

**TOWARDS A MANAGEMENT INFORMATION SYSTEM FOR PUBLIC
ADMINISTRATION IN UGANDA**

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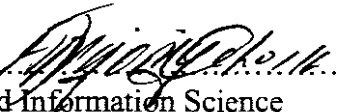
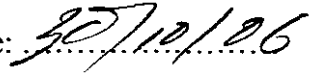
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**Thesis submitted in fulfilment of the requirements for the award of the Degree of
Doctor of Philosophy (Library and Information Science) of the University of
Zululand, Kwa Dlangezwa,
SOUTH AFRICA**

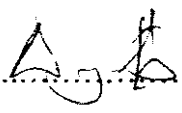
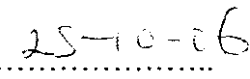
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APPROVAL

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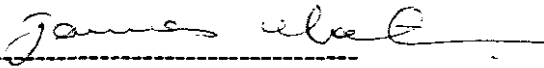
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DECLARATION

I declare that this study Towards Management Information System in Public Administration in Uganda, except where specifically indicated to the contrary in the text, is my own work both in conception and execution. All the information that was used have been and duly acknowledged in the text and in the references

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DEDICATION

This work is dedicated to my wife Victoria Ndibalekera Matovu; and my children Doreen Louisa Nampewo, Philip Kiwana and Gordon Blaze Balaaka; my father the late Samuel Mutekanga Matovu, and my mother Victoria Nanteza Matovu, and finally, my late sister, Deborah, Nakacwa Matovu Oseku, whose close relation to me proved the critical driving force that finally enabled me to bring this exercise to its logical conclusion.

LIST OF ACRONYMS

AI: Artificial Intelligence
ANN: Artificial Neural Network
CBO: Community Based Organisation
CCA: Clinger-Cohen Act
CD-ROM: Compact Disc Read Only Memory
CIO: Chief Information Officer
COMESA: Common Market for Eastern and Southern Africa
CSRP: Civil Service Reform Program
DSC: District Service Commission
DSS: Decision Support System
EASLIS: East African School of Library and Information Science
ECOWAS: Economic Community of West Africa
E-Government: Electronic Government
EIS: Executive Information System
FAO: Food and Agricultural Organisation
GDSS: Group Decision Support System
GNP: Gross National Product
HMIS: Health Management Information System
IAC: Information Analysis and Consolidation
ICT: Information and Communication Technology
IFMS: Integrated Financial Management System
ITIU: Industrial and Technological Information Unit
IRS: Information Reporting System
ISN: Information Sharing Network
JIS: Judicial Information System
KCC: Kampala City Council
KOL: Knowledge On-line
LAN: Local Area Network
LC: Local Council

LOGICS: Local Government Information and Communication System
MFPED: Ministry of Finance Planning and Economic Development
MOH: Ministry of Health
MPS: Ministry of Public Service
MWHC: Ministry of Works Housing and Communication
MIS: Management Information System
MISR: Makerere Institute of Social Research
MOB: Management by Objective
NASPAA: National Association of Schools of Public Affairs and Administration
NGO: Non-Governmental Organisation
NIE: New Institutional Economics
NPM: New Public Management
NPR: National Performance Review
NRM: National Resistance Movement
OAS: Office Automation System
OLAP: Online Analytical Processing
PAC: Public Accounts Committee
PEAP: Poverty Eradication Action Programme
PC: Personal Computer
PCS: Process Control System
POSDCORB: Planning, Organising, Staffing, Directing, Coordinating, Reporting and Budgeting
PSC: Public Service Commission
PSRRC: Public Service Reform and Reorganisation Program
ROM: Result Oriented Management
RSDC: Road Sector Development Program
SAP: Structural Adjustment Program
SADC: Southern African Development Community
SDI: Selective Dissemination of Information
TPS: Transaction Processing System

TQM: Total Quality Management
UBOS: Uganda Bureau of Statistics
UMFPED: Uganda, Ministry of Finance Planning and Economic Development
UMA: Uganda Manufacturers Association
UMACIS: Uganda Manufacturers Association Consultancy and Information Service
UMH: Uganda, Ministry of Health
UMLG: Uganda, Ministry of Local Government
UMPS: Uganda, Ministry of Public Service
UMWHC: Uganda, Ministry of Works Housing and Communication
UNCC: Uganda National Chamber of Commerce
UPS: Uninterrupted Power Supply
UTIS: Uganda Technical Information Service
WK: Workstation
WWW: World Wide Web

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GLOSSARY

Archives: semi-active literature, or literature not likely to be on demand regularly

Artificial Intelligence: a system designed to enable a computer to reason like humans during decision making

Automated Information Systems: An information system based on use of computers and computer related technologies, such as photocopiers and fax machines.

Centralised database: databases of an organization located at one site and under the management of one group of people.

Communication Network: a group of devices connected to one or more communication channels.

Computer-based Information System: an information system specifically designed to run on computers.

Database Management System: A collection of software programs, that stores data in a uniform and consistent way; organize the data in a uniform and consistent way; and allows access to the data in a uniform and consistent way.

Decision Support Systems: an information system established to support decision making at tactical levels of management

Electronic Government: government, whose activities that take place by digital processes over a computer network, usually the internet, between the government and members of the public, and entities of the private sector, especially regulated entities.

End-user: people who use an information system or the information it produces

Executive Information System: information system designed to meet the information needs of top-level management, consisting of graphics, charts and tables.

Expert Systems: an information system designed to enable a computer to reason like humans when dealing with a problem with several dimensions

Gray literature: literature published by organization not fully in the business of publishing.

External Environment: factors that are alien to an organization but which are able to influence changes in that organization which may be positive or negative

Fuzzy logic: logically consistent ways of reasoning that can cope with uncertain or partial information characteristic of human thinking and many expert systems.

Group Decision Support Systems: a computer based information system where several people working in isolation are able to participate as a team in a discussion

Informal Information System: flow of information depending on the word of mouth

Information proficiency: having a more than average understanding of the importance of data and information and how it may be to managed properly

Information Repackaging: presenting data in a format that makes it easier to use

Information Reporting System: a computer-based information system established to keep management abreast of the changes taking place in the external environment

Information System: a system that converts data into information.

Internet: a global network of hundreds of thousands of local networks.

Knowledge Base: a collection of databases constructed to support the information needs of a given user group

Knowledge management: a system for management of the expertise in an organization; i.e. collecting categorizing and disseminating knowledge.

Manual Information System: an information system that operates without the support of computer technology.

MIS infrastructure: the external environment impacting on the working of an MIS system, i.e. government policies, the economy, etc.

Reference literature: abstracts, handbooks, directories, catalogues and other materials that can be used as primary data to supplement interviews and field observation

Phenomenon: the central ideas, event, happenings, incidents about which a set of actions or interactions are directed at managing, handling, or to which a set of actions are related

Primary data: data presented in a form in which it was officially published by its originator

Public Administration: institutions involved in rendering service to the general population, and whose remuneration is drawn from the national treasury

Qualitative Research: research method based on collecting data through critical interviews and observation

Quantitative Research: a research method based on establishing quantities in the changes of a given environment, which are used to derive inferences

Technical Literature: Reports of research, studies, and theoretical, and philosophical papers, characteristics of professional and disciplinary writing

Teleconferencing: or electronic conferencing: systems that permit many participants to engage in two-way communications without having to travel to a common site.

Theory: a collection of assumptions, definitions and propositions which explain a group of observed facts or phenomena in a field or discipline

Transaction Processing System: system that processes organizations routine or basic transactions such as ordering billing and paying.

ABSTRACT

A study based in Uganda, examining and evaluating the theoretical and practical challenges in establishing a management information system (MIS) for public administration. The study focused on the information system at the Ministry of Health (MOH), and Ministry of Finance Planning and Economic Development (MFPED) in the case of Central Government; and that of local administration of five districts, namely, Arua, Bushenyi, Kampala, Masaka, and Mbale.

The study involved administration of a survey questionnaire to 530 respondents as well as conducting face to face interviews with 53 respondents. This was on top of the review of the literature that included journal publications, monographs, institutional reports, and conference proceedings. Data collected was analysed using SPSS, Excel, and Epinfo software programs and was later interpreted accordingly.

The findings of the study reveal that introduction of new public management, in particular, result oriented management trigger off the desire for the introduction of MIS public administration. Initial efforts towards MIS in public administration proved faulty due to lack of coordination. The effort also resulted in MIS programmes which are limited in scope as they are designed mainly for planning purposes. The steps towards review of the MIS program in 2002 aimed at establishing an integrated MIS program. The leading information needs of public administration were identified as financial management, capacity building, national policy, central government policy, economic conditions and HIV/AIDS. Despite the claim of having an MIS, the information system in place is said to be considerably lacking in the ability to supply adequate, well processed, timely, and easy to use data. The system was found to be lacking in the supply of grey literature, and value added data. Websites suffer from inadequate scope and limited currency. In-house databases by the established information system are non-existent. The system suffers from the lack of a LAN system, meaning non-availability of online access for most people. It also suffers from undeveloped CD-ROM, and flash disk technology, meaning that information from databases is only accessible in printed form

or on diskettes. The MIS programme also suffers from excessive donor dependence, resulting in the development of incompatible systems. Local governments in particular suffer from inadequate computer stock. Public administration, as a whole, suffers from inadequate computer accessories, a problem aggravated by lack of a LAN system to support resource sharing. It also suffers from inadequate computer literacy by both information resource personnel, and public administrators which then results in the under-utilisation of computer resources. To most respondents, the productivity of the MIS program is less than 30 percent of its potential.

There is a need to; a) strengthen training in information management, including information gathering, knowledge management, indexing and abstracting service, information analysis and consolidation, and information repackaging; b) establish sectoral information analysis centres with legal deposit rights on government and non-government publications, to assume management of the national websites and online databases; c) create a Ministry of Information and Communication Technology to elevate the information resource to a ministerial status; d) effect greater investment in group decision support systems as opposed to decision support systems; e) invest in information sharing networks as opposed executive information systems; f) emphasise information reporting and communication as opposed to production of decision models; g) increase government active participation in MIS programs demonstrated through independent budget lines in the national budget and lastly there is a need to integrate the various information systems into a public administration management information network (PAMIN).

In conclusion, MIS for public administration is the only way to activate the critical role of information in public administration. Bearing in mind that MIS is computer based, and that the ICT industry is ever changing, the Uganda Government is faced with an uphill task of making MIS a success.

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CHAPTER ONE

GENERAL ORIENTATION

1.1 Introduction

The aim of the study is to analyse the rationale for Management Information Systems (MIS) in public administration in Uganda, as well as to analyse the underlying factors in the establishment of a successful MIS Programme. Chapter One of the study defines the concepts of public administration, information needs and information systems in public administration, and MIS. The chapter also spells out the research problem, motivation, and objectives of the study.

1.2 Public Administration

1.2.1 Public Administration as a Concept

The national economy, according to Hughes (1998:82) is divided into the private and public sector. The public sector is that one engaged in providing services (in some cases goods) whose scope and variety are determined by the decision of government bodies, or the representatives of the citizens. Hughes (1998:97) points out that production of some goods and services cannot be left to the private sector because they are non-excludable. These are items that benefit all users irrespective whether they have paid for the price or not. Hughes identifies such items as defense, road and bridge construction, as a few of the examples.

Simon, Smithburg and Thompson (1950) describe public administration as “the activities of the executive branch of the national, state, and the local governments, independent boards, and commissions set up by the national legislature, government corporations, and certain agencies of a specialized nature”. Balogun (1983:11-12) identifies public administration as an institution that: a) pursues non-quantifiable objectives, such as law and order; b) fulfills non-economic socio-political ends; c) implements public policies and satisfies collective aspirations; d) is governed by public laws; e) is financed from the public purse, that is taxpayers money; f) is subject to public accountability; g) is heavily

influenced by external social-political environment; and, h) is influenced by issues of morals and ethics that include probity in office, self discipline, acknowledgement of individual rights and liberties.

Hughes (1998:84) points out that government outputs are many and varied, and that they include, the supply of goods and services ranging from roads to hospitals, the imposition of taxation, the transfer of money from one set of citizens to another, the relationships with other governments, and goods, and the implementation of laws or regulations which are themselves multi-functions. Through the government budget, government provides goods and service. Through coercive measures, government allows or prohibits certain activities in the private economy. Through subsidies, government assists someone in the private economy to produce goods and services for sale in the market; and that government also produces goods and services for sale in the market.

Pfiffer and Presthus in Balogun (1983) describe public administration as the coordination of individual and group efforts to carry out public policy. Woodrow Wilson in Balogun (1983) describes public administration as Government in action. Nnoli (2000), on his/her part, **describes** public administration as the machinery as well as integral processes through which the governments perform their functions. According to Nnoli public administration is a network of human relationships and associated activities extending from government to the lowest paid and powerless individual charged with keeping in daily touch with all resources, natural and human, and all aspects of the life of the society with which the government is concerned. Public administration, according to Nnoli, is necessary due to the numerous and complex processes through which implementation of government decisions is made. Government, according to Hughes (1998:83), includes the staff employed by the state to carry out the instructions of the elected government, and to administer or manage its institutions. While the political process may set the agenda of politics, the detail is left to the administration. Contact with government by most people, according to Hughes, is not at the political level. Instead, the vast bulk of the day-to-day governmental dealings of an ordinary citizen is performed by the public administration.

Balogun (1983) refers to public administration as the executive arm of government responsible for the formulation and implementation of public policies. It is the accomplishing side of government comprising all those activities involved in carrying out the policies of elected officials and some activities associated with the development of those policies. Public administration is manned by personnel referred to as public administrators, or public servants, civil servants; and the body of public administration is usually called the civil service. Civil service, according to Balogun, is thus actively concerned with the social and economic well-being of the general public, and is thus actively involved in the critical analysis of the economic, social, scientific and technological policies of a country for the purposes of maintaining a healthy economy, setting up a system that depicts adequate response to public needs, social justice and treatment, involvement of citizens in government decisions, the quality of life and government participation. Senior civil servants are regarded as the professional advisers to those who formulate state policy. They are expected to advise, warn and assist those responsible for state policy, and when this has been decided, to provide the organisation for implementing it. On the other hand, while the senior civil servants may give advice, responsibility for policy decisions lies with the political members of the executive, or those elected or appointed to give political direction to government (Balogun, 1983).

Balogun, suggests that unlike disciplines such as engineering, or medicine, public administration is amorphous. Its scope and structure varies according to country. Peters (1995) submit that to some scholars, public administrators include all appointed officials of the state including the military, civil servants, transients as well as long-term servers, higher and lower personnel, those in state, local and national governments; as well as cabinet officers if they are elected members of parliament. In other words, within nations, public administration is practiced at the central, intermediate and local levels. Peters goes further to submit that a distinction is made between professional or scientific civil service and general civil service, the former being those who render technical services; while the latter refers to those who provide general administrative support. The Uganda Public Service Review and Re-organisation Commission Report [UPSRRC] (1990), for example, observe that “the New Era Public Service must have a unified structure which

embraces all the posts in the civil service from the lowest to the highest and provides equal opportunity to every officer to advance to the highest post in the service irrespective of his or her discipline. The unified structure presupposes abolition of the existing multiplicity of classes with its inbuilt friction potential, especially between professional and administrators” (UPSRRC, 1990:23). According to Peters, a distinction is again made between the general civil service and the military, the judiciary and the police. In many countries, the civil service does not include local government, or public corporations. In others, civil servant is simply a body of persons directly employed in the administration of the internal affairs of the state and whose role and status are not political, ministerial, military, or constabulary.

According to Hughes (1998), the role of public administrators was for many years limited to the implementation of state policy, while state policy formulation was reserved for the elected leaders only. It later became evident to many that public administrators, on the basis of their high qualifications in specialised fields, coupled with a long stay in public administration are in strategic positions to render advice to political leaders on issues regarding state policy. According to UPSRRC, 1990:29), public service not only implements government policy but also greatly influences its formulation through the selection of strategies and managerial control of resources and, consequently, largely determines the extent and manner in which it is executed. UPSRRC observe that “whereas the fundamental objectives of government may change from time to time, and thus affects its scope, size and numbers of its activities, the main functions, or means of carrying out political programmes remain essentially the same: management of national resources” (UPSRRC, 1990:29).

Public administration structure, as described by Nnoli (2000), consists of ministries and/or departments which are created on the basis of different areas of interest of its activities. (Nnoli, 2000). With globalisation, the role of the government may be more important now than ever before. If, for example, corporations are to succeed in today’s global market, they need the highest quality inputs they can get - the most knowledgeable workers, the most ground breaking research, the cheapest capital, the best infrastructure;

and that, this makes the government's various roles as educator, trainer, researcher, funding agency, regulator, rule setter and infrastructure operator far more important than they were thirty years ago.

According to Hughes, society over centuries has evolved over different phases of government intervention. In the late 18th century, it was *lassiez-faire*, which stood for non-government intervention in the working of the market forces, except when this was seen as absolutely necessary. This resulted in small governments which were playing a reduced role. The *lassiez-faire* was later to be followed by the welfare state system during the 19th century when government became an active player in the production of goods and services, thus resulting in huge Governments for many countries. The trend since the 1970s, according to Hughes, has been what he refers to as the replacement of welfare with minimum intervention from government, or 'neo-classicism'. Neo-classicism, according to Hughes has assumed different labels including new public management, managerialism, and downsizing of the public sector. It is characterised by scaling down government through privatisation, liberalization and decentralisation. Hughes traces neo-classicism to the leadership of Margaret Thatcher in the UK, Ronald Reagan in the United States, the Lange-Douglas government in New Zealand, and the Mulroney government in Australia (Hughes 1998:95). Hughes again points out that since the Clinton administration in the United States, and that of Major and Blair in the United Kingdom, the trend has been to scale down a bit on neo-classicism.

Musgrave and Musgrave (1989:5-6) point out that the prevalence of government is a reflection of the presence of political and social ideologies which depart from the premises of a total free market economy. Thus, the role of the Government today in the development of the national economy lies between the two extremes, that is, *laissez faire* and welfare state as none of the two conditions is sustainable in the long run. The World Bank in its 1997 report on development presented five fundamental tasks which lie at the core of every government mission, namely, the establishment of law and order, maintenance of non-distortion policy environment, including macroeconomic stability; investing in basic social services and infrastructure; protecting the environment; and,

protecting the vulnerable. Anderson (1989:19-22) identifies seven basic functions of government, namely: provision of economic infrastructure, provision of various collective goods and service, resolution and adjustment of group conflicts, maintenance of competition, and the protection of natural resources, provision of minimum access by individuals to the basic goods and services, and economy and its stability.

Functions of public administration were once summed by Gulick (1990) under the acronym 'POSDCORB', which stands for planning, organising, staffing, directing, co-ordinating, reporting and budgeting. Flitch (1990) identifies the principal tasks of public administration as contributing to improved allocation of resources, providing the framework for openness and freedom, facilitating choice among alternative productive techniques and organising to produce and deliver public services and to ensure means of promoting the general welfare through these techniques. Flitch goes further to identify public administration's tasks as developing personnel policies which capture the creativity and enthusiasm of staff and customers, laying the basis for increases in humanity and productivity; and strengthening the process of self-co-ordination, together with supervision and evaluation.

Nnoli (2000) summarizes the function of public administration into three, namely: to maintain the incumbent government in power through generating good will for it from the majority of the population; advising the government on how best to formulate good and realistic programmes, as well as the implementation of those programmes; and lastly, informing the public at large about government programmes and what progress is being made to realise them. Nnoli observes that unlike private enterprises, public administration is not about maximising profits, but social welfare, national prestige, and political advantage. It is not possible under public administration to quantify precisely the returns from the activities of government; and that unlike private enterprises which have a very narrow focus of economic nature, public administration is driven by a wide range of concerns that include social, economic, cultural and political activities. Nnoli also observes that while private enterprises are often accountable to themselves, public administration is accountable to the public for every aspect of its official activities. Civil

service is subjected to detailed scrutiny by the public for its use of resources and nature of performance of its jobs; and additionally, it faces scrutiny by the press, legislature, tax payers, the courts, and by interest groups and political parties.

Until recently, the structure of public administration remained in the form of a hierarchical structure in which the command structure rises into a pyramidal fashion from the lowest offices to the highest. Traditionally, public administration is structured into several levels, which are broadly categorized into three, namely, top, middle, and the lower levels. The top level refers to public administrators concerned with strategic decision making, a task executed in their capacity as chief advisors to political leaders on policy matters. Thapisa (1996:3) points out that top level management is responsible for strategic planning which involves determining the major objectives of an organisation and the policies and strategies that will govern the acquisition, use and disposition of the resources to achieve those objectives. Harrison (1992:72) defines strategic decisions as those that involve a commitment of a large amount of resources over extended periods of time to fulfill organizational purposes. Harrison describes the function of top level management as an assessment of organisational strength and weaknesses by studying the external environment, that is, the opportunities and threats; with a view to formulate long term goals and objectives. According to Harrison, the function of top level management in organisations is to formulate the Master Strategy, or long term direction of an organisation characterised by growth, integration, diversification and retrenchment. Similarly, Peters (1995:38), argues that top level public administrators perform a strategic role of advising or warning government on public policy, as they are endowed with specialised knowledge in a diversity of fields acquired through high level training in these fields. They also have the benefit of a long period of association with public affairs as office tenure that may not necessarily be affected by political changes. They are entrusted with such responsibility due to the high level of academic qualifications they command, as well as the long period of association with public affairs. During induction, they may undergo a long period of on job training in technical fields such as law, public finance, accounting and economics, taken in colleges specially established for that purpose. There is almost one such college in every country, examples being Ecole

National d"Administration in France, the Civil Service College in UK; the Federal Executive Institute in the United States, and the Uganda Management Institute in Uganda. Appointments and promotions of senior public administrators are done on merit, based on excellence in written and verbal examinations again conducted for that purpose.

Middle level management, according to Morgan et al. (1996) refers to those responsible for stimulating inter-organisational co-operation and developing co-operative relationships with important community stakeholders, translating the community's values to lower levels of the organization, representing the organisation's constituency groups, and increasing the organisation's capacity to deliver. Morgan et al. identify middle management with several tasks that include: a) interpretation and representation of their work units during discussions regarding budget; b) exchange of data with other departments or organizations; c) distribution of responsibility, tasks and duties; d) development of organisational relationships with other work units and e) leverage of each other's time through meeting attendance and/or performance of tasks where the purpose of the task or meeting is vague, ill-defined or even ill-conceived.

Morgan et al. argues that middle managers make governments more efficient and effective by facilitating common grounds across fragmented structures of local authority. They serve as essential communication links between the organisations' senior level managers and the line personnel. Middle level managers are on high demand due to their respected role of interpreting and synthesising a variety of influences on the work of the organisation, including the demands of various internal and external leaders, the interests of the consumer/clients, the perception of the general public, the needs of the personnel, the expectations of the organization; and the goals of board members and/or of elected officials.

At the lower end of the managerial group, are the supervisory staff of the various operations taking place in public administration. These include the foremen and chief clerks. They are responsible for managing the routine type of work including transaction processing. They are answerable for the effective use of the existing facilities and resources within budget constraints and prescribed objectives. Largely, they handle

structured problems concerned with the implementation and control of the day-to-day activities of the organisation. Effective and efficient information systems are essential in the day-to-day activities of lower management since its control is enormous, monitoring is constant, and data is needed rapidly and often in real time. Neelameghan (1992) points out that in management, the variation in demand for internal data as opposed to external data varies according to the management level with the lower management focusing more on internal data while top management is more concerned about external data.

1.2.2 New Approach to Public Administration

Public administrators, for many years were well known for their adherence to formal organization. Institutions are organised into departments, ministries, and agencies on the basis of common or closely related purposes; grouping like activities in single units. Responsibility is equated to authority, and there is total observance of unity of command. Public administration differentiates its line activities by employing the principle of management by exception and having a clear-cut chain of command downward and responsibility upward; thus limiting the number of subordinates reporting to a single supervisor.

Since the beginning of the 1990s, the attempt has been to replace the traditional approach to public administration with a new approach aimed at emphasising results as opposed to process. Denhardt and Denhardt (2001) describe the new approach to public administration as a system driven by cost reduction through processes such as reduction of the management levels, the curbing of bureaucracy in public administration, regular performance appraisal, regular evaluation of the production processes, reengineering, participatory decision making, devolution of decision making decentralization, and increased emphasis on accountability. According to Kearns (1994:185) today, throughout the nonprofit sector, there is renewed interest in issues such as: measuring the value added performance of nonprofit organizations in terms of actual outcomes. According to Novotny (1996:158), the trend today is creating a government that works better and costs less.

Liu and Kleiner (2005) point out that historically, it was taken for granted that public services would be delivered by career civil servant employees working within the structure of centralized public agencies budgeted with appropriate funds. Today, according to Liu and Kleiner, none of these are true as public programmes are more likely performed by alternative organizations, or mechanisms rather than public agencies. This change has led to a series of new theories which represent what is technically referred to as new public management (NPM). One distinct feature about NPM is that it is information prone. It involves both intensive and extensive exploitation of the information resource in the practice of managerial duties.

1.3 Information and Public Administration

1.3.1 Need for Information Service

Governments everywhere appreciate the role of information in quality decision making. This is demonstrated through continuous investment in information management through the establishment of institutional resource centres, specialised libraries, documentation centres and registries. These are charged with the task to collect, process, store, and disseminate data and information to decision makers within the individual organisations. Public administrators need good access to data concerning ongoing processes within and outside the organisation, including those dealing with personnel, equipment, materials, and research. Similarly, they need effective access to data concerning trends in politics, economy, technology and social values. Nonaka (1995) points out that successful companies consistently create new knowledge, disseminate widely throughout the organisation, and quickly embody it into new technology and products. These companies want to process objective information as well as tap the tacit and often highly subjective insights, intuitions and hunches of individual employees, upon which they make these insights available for testing and for use in the company as a whole. It is argued that if innovative management is to achieve its objective in public administration, information must be made available regarding its operations and the wider environment, and that this must be accurate, timely, accessible, comprehensive, and continuous. Nonaka (1991) emphasises the need for successful organisations to consistently create new knowledge through intelligence gathering, which is disseminated widely and throughout the

organisation, pointing out that new products and new production methods and new services are the end product of successful intelligence gathering.

Information needs in public administration are more diverse and complex than what may be the case with private enterprises. Dunn (1994) points out that unlike private firms driven with the sole objective of maximizing profit, public administration is motivated by numerous factors which include politics, social and cultural values, technology, and economy. Public administration also involves numerous stakeholders, such as the tax payer, civil society, NGOs, and donors. Consequently, decision making in public administration often involve the consideration of numerous factors including political manifestos, and social issues relating to equality and gender balance.

1.3.2 Management Information System

Easy access to quality data and information is made difficult by numerous factors. Atherton (1977) identifies factors such as information explosion, information scatter, information oversupply, high rate of obsolescence, and varying forms of presentation. Other barriers include institutional regulations, economic factors, overhead cost, language multiplicity, and physical barriers. Ocholla (1995) observe that due to the increasing complexity of both the information resource and public administration, government attempts to establish effective information systems in most countries has often resulted in limited success. Katz (1994) argues that the challenge faced by all countries today is to tap computer power into the management of the information systems in public administration. It is argued that with the help of computer power, information workers can easily and effectively process data to produce reliable and complete indexes, abstracts, directories, handbooks, dictionaries, bibliographies, almanacs, and encyclopedic information. Computer power is especially useful in providing vast storage mediums, full indexing, fast information retrieval systems, and real-time dissemination of data and information. Management has become system oriented and more sophisticated in management techniques; and that information is planned and made available to managers as needed. Theirauf (1984) observes that given adequate information on essential facts, management can rely more on deductive and analytical methods than

guesses and intuitive judgments, which are forced upon decision-making processes when the relevant facts are missing.

Newcomer (1991) observes that the proliferation of personal computers, networked terminals, and powerful workstations throughout the public sector makes information systems and information products readily accessible to most government workers. Newcomer further observes that online publications, documents placed on the internet or computer bulletin board systems are increasingly being used by citizens, private firms, public interest groups, and governments to reach segments of the population. Newcomer, however, points out that governments still lagging behind the private sector as they are just beginning to take advantage of the new technologies to allow managers and citizens access up-to-date government information quickly and cheaply.

Management Information System (MIS) is a computer based information system, specially designed to support decision makers in an organization with quality data, so as to enhance the quality of decision making. MIS is based on the principle that data for management purposes need to be adequate, relevant, timely and easy to use. MIS recognises that information needs and information seeking behavior vary according to sector, individual, organization, but more importantly, according to the management level. MIS is about supplying data to end-users in a customer tailored manner, bearing in mind factors such as timeliness. Davis and Olsen (1985) observe that much as MIS can be manual, it is computer power that makes MIS particularly effective.

As argued by Brown and Brudney (1998), almost all governments in the world are committed to the idea of integrating MIS in the management of public institutions. Sauter (1997:19) observe that MIS through decision support systems enable decision makers to look at more facets of the problem, generate more alternative solutions to a problem, respond to situations easily, consider more options to solving a problem, and utilise multiple analyses in solving any given problem. Sauter further observes that MIS is especially useful where managers and staff spend a lot of time locating and analyzing data that is already stored, resulting in management meetings being stalled because

people challenge the validity of the data in question. Theirauf (1984:17) observes that the need for an effective MIS is of paramount importance to the organization because the organization does not operate in a vacuum, but must coordinate its operations with the business universe. Theirauf also observes that information has assumed a new status of a corporate resource; and that corporate strategic planning cannot be accomplished without information systems. Theirauf continues to observe that prior to MIS, information systems were backward looking in that they concentrated on various types of historical reports, which were largely custodial reports. He argues that managers dealt with current problems in the light of yesterday's results; and the wider environment was seen as static, or changing gradually. As such information systems were treated as separate entities.

Theirauf argues that with globalisation, the world has become extremely dynamic. The challenge to organizations is to make use of the available data to effect decisions that take into account the predictions about the future. Theirauf argues that MIS is about integration of all subsystems that can be logically interrelated. It is about integration of men, machines, money, materials, and management, all in conformity with the organizations objectives. The net objective, according to Theirauf is the establishment of an integrated data processing system.

On the other hand, Littlejohns, Wyatt and Garvican (2002) point out that the development of MIS in most organisations has been characterised by problems such as poor system quality, long development lead time, user dissatisfaction and huge costs. Littlejohns also observes that while enormous investment has gone into computerised hospital information systems worldwide, when such systems are evaluated, about three quarters are considered to have failed. Willcocks (1996) argues that MIS is heavily computer dependant yet the gap between the use of ICT in the public sector and the technological achievements of the private sector is evident in many countries. Today, public organisations are being forced to spend a lot on information technology (IT) even when their budgets come under pressure. Willcocks argues that many often find themselves with IT projects that are over budget, behind schedule or producing benefits less than originally anticipated. Willcocks (1996) cites the case of the State of Vermont Legislative

Council in the United States which in 1993 embarked on the setting up of a Human Resource Management System, and whose project experienced many difficulties along the line resulting in major deadline extensions and cost overruns. According to Willcocks, twenty percent of IT projects get stopped before completion, and 80 percent of the ones that get completed are finished behind schedule, spend more than is budgeted for and ultimately become less functional. Willcocks (1996) points out that unlike the Private Management Information Systems (PRMIS), Public Management Information Systems (PUMIS) have to contend with greater levels of interdependence across organisational boundaries, higher levels of red-tape, and extra-organisational linkages. As for PRIMIS, its concerns are largely limited to internal co-ordination. Willcocks again argues that while project management frameworks have been developed in the private sector that can provide guidelines, blindly adopting such frameworks to the public sector can be misleading.

1.4 Research Problem

Uganda Government has, since mid-1990s, committed itself to setting up a management information system (MIS) for public administration in Uganda, as one way of promoting result oriented management in the management of public service. Information today is a key resource in the effective management of any institution including public administration. MIS is a computer-based system that demands heavy capital outlay. It is import driven in that its inputs in terms of computer hardware and software can only be obtained from overseas. Lastly, it calls for high level technical know-how in terms of ICT management, content management, and information retrieval. Thus, opting for MIS for public administration is a big challenge to the Government, as MIS to be viable must all the time be able to produce quality data. Unfortunately, the history of the country's information system does not provide enough guide on the country's ability to cope with modern information management. Presently, there is hardly any information system in public administration that has been able to address the information needs to the user satisfaction.

1.4.1 Analysis of the Problem

Most Government departments are provided with information service in the form of a library and a documentation center at their headquarters as one way of addressing information needs of the ministry. Similarly, every Government department maintains an archive and records units for the proper storage and archiving of all records produced by the organization. The international community in the form of donor agencies has on several occasions helped the Government in funding and setting up modern information systems for government bodies, and these systems have been stocked with modern technologies. Through local as well as overseas training, Uganda has built up the capacity for the effective management of information systems and services.

Since the early 1990s, there has been a renewed attempt to revamp information management for public administration, with information centres in selected ministries being equipped with computer technology. Unfortunately, the effort to solve the information question in public administration is yet to bear fruits. The attempt to establish modern information systems in Uganda is punctuated with a long list of failed organisational information systems and services. Thompson in Matovu (1994) documents the origin and final demise of The Uganda Technical Information Service (UTIS). UTIS, according to Thompson was established in the mid 1960s at the Uganda Polytechnic Kyambogo to act as a source for industrial and technical information in the country. UTIS failed to attract enough of the user attention resulting eventually in its eventual closure. Again Thompson in Matovu (1994) reports about the establishment of a modern information system at the Management Training and Advisory Centre (MTAC) at Nakawa in Kampala during early 1965, which again faced the same problem of limited use. The information center at MTAC was established by Government, with assistance from UNESCO and ILO, and was meant to provide information services, such as indexing, abstracting, current awareness service, and information analysis and consolidation (IAC) to the business community in the country. Matovu (1994) reports that the attempt to set up a modern information system in 1988 under the Uganda National Chamber of Commerce (UNCC) to support the business community with information relating to international trade. By 1993, the information center had been

reduced to a computer training centre for the business community. According to Matovu, similar efforts by the private sector as well as NGOs to establish modern specialized information services in the country have had the same ending. Reference is made by Matovu (1994) to the Uganda Manufacturers Association, which, with the assistance from UNIDO, UNDP, CMA, and the World Bank, established a modern information system for the manufacturing sector under the names Uganda Manufacturers Information Centre (UMAIC), and Uganda Manufacturers Association Consultancy and Information Service, (UMACIS). According to Matovu, the two services have since been reduced to a shadow of their former selves. Additional examples of failed specialized information services in Uganda are listed by Matovu (1994). These include the attempt by the Government to establish an Industrial and Technological Information Unit (ITIU) at the Ministry of Trade and Industry in 1984 under the Project No. DP/UGA/84/003/A. The information center in question which was meant to assist the victims of civil service reform with information to start some private investments using the lay off capital they obtained from government, came to a close barely ten years after its establishment. Again one can not fail to notice the cause for the dismantling of the library and information service at the Ministry of Education and Sports headquarters in Kampala, with its replacement with a resource centre whose purpose was to serve as a model for sensitising head teachers about resource centres. The downsizing of public service under the Structural Adjustment Programme (SAP) in Uganda during the 1990s proved the end of information service to a number of public bodies in the country, including the Ministry of Foreign Affairs. With Government leaving it to the individual ministries to identify the activities of services that could be suspended to satisfy the demands of downsizing, most ministries picked on the library and documentation center. This implied that to many, this was one of the least "productive" of all activities.

The Uganda Government, since 1995 has been working towards the establishment of MIS for public administration, as part of the Civil Service Reform Program (CSR), which formed part of the Structural Adjustment Programme (SAP) (UMPS, 2002:1). Several MIS related programs have been set up under the Ministry of Finance, Planning and Economic Development (MFPED), as well as other ministries. These included the

Personnel and Payroll Information System, Physical Assets Management Information System, Pensions Management Information System, Budgeting and Financial Management System, and Strengthening of Audit and Inspection Section (UMPS, 2002:39). Preliminary investigations suggest that most MIS programmes set up by the Government are still unable to satisfy the information needs of the administrators. Most MIS programmes suffer from limited scope, inability to update data regularly, and inability to open easily due to limited bandwidth.

In view of the close relation between MIS and NPM, the study is designed to examine the nature and scope of public administration in Uganda, the information needs in public administration, the rationale for MIS, and the viability of the MIS infrastructure. On the basis of the findings made by the study through the literature review, as well as the fieldwork, the study will make an attempt to come up with recommendations amounting to a suitable MIS model for public administration in Uganda.

1.4.2 Motivation For The Study

This study was influenced by several factors: Firstly, MIS has taken centre stage in the working of information systems in private and public sectors in many countries. For anybody associated with championing the cause of information in Uganda, it becomes inescapable to make a contribution towards the examination of the relevance of the MIS concept to various institutions in the country including public administration. Secondly, to many, the understanding of MIS has been more closely associated with the *management of hardware and software technologies than the management of content* (O'Brien, 1997). The aim of this study, therefore, is to examine MIS more from the premise of content management. Although the concept of information service has been around us since the industrial revolution, information systems have generally failed to make a meaningful impact in most organizations (Katz, 1994). The purpose of the study is, therefore, to explore ways in which the information resource can become an active resource in the day-to-day management of institutions in the country. This study is meant to examine the concept of MIS in the manner in which it can make information service more meaningful to all decision makers, including policy makers.

While most ICT specialists have a good understanding of the importance of internal data management, they have a limited understanding of the influence of the wider environment including the social, economic, political, scientific and technological factors in the well being of an organisation. They also fail to understand fully the notion of information needs and seeking behaviour. The aim of this study is to provide a wider understanding of the MIS concept by introducing concepts such as the external environment, and variations on information needs and information seeking behaviour. Lastly, the study would enable the researcher to gain a better understanding of the working of modern information systems, as well as establish the relation between MIS and the conventional information systems and services, under what is described as the information era.

1.4.3 Aim of the Study

The aim of the study is to analyse the factors underlying a successful introduction of MIS to the public sector in Uganda.

1.4.4 Objectives of the Study

The objectives of the study are as follows:

1. To identify and describe the nature and scope of public administration in Uganda;
2. To explore the information needs of public administration in Uganda;
3. To examine and evaluate the rationale for MIS in public administration
4. To *examine the infrastructure needed to ensure effective working of MIS in Uganda; and finally,*
5. To develop a conceptual MIS model for public administration.

1.4.5 Research Questions

The study endeavours to address a number of questions regarding MIS including the following:

1. What is the form of public administration in Uganda?
2. What are the information needs of public administration in Uganda?

3. To what extent does the information system in public administration in Uganda conform to what may be described as management information system?
4. How favourable is the external environment regarding MIS for public administration in Uganda?
5. What conceptual model of MIS may public administration adopt to realise a viable MIS Programme?

1.5 Scope and limitations

The subject scope of this study is MIS and public administration. The geographical scope of the study is limited mainly to Uganda. In particular, the study aims to examine MIS under both the central and local governments in Uganda. For the Central Government, the study is limited to the Ministry of Health (MoH) and the Ministry of Finance Planning and Economic Development (MFPED). For the Local Government, the study is limited to five districts: Arua, Bushenyi, Kampala, Masaka, and Mbale. The study aims at examining the relation between specialised information services and MIS. It may be noted that since the age of the industrial revolution, managers have been opposed to information in its primary form, preferring factual data and information. The study thus aims at examining the degree to which MIS offsets or complements the traditional specialised information service. Much as Uganda remains the geographical scope of the study, the study compared the working of MIS Programmes in many countries with the sole aim of drawing some comparative lessons with Uganda.

1.6 Significance of the Study

It is hoped that the study will be productive to many people within, and outside, Uganda. It is also hoped that the study will enable information managers in Uganda to make a better understanding of the MIS concept and the way MIS relates to the traditional information management practice. It is further hoped that the study will enable ICT technologists to improve their understanding of MIS by drawing their attention to issues such as the management of content. It is again hoped that with this study in place, public administrators in the country will acquire the necessary skills to evaluate the information services around them, and even be able to make useful proposals when the need arises. In

particular, the study should be able to benefit top management in the public sector by introducing them to new developments taking place in the information industry which are meant to lead to greater efficiency in the practice of management. In several respects, the study has deepened the researchers' understanding of the concept of MIS and the way it relates to the wider concept of information management. Lastly, it is the humble hope of the researcher that the study will benefit the wider community through improved service being rendered public administration

1.7 Structure of the Thesis

In chapter two of this study, the researcher explores the concept Management Information System (MIS) in its various forms, and the MIS infrastructure. Chapter three examines the information system in public administration in Uganda and the attempt to *modernise it through MIS Programmes*. Chapter four examines the concept new public management and the relation between MIS and NPM. Chapter five presents the background information to the empirical work that was carried out by the researcher regarding the application of MIS in public administration in Uganda. Chapter six presents the findings of the study from the survey questionnaire research method. Chapter seven presents the findings of the study from the guided interview research method. Chapter eight presents a discussion of the findings made through the literature review, survey questionnaires and guided interviews; and a discussion of an MIS model for public administration. Finally, chapter nine presents the conclusion and recommendations regarding a *suitable MIS model for public administration in Uganda*.

1.8 Summary

In concluding this chapter, it can be said that public administration is a strategic institution in any country charged with the implementation of the policies formulated by Government. While the three major constituents of a national government are the executive, the judiciary and the national parliament, it can be argued that public administration constitutes the fourth pillar. The quality of decisions by public administrators has a direct effect on the performance of the national government, and in turn, the well being of everybody in a country. It is important that public administrators

are well assisted with quality data to enable them to execute their duties effectively and efficiently. The new approaches to public administration involve decentralisation, managerialism, participatory decision making, and result oriented management, and this places additional demand on the information personnel to ensure delivery of quality data. MIS with the support of ICT provides the information personnel with a new capacity in the management of information resource.



Figure 1: Map of Uganda showing selected districts

CHAPTER TWO

MANAGEMENT INFORMATION SYSTEM

2.1. Introduction

Objective three of the study is to examine and evaluate the rationale for Management Information System (MIS) in public administration. This chapter examines the concept 'Management Information System' (MIS). The research question here is: what is MIS? This chapter begins with examining the concepts information, information society, and information management. The chapter also examines the extent to which MIS is being applied to public administration at a global level, the challenges it faces, and the possible remedies in this regard.

2.2 Background Information

2.2.1 Information and Knowledge Society

Webster (1995) argues that today, we all live in an information society where we are surrounded by, and are part of such technologies as online databases, real time computer networks, the internet and all its treasures; and where the ability to generate and communicate information determines the society's rate of progress and its ability to satisfy human wants. Metaxiotis, Samoulidis and Psarras (2003) submit that globalisation has placed businesses everywhere in new and different competitive situations where knowledgeable and effective behaviour has come to provide the competitive edge; and that many organisations try to improve their competitive position through better use of knowledge. They are also looking for ways to harness and enhance the expertise and intellectual capital they possess while aiming at continuously leveraging them into new applied knowledge. Metaxiotis, Samoulidis and Psarras further argue that organisations are becoming increasingly complex and even multinational, to the extent that decision making is more and more complicated, difficult and risky, and knowledge management becomes more necessary than ever before.

Today, knowledge management has become a more strategic resource, even more important than capital or labour (Kellerman, 2000). According to Kellerman, information

society is being driven by two major processes, namely, increased production of information related products such as computer hardware and software on the one hand, and increased consumption of information. Kellerman argues that the ultimate result of being well informed has become the underlying factor in the success of an enterprise, and possibly the most important asset for every organisation. It is argued that abundance of information provides the decision maker with an aura of rationality, and that information leads to the reduction of uncertainty in decision making. Goodman (1993) argues that failure to obtain quality information carries the potential of numerous consequences such as inefficiencies in organisational operations, misunderstandings, duplication of effort, working at cross purposes, time delays, stress, tension, frustration, to mention but a few. Again Goodman (1993) argues that the best managers are those who aggressively seek information by more skillfully asking questions. To most countries, information has become a powerful weapon in geo-politics, as well as a resource in the transformation of nations from marginal into wealthy countries. Webster (1995) equates information to the three basic needs in life: food, shelter, and work. Furthermore Webster equates information to good governance pointing out that in a healthy democracy, citizens need to be provided with knowledge and information to enable them to play a full part in the political process. Kellerman (2000) argues that as an organization becomes larger, management get removed from the field where the action is taking place. Increasingly, the role of management becomes one of analyzing information coming from the field, and interpreting this information in terms of the institution's performance in relation to its goals.

2.2.2 Information and Management

Public administration is a massive body that includes numerous stakeholders, such as the public servants themselves, the general public, NGOs, international agencies, and the private sector. The information needs in public administration encompass the information needs of virtually all institutions and organisations that may themselves derive their well-being from the activities of the national government, directly or indirectly. The government is information in that its employees are nearly all information workers. The government's raw material is information inputs, its products are those inputs

transformed into policies, which is simply an authoritative form of information. Public administrators, thus, need to have good access to all government programmes and activities. Dunn (1994:54) observes that public administration is under the influence of social and cultural realities that vary accordingly from community to community, and from individual to individual. According to Dunn, this makes the public sector policy making an ill-structured science with many decision makers, unlimited alternatives, conflicting values, unknown outcomes and incalculable possibilities. Onyango (1999) points out that for long, public bodies have been well protected from internal and external frictions by the government, through its readiness to absorb, manipulate, and underwrite any costs they may incur from misreading changes and uncertainties. In this new era of structural adjustment, according to Onyango, the public sector has lost much of this protection and must now start to address changes in the environment and adapt to them or face serious problems. Public administration is an open system affected by numerous external factors. Thus there is a need for public administrators to consult widely, a demand that requires the support of a viable information system.

Laudon and Laudon (2000) submit that the work environment at the top level is characterised by work activities that are brief, diverse, and fragmented. As such there are high degrees of uncertainty, with many multifaceted and multifunctional issues arising rapidly and often unexpectedly. Laudon and Laudon further point out that the work environment at top level involves rapid shifting from one pressing problem to the next, and thus affords little time to reflect on any single issue, and has frequent interruptions throughout the day. With this kind of work environment, top level management prefers factual data that is easy to retrieve and comprehend. Again Laudon and Laudon (2000) observe that top executives build cooperative relationships with numerous people who may play a role in providing information for development and implementation of their agendas, and these include external suppliers, customers, politicians, and other stakeholders. Correspondingly, top level management often demand a lot of data concerning the external environment, as opposed to other levels of management whose information needs are largely internal.

Public administrators are managers in their own right and their information needs thus differ very little from what can be said of managing a private firm. Neelameghan, (1992) identifies a long list of information needs bearing on the external environment by the manufacturing sector. These include data concerning government and its policies, local governments and their various activities, science and technology, economic policies and conditions, economic activities, social values, social services relating to education and health, the judicial system, utilities, natural resources and their exploitation, and a wide range of economic, social, scientific and technological activities concerning the country and the rest of the world (see Neelameghan, 1992). Similarly, public administrators are equally concerned with changes in the external environment in their day-to-day decision making

Culkin, Smith and Fletcher (1999), argue that all data are qualitative, meaning that all data need to be interpreted in context. This includes the full appreciation of where the data comes from and their strengths and weaknesses. Public administrators like managers in the private sector, need data concerning issues at hand which require decision making. They need data that is adequate, reliable and easy to use. Public administrators, are often involved in making decisions that affect many people's lives, and may have long term effects on the society. This explains the need for data that is reliable. At the same time, public administrators, again like managers of corporate bodies, often handle several problems simultaneously. Managers generally would prefer data presented in a factual format for easy use, fully indexed for easy retrieval, current and thus reliable; and where necessary, data must be flexible enough to permit further analysis. Zairi, Oakland, and Chang (1998) also point out that what executives need today is the ability to pull information in quickly, understand it quickly, make decisions quickly and get things moving. Culkin, Smith and Fletcher, (1999) also observe that for management, data from several sources are likely to be a more reliable guide for decision making than data drawn from a single source. Data from several sources create an opportunity for decision makers to exercise some degree of triangulation.

2.2.3 Information Management

Information management refers to the economic, efficient and effective co-ordination of the production, control, storage and retrieval and dissemination of information from external and internal sources, in order to improve the performance of the organization. Adeoti-Adekeye (1997) argues that information management is the organization's capability to create, maintain, retrieve and immediately make available the right information, in the right place, at the right time, in hands of the right people, at the lowest cost, in the best media, for use in decision making. The main challenge facing the information personnel is to ensure that the information resource benefits its potential users in the best way possible (O'Brien 1997:7). Increased competition, along with the rapid development of new information technologies, has forced more and more businesses to rely on information systems (Liong and Hung, 1997). The value of information, according to Kroenke and Hatch (1994:18), is a function of many variables that includes age, perish-ability, convenience, reliability and source. Kroenke and Hatch (1994:18) and Watson, Houdeshel and Rainer (1997) identify the attributes of good information as adequacy, relevance, timeliness, easy use, freedom from bias, reliability, cost effectiveness, appropriateness of format, freedom from redundancy, accuracy, precision, currency, reliability, completeness, convenience, conciseness, format and relevance, understandability, report usefulness, sufficiency and freedom from bias. Atherton (1977) argues that access to quality information is subjected to numerous constraints including information scatter, over supply, high rate of obsolescence, economic cost, overhead costs, institutional regulations, forms of presentation, and the production of goods.

Williams (1997) argues that to plan effectively an organization needs to know its present position, its strengths and weaknesses, those of its competitors, market trends, et cetera. All this presupposes a developed management information system. Laudon and Laudon (2000) stress the need to collect or retrieve; process, store and distribute information to support decision making and control, pointing out that formal information systems are necessary to enhance the information and knowledge flow within the organisation. It is

often argued that an organization can be data rich but information poor, especially if there is no proper system of managing the data stock.

The Center for Microenterprise Finance (CMS) (2000) argues that good data if analysed appropriately gives rise to good information that should provide knowledge and reduce uncertainty in decision making, and vice versa. CMS points out that a management information system will fulfill its role only if it can be relied on. CMS further points out that it is important that management have a realistic view of the quality of information it gets from information systems. If the management of an organisation is aware that the information they have is the best for making a particular decision, they should bear this fact in mind as they make the decision. If, however, they are unaware that the information they have is of poor quality, they will more likely make poor decisions.

Information management, according to Atherton (1977) includes indexing, abstracting, information analysis and consolidation, information repackaging, production of trend reports, feasibility studies and viability studies, as well as statistical bulletins. Adeoti-Adekeye (1997) observes that Information systems are generating greater interest in modern organizations. Therefore the need to obtain and access quality data conveniently makes it imperative to create, manage and utilize databases in organizations. Adeoti-Adekeye further observes that information systems, with specific reference to those related to effective decision-making processes in an organization, are regarded as valuable organizational resources.

2.2.4 Information System Failure

Katz (1994) identifies traditional information management as the production of quick reference tools in the name of indexes, abstracts, bibliographies, encyclopaedias, directories, handbooks, almanacs, yearbooks and biographies. Katz points out that the traditional quick reference tools, produced manually, suffer from numerous limitations, including high rate of obsolescence, limited scope, limited focus, weak retrieval mechanisms, and inflexible forms of data presentation. Consequently, such tools fail

completely as a reliable source of data for decision making purpose, and this leads many to believe that decisions in public administration can at their best, be only satisfactory decisions (Lucy, 2000).

Information systems often fail because information seekers rarely have a good understanding of their real information needs. This also happens because each problem and set of information has unique dimensions or attributes. Thus, correctly matching problem dimensions and information traits is necessary to facilitate problem resolution. Ocholla (1995) argues that the information industry is so complex that developing sufficient searching and retrieval facilities and skills and applying relevant information dissemination and marketing strategies is becoming increasingly demanding. The result of this, according to Ocholla, is that, information management by individuals and institutions is increasingly being done through private contact information consultants and brokers.

2.3 Management Information System

Management information system (MIS) is defined as a system using formalised procedures to provide management at all levels and in all functions with appropriate information, based on data from both internal and external sources, to enable them to make timely and effective decisions with regard to planning, directing and controlling the activities for which they are responsible (King and Waterfield 1995). It may also be defined as a set of inter-related components that collect or retrieve, process, store and distribute information to support planning, decision making, coordination and control in an organization. It can further be defined as a combination of human and computer-based resources that result in the collection, processing, storage, retrieval and communication of information for the purpose of efficient management and business planning (Centre for Microenterprise Finance, 2000). One of the most elaborate definitions of MIS was given by Davis and Olsen (1985) who describe MIS as an integrated user machine system for providing information to support operators, management and decision making functions in an organization. The system, according to Davis and Olsen, uses computer software and hardware, manual procedures, models of analyses, planning control and decision making, and a database.

According to Spathis and Ananiadis (2005) MIS is about creating a decision support system in an organization, or a system that ensures adequate access to quality data by all those in decision making positions. Spathis and Ananiadis point out that MIS is about making data more user-friendly through data consolidation, and presentation in graphics, charts, graphs, or even pin-pointed facts. MIS looks at an organisation as an open system which is the influence of numerous external factors. MIS is thus about ensuring adequate data collection in the internal and external environments, processing and presenting such data in a form agreeable to the end user.

MIS is dynamic in that the content, level of detail, and form of presentation of the data for management purposes, change from time to time as the organization finds itself facing different environments and growing from one stage to another. MIS helps to reduce apathy in management. MIS has revolutionised the performance of governments, revitalised democracies, led to speedy transactions, increases efficiency, and brought people closer to their government.

2.3.1 Background to the MIS Philosophy

MIS came into being during the early 1960s as an attempt to make the computer power resourceful to decision makers when dealing with unstructured decisions. McLeod (1983) reminds us that computer technology came into being during the early 1950s mainly to assist humanity in the management of data, its contribution being the provision of a memory for storage of both unprocessed data and the processing instructions during the time of data processing (McLeod, 1983). Computer technology has since made possible that the construction of online databases be feasible. Management Information System (MIS), according to (McLeod, 1983) is closely associated with computer power in the management of unstructured decisions.

MIS is based on the assumption that the approach to decision making varies according to management level (Laudon and Laudon, 2002). The approach to management categorises management into three broad categories, namely, operational, or lower level management; tactical or middle level management; and strategic or top level management. The idea under MIS is to present data in a form that takes into account the

expectations of the end user. The three forms of data presentation have been defined as: the information reporting system (IRS) for lower level management, the decision support system (DSS) for middle level management, and the executive information system (EIS) for top level management (See: Figure Two).

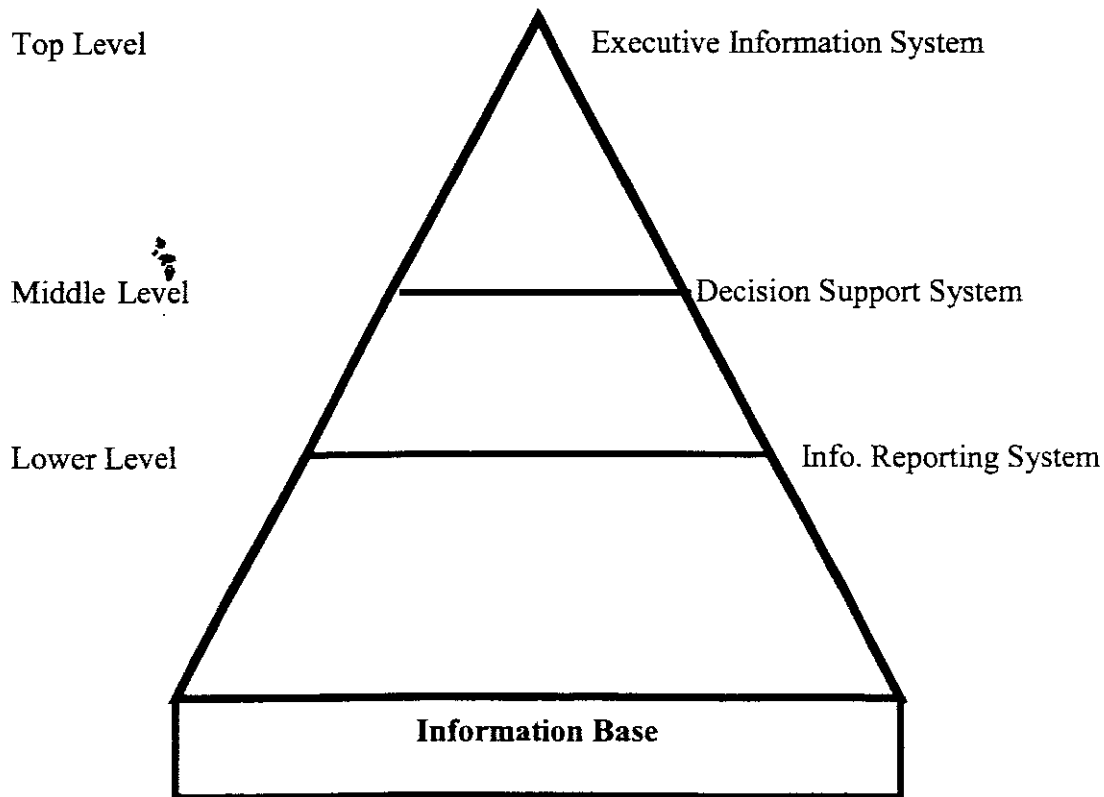


Figure 2: Management Information System and the Management Levels

Source: Laudon and Laudon, 2002:39

Information reporting system, (IRS) may be defined as a series of data bases specially designed to support the lower level, or operational management. This is management constituted of foremen, section heads, and office superintendents. IRS, also referred to as 'management information system' is about organising information into databases that deal with multidimensional data views such as product, region, and time, with a faster query response time (Eom 1999). It involves repackaging of primary data that may be obtained from various official sources, such as reports of various institutions and agencies. Williams (1997) argues that this level of information is very detailed and is

derived from operational data mainly from within the system, although some external information may also be required, where customer sales and service and supplier service are to be analysed. Williams also points out that it is difficult for some organizations to invest in computer technology, let alone investing in an information system. It is argued that in the event they decide to invest in such systems organizations try to save costs and develop operational information systems.

MIS supports the middle level management through what is known as decision support systems (DSS). Middle level management is constituted of project implementers, also known as tactical managers. DSS capitalises on computer power to produce decision models which the middle level managers are able to manipulate in interactive and iterative manner in an attempt to arrive at decisions of optimal value. DSSs are designed to provide support for decisions and problems whose solutions involve sophisticated data analysis and modeling tools. It permits retrieval and testing of alternative solutions by way of models, simulations and prototypes to support semi-structured or unstructured decision making. DSS is founded on the principle that data for decision making purpose need to be processed and presented in such a way that the result is directed toward a particular decision. DSS are popular because they enable managers to examine the impact of a decision from various angles without exposing the organisation to much risk as would be the case when experimenting on the organisation itself. Furthermore, it enables management to identify specific problems by themselves so that the technocrats are only invited to provide a solution (Laudon and Laudon, 2000; Cassie, 1997; McLeod, 1983). According to Cassie (1997) DSS enable managers to spend more time on analysis and planning for the future rather than merely reflecting on the past.

Executive Information System (EIS), described by Salmeron as flexible applications offering a wide and thorough access to information, as well as different means for analysing this information in a wide range of executives' decisions, is traced to Rockart and Treacy to Ben Heinemann, CEO of Northwest Industries in the United States (Salmeron 2002). Collier and Dixon (1995) describe EIS as user friendly computerized systems designed specifically to provide selected and summarized information from diverse sources in a form that permits access, analyses, and presentation to assist top level

management. Kroenke and Hatch (1994) who refer to EIS as "DSSs made more user friendly", point out that unlike middle managers, top executives, are generally non specialised managers and not competent enough to work efficiently with decision models. Instead, they prefer a simpler system whereby by merely moving a mouse or merely touching the screen, they can direct the computer to provide information. Kroenke and Hatch observe that with graphics, EIS enables the user to look at more data in less time with greater clarity and insight. Sauter (1997) argues that EIS product may obviate the need for a forty-five page financial reports in printed form, and thus lessens the problem of information overload commonly associated with paper reports. Sauter also observes that EIS makes it possible for fewer meetings and less time spent in meetings, enhances executive mental models, and improves executive planning, organizing and controlling.

According to Kumar (2001) EIS is very user-friendly and access is provided via icons, a mouse and/or a touch screen. The user is not expected to have much IT or keyboarding skills. The information that is presented to the executives is supported by customized presentation formats (color and graphics) and provides exceptional reporting and drill-down capabilities. Kumar further explains that the system is linked to electronic mail and other online information services; and that such a system would allow executives in global organizations to access data on markets worldwide.

Zairi, Oakland, and Chang (1998) point out that the purpose of an EIS is primarily to enhance the quality of strategic planning and control processes. Bird in Zairi, Oakland, and Chang (1998) point out that an EIS can contribute to virtually every company's strategic goals and daily operations by providing a clear picture of the entire organization's activities and results. Zairi, Oakland, and Chang (1998) argue that by obtaining quality information from an EIS, executives can have a greater opportunity through management control to ensure that the organization is on the right track towards its goal.

Besides the three forms described above, MIS can also be said to exist in the name of artificial intelligence (AI). The current trend in the MIS sphere is to develop software systems which engage and help all types of end users in order to reduce work and

information overload, teach, learn, and perform tasks for the user. Laudon and Laudon (2002:383) refer to AI as an effort to develop computer-based systems that behave as humans, that is, systems where a computer is able to learn natural languages, accomplish coordinated physical tasks (robotics), use a perceptual apparatus that informs their physical behaviour and language (visual and oral perception systems), and emulate human expertise and decision making (expert systems). Schultheis and Sumner (1998) describe AI as an attempt to empower the computer to behave as though it could partake in human activities , that is, think, see, hear, walk, talk, feel, reason, make inference, or learn. Artificial intelligence became especially helpful with the downsizing of the organizational establishment that leads to expanding the span of control. AI can be especially productive in handling routine jobs, as well as assisting a manager with decision making in areas where he or she may be less competent.

AI takes a wide range of forms that include expert systems, neural computing, fuzzy logic, intelligent agents, and artificial neural networks (Laudon and Laudon, 2000: 444-482). These can be summarized as having the knowledge-base component of an expert skill held in a form that enables the computer to offer intelligent advice, or take an intelligent decision (Metaxiotis, 2003; Smith, Nugent, and McLean, 2002; Stefanik, 2000; Collier and Dixon, 1995; Stotts and Kleiner, 1995; Maes, 1994; and Czernkowski, 1990). Nwana (1996) characterizes intelligent agents with several features, including: a) the ability to receive sensory input from its environment and perform actions that change the environment in certain ways (reactive response); b) the ability to take initiative and solve problems without direct intervention and constant guidance from the user; c) the ability to adapt and customize assistance and service, according to what is learned about the user; d) the ability to improve performance based on previous experience; e) the ability to interact with other agents or humans in order to complete their own problem solving and to help others with their activities; and, f) the ability to render proactive support and service, such as proactive information delivery.

Kleiljan in Collier and Dixon (1995) identifies numerous factors against which MIS's satisfactory performance is measured. These include: completeness or adequacy in information output, accuracy, relevancy, currency, timeliness, and, cost. Additional factors against which success of MIS can be measured include the following:

- user feeling of participation,
- user control over IS services,
- good communication between IS and users,
- *user confidence in the system*,
- prompt processing of change reports,
- short lead time to new system developments,
- responsiveness to changing user needs,
- support for users from IS staff,
- flexibility of data and reports,
- extensive use of analysis and inquiry systems,
- effective training,
- user access to terminals,
- competence of staff,
- commitment to new systems,
- positive attitude of staff to users,
- and adequacy of data security and privacy.

It may be argued that the totality of the above mentioned factors constitute a tall order even for organizations in the developed world.

2.3.2 Critique of the MIS Philosophy

Criticisms have been leveled against some of the MIS programmes. Collan and Shuhua (2003), for example, assert that DSS are only useful in spreadsheet modeling involving quantitative analysis of well-structured decision problems. They argue that strategic considerations when unstructured decision problems and unknown situations have to be

dealt with, and when qualitative analysis is an important component, renders DSSs inefficient. Collan and Shuhua, (2003) also point out that in practice, the data component under DSSs has often been found inappropriately developed, as it is commonly limited to internal data sources and application systems, without including external data sources. Collan and Shuhua argue that from a decision making process point of view, a DSS that focuses only on the analytical support capabilities but falls short of a constantly refreshed information base hardly excels in the ability to detect and define new problems.

Collan and Shuhua, (2003) again point out that most managers find it difficult to work with DSSs support tools on a regular basis. They observe that decision support technology has been providing more and more new, complex tools and services that take time to learn to use effectively. Their use often requires intensive intervention, direct involvement and manipulation of the process from a user. The two argue that DSSs tend to compete for the time and cognitive effort of managers with their primary work. They argue that those managers, who tend to resist changes in their management style, are very likely to resist such support tools. They argue that for DSSs to become managers' popular helping hands there is need to make the use of the systems less demanding and less time consuming. Simon through Collan and Shuhua (2003) also observe that DSSs lack capabilities of searching the environment for conditions calling for new consideration and decision making, and for offering solutions to these problems.

Raggad (1997) argues that the application of DSS delays the decision-making process and commits the user to the cost of invoking the system. Raggad further argues that the existing configurations of decision support systems do not guarantee the profitability of the DSS. Raggad, therefore, proposes a decision support system equipped with a knowledge-based model that tells the decision maker, prior to invoking the DSS, whether or not it is profitable to invoke the DSS. If invoking the DSS is not profitable, then the decision maker will have to base the decision on pure managerial subjective judgment. Eom (1999) on his part describes DSS as weakly grounded in organizational science, multiple criteria decision making, group decision making, and strategic management; and that many researchers in the DSS research area are moving away to develop new theories

regarding group decision support systems (GDSS), model management, user-interface/individual differences, and implementation.

Another MIS programme under challenge is the executive information system (EIS). It is argued that a high risk is involved in the implementation of EIS and many EISs fail because information alone is insufficient to guarantee organizational effectiveness (Zairi, Oakland, and Chang, 1998). Zairi, Oakland, and Chang argue that while information must be combined with a strategic management process to meet the executives' requirements, defining executives' information requirements is difficult because of the nature of executive work. They argue further that executives' management decision-making behaviour is far richer and more complex than assumed by EIS developers. It is again argued that executives' participation and involvement throughout system development and implementation is very important to define information requirements, yet time is a precious commodity for executives and is often hard to obtain it for an EIS project.

Zairi, Oakland, and Chang (1998) assert that executives face a dynamic, competitive environment, and that continuously fast changes in information requirements are inevitable. It is again argued that the value of EIS depends on the data quality of timeliness, accessibility, accuracy, integrity, and completeness; yet access of some data sources is difficult, and sometimes impossible. According to Zairi, Oakland, and Chang (1998) the benefit of an EIS is to improve service quality rather than profitability; yet it is very difficult to quantify quality in dollar savings. They argue that given the high costs which the installation of an EIS involves companies find it very difficult to justify the costs prior to expenditure.

Zairi, Oakland, and Chang (1998) also point out that information is power, and EIS's implementation can easily become political because it presents the potential for a significant change in the organization's power structure. They point out that it is not uncommon for data owners, or those who were responsible for providing information to

top management to undermine EIS by stopping some of the data from reaching top management. Similarly, subordinate line managers may fear giving top management too much visibility into their operations. The result of this fear is the making of excuses in order to resist an EIS.

Zairi, Oakland, and Chang (1998) again argue that executives have had less experience with information technology than anybody else in organizations. They have poor keyboard skills and do not feel confident about personally using a computer terminal. Zairi, Oakland, and Chang (1998) argue that most executives are happy with their human delivery and communication system.

Fitzgerald in Zairi, Oakland, and Chang (1998) is critical of an IT-led EIS pointing out that IT professionals tend to be more interested in the technology than business issues. Furthermore, it is argued that IT experts lack communication skills and the opportunity to communicate with the executives. Harvey and Meiklejohn in Zairi, Oakland, and Chang (1998) argue that if an EIS cannot meet the information requirements of executives, even if it has advanced IT functions, it will lose all its users. Consequently, an EIS without IT involvement will face technical problems concerning such things as data sources and communication with computer networks. Barrow (in Zairi, Oakland, and Chang, 1998) argues that a balance between IT and business knowledge is necessary for an effective EIS. Barrow observes that under these circumstances, having the involvement of business departments in the project is an important issue. Zairi, Oakland, and Chang (1998) point out that middle managers or staff in business departments are responsible for interpreting computer paper reports for executives not only control data but also clearly understand the quality of the data; and it is important to have them involved in the EIS developing team. Kumar (2001) argues that the initial EIS that came around the 1980s largely focused on domestic data. Kumar further argues that under globalisation, organizations demand global executive information systems, that is, a computer-based information system that provides easy access to domestic and international information for senior executives working at headquarters and in subsidiaries worldwide of a global organization to support their analysis and decision-making function.

While traditional EIS was designed to support a few top executives, the emerging view is that EIS can spread horizontally across and vertically down to other organizational managers. Zairi, Oakland, and Chang (1998) argue that middle managers and staff can also benefit from EIS in that they: a) also need information to control their own processes and to communicate with their superiors; b) need to know what information their superiors are looking at in relation to their performance shown on the EIS screens; c) get prestige because they have access to the same information as their executives; d) provide explanations or interpretations that they think can contribute information for executives and have control over it; and d) contribute to the organization if they help to spot dirty data and to offer their knowledge and expertise.

Support for opening up of EIS may also be seen as an economic factor. It is argued by some that it is from the corporate level that the cost is too high if an EIS is just used by very few executives. While most EISs are struggling with low usage rate, a wide range of users can significantly reduce the average cost, enhance business management by using IT, and achieve information sharing throughout the whole organization.

Zairi, Oakland, and Chang (1998) point out that the current trend is to view EIS as technology for information delivery for all business end users. They argue for broadening EIS's user base to an Everyone's Information System which allows all the employees who make contributions to create data related to key performance measurement and who need information to manage their processes. An Everyone's Information System, according to Zairi, Oakland, and Chang (1998) promotes a corporate culture of using IT. They argue that with Everyone's IS, middle managers and their superiors stand a chance of sitting together before a computer (PC), discussing how to operate an EIS, and discussing figures on an EIS screen. They argue that Everyone's IS provide middle managers and staff with an opportunity to influence and encourage their senior executives to use the system. On the other hand, executives' involvement in and using of the system does also encourage employees to try the use of IT; and that this positive cycle promotes a culture of using IT in an organization. They also argue that if executives are looking at

the business using one approach and the rest of the company is looking at the business using a different approach, this will create problems in communication.

2.3.3 Group Decision Support Systems

Over the years MIS has been undergoing change due to changes in ICT, as well as changes in the approach to management. Among such are changes such as globalisation and devolution of decision making, participatory decision making, and result oriented management. These changes have led to a new approach to MIS philosophy. This has also led to new approaches to MIS. These include the introduction of group decision support systems.

Laudon and Laudon (2000:478) define group decision support systems as interactive computer-based systems to facilitate the solution of unstructured problems by a set of decision makers working together as a group. According to Turban (1995), GDSS is an attempt to shift from the individual DSS (IDSS) to a more complex stage of supporting groups of individuals in several tasks. GDSS, therefore, is an attempt to respond to the need to broaden decision making within organizations, so as to promote democracy, openness, transparency and participatory decision making. Turban (1995) points out that under NPM, teamwork is a virtue in carrying out complex tasks involving highly specialised knowledge, and that GDSS can be used to support group decision making.

Curtis and Cobham (2002) argue that computer-based GDSS can be decision networks, decision rooms, and tele-computer conferencing. Kroenke and Hatch (1994) describe GDSS as an application of electronic boardrooms and collaboration laboratories. Individuals working from a desktop PC or workstation are able to have their contribution integrated on a file located on a server from where it is viewed on a common screen at the front of the room, as well as the individual participants' screen. Under GDSS, each participant is able to work in isolation where his or her screen is viewed by himself alone, and thus, his or her work remains confidential until it is released to the file server for integration together with the work of others. Kroenke and Hatch (1994) argue that with GDSS, all input to the file server remains anonymous, and that at each step, everyone's

input to the file server, whether it be brainstorming ideas, criticism, comments, voting, and the like, can be seen by all the attendees on the integrated screens, but no information can identify the source of specific inputs. Kroenke and Hatch further assert that, with GDSS by the time the meeting is completed, a full record of the meeting is already available to the attendees and can be made available to anyone else with a need for access (see Kroenke and Hatch, 1994)

Laudon and Laudon (2000:478) argue that GDSSs make organisational meetings more productive through increased participation by all attendants especially if their number is large. In particular, GDSS provides a criticism-free idea generation environment, thus, enabling attendants to contribute without undue fear of feeling personally criticised; it allows for objective evaluation of contributions by creating an atmosphere in which an idea is evaluated on its merits rather than on the basis of the source of the idea. GDSS provides efficient ways to organise the many ideas that can be generated in a brainstorming session, and evaluating those ideas within appropriate time constraints; and it also provides for efficient documentation of meetings, so that attendants will have as complete and organised a record of the meetings as they may be needed to continue the work on the project. It is further argued that GDSS allows access to external information and the preservation of organisational memory so that those who do not attend meetings can also work on the project. Min and Eom in Kumar (2001) advocate the view that there be initiated a development of an integrated decision support system (IDSS) for handling the complexities and the uncertainties of global logistics' operations. They define such a system as 'a world-wide network of multi-user decision support systems that integrates the MNF's (multinational firm) various logistics operations and standardizes databases across national, cultural and market boundaries'.

2.4 MIS Infrastructure

Issues concerning MIS infrastructure border on information and communication technology (ICT), and social, political, cultural and economic factors, among others. According to Kumar (2001) at the heart of MIS data needs to be collected so that it can be

processed, managed and presented to executive users for decision-making. This data is both internal and external to a global organization. The internal data that needs to be collected and processed is captured by the transaction processing systems. The external data includes competitor and industry data, and data about the political, social, economic, and legal environment of countries where a company has operations or might be planning to begin operations. The sources for this external data need to be identified and used for presenting information to the executives. Kumar argues that data plays a vital role in organizations, and in recent years companies have recognized the significance of corporate data as an organizational asset. Consequently, a company needs to address the issue of collecting, managing and presenting its corporate data in the form of useful information for effective decision-making.

Under what is described as an era of information explosion, coupled with a new approach to management, the original thinking that MIS can be manual is to be deemed erroneous. The challenges of effective information management today can only be met effectively, with the help of computer power. Katz (1994) points out numerous advantages ICT enjoys in data management and which form the foundation of the MIS. These include expansive data storage facilities, increased speed in data retrieval, ability to update data files efficiently, and the ability to search numerous databases under a single search. Katz further argues that ICT leads to increased ability to manipulate data in numerous ways, such as increased accuracy and reliability in data retrieval and processing. This also involves the ability to format data outputs in many ways and the ability to apply boolean logic to enhance specificity and/or exhaustiveness during data retrieval. Furthermore this involves the ability to provide multiple access points to a databank, ability to integrate text, sound, and pictures in one medium of communication. The traditional quick reference tools in their printed form fail to satisfy the MIS criterion because they are limited in scope, supply limited data that is rarely up-to-date, and are inflexible.

Kroenke and Hatch (1994) argue that ICT provide organisations with the easiest and cheapest methods to collect, store, transmit, manipulate, customise and use information. As such, it provides organisations with powerful computations that are able to crunch numbers, analyse vast pools of data or simulate complex physical and logical processes with animated drawing sounds. It is, however, also important to emphasise that having

computers alone by an organisation does not amount to MIS. Turban and Aronson (2001) are of the view that computer support helps organizations overcome cognitive limits in data processing and storage.

According to Adeoti-Adekeye (1997), the rapid evolution of computer technology is expanding man's desire to obtain computer assistance in solving more and more complex problems: problems which were considered solely in the domain of man's intuitive and judgemental processes, particularly in organizations, a few years ago. It can, therefore, be argued that one of the most important ingredients for MIS to work effectively is ICT. However, ICT can be associated with a long list of shortcomings that make MIS almost look like a dream.

Kroenke and Hatch (1994) identify office automation as one of the key features of MIS. OAS according to Collier and Dixon (1995) encompasses word processing, electronic mail, desktop publishing, teleconferencing, document image processing, interactive video, voice mail, facsimile, telecommuting, electronic bulletin boards, internet, and multimedia. OAS increases productivity in management by reducing the time and effort needed to produce, access and retrieve data. OAS through the Internet service enables organisations to send messages, search and retrieve documents, search databases, read electronic brochures, manuals and advertisements, join interactive discussion groups, conduct voice mail transmission, transfer computer files and sell and purchase goods and services (Kroenke and Hatch 1994). O'Brien (1997) argues that without OAS, information work can be effectively crippled, pointing out that frustrations are bound to set in when clients cannot print their results after spending hours finding articles.

MIS environment, however, is not free of challenges. Katz (1994) observes that many database systems operate using different programmes which one must learn in order to use the system effectively. But contrary to this expectation many information managers are unwilling to learn more than one retrieval language and this may hinder one to explore additional databases some of which may even be better databases to search. Salmeron (2002) asserts that 72.41 percent of EIS user organisations in Spain invest not

less than \$25,000 to set up MIS. Salmeron identifies the cost of software development, training and retaining of staff, for the maintenance of the system as some of the most critical issues. O'Connel (2003) notes that ICT demand regular updating in terms of hardware and software, yet updating cannot be done piecemeal if its full benefits are to be realised.

It is argued by Hong et al. (2003) that many countries are yet to revise their statutes to accommodate the working of MIS and electronic governments. Hong et al. further assert that most countries implementing e-Government still maintain a legal framework that is tailored for paper-based transactions, the reason being that it is still a legal framework that is dominated by conventional concepts such as 'signature', 'original', and 'authenticity'. It is also a legal framework that is still lacking in electronic crimes such as fraud, cyber-crime, cyber terrorism; privacy; fair trade; copyright protection; computer crime and hacking (South Africa, 2000).

O'Brien (2002) alludes to computer crimes as cyber-thefts, piracy of intellectual property, computer viruses, unauthorized use, access, modification, copying, and release of information health hazards, including job stress, eye stress, and radiation exposure, as problems worth noting. Laudon and Laudon list computer ethics, privacy, property rights, system quality and quality of life as additional challenges under ICT policy. Laudon and Laudon further assert that under the Internet, information passes through many different computers before it reaches its destination. Each of these, according to Laudon and Laudon, is capable of monitoring, capturing, and storing communications that pass through it. Brown and Brudney (1998), identify staffing, poor planning, inadequate leadership and direction as critical underpinnings in system failure. The two, Brown and Brudney observe that there is, however, a tendency to attribute systems failure to technology even when the problems are organisational in nature.

The issue of MIS development and implementation being dominated by ICT specialists as opposed to information resource managers was raised under 2.4. Most ICT technologists lack sufficient training in social issues, such as information seeking

behaviour. They have little regard for customer satisfaction, or even the impact of their contribution. Instead, they marvel on the number of databases created, or the number of records in a database.

Other factors influencing the effective working of MIS include social, economic, political and cultural factors. For countries that are still faced with such problems as unemployment, corruption and nepotism, one cannot afford to downplay the problem of awarding MIS tenders to less competent firms, or even recruiting incompetent personnel to manage the system.

Jimba (2000a) attributes information system failure in public administration on the governments themselves. Jimba identifies the inadequate computer-related planning, improper development of systems, and deficiencies in equipment acquisition and operation. According to Jimba, policy makers pay inadequate attention to the intergovernmental implications of information systems, which then result in fragmented systems at all the levels of the government.

Belsis and Kokolakis (2005) argue that information systems security management is a knowledge-intensive activity that currently depends heavily on the experience of security experts. These authors argue that the knowledge dimension of IS security management has been neglected, both by research and industry. The two authors also argue that successful security management largely depends on the involvement of users and other stakeholders in security analysis, design, and implementation, as well as in actively defending the IS. However, most stakeholders lack the required knowledge of IS security issues that would allow them to play an important role in IS security management.

Belsis and Kokolakis point out that while a plethora of tools and mechanisms have been developed, covering almost every aspect of IS security, the actual effectiveness of current security solutions is questionable, as the volume of security related incidents and consequent financial losses continue to increase both in magnitude and in severity. They point out that security tools and mechanisms have limited effectiveness because security is primarily a “people's issue”, as well as an “organization's issue”.

Watson et al. in Kumar (2001) refers to the need to include "soft-data" which include news, rumors, opinions, ideas, predictions, explanations, and plans. They argue that soft data will add to the "richness" of the information that is provided by an EIS. They also observe at the same time that capturing soft data as a part of an EIS can be a difficult process.

According to Rainer and Watson (1995) many MIS programmes suffer from lack of coordination and thus result in incompatible systems. Rainer and Watson further argue that it is common in an organization to have several DSS in place, with each DSS system having a separate set of model base, database and knowledge base. This means that each DSS interpretation of decision criteria is separated from the other, although the decisions supported may be interrelated. Rainer and Watson give New York as one example where every human information service agency has its own eligibility assessment system, service monitoring system, billing system, audit system, and client tracking system. These two authors argue that these systems contain information about the same people, but since they were developed without much co-ordination, they are unable to complement each other.

Smythe (1999) is irked by the adverse effects of MIS on corporate memory and points out that MIS development is often characterised by mergers and acquisitions which often lead to the loss of intellectual capital through terminations and transfers.

Greater exploitation of MIS's potential is sometimes frustrated by some individuals' fear to lose their jobs to the computer. Ventura (1995) points out that MIS is subjected to such problems as fear of change, difficulty in learning or accepting new methods, and struggles over authority. Most of the managers seek to maintain the status quo by fulfilling their explicit mandates as narrowly and expeditiously as possible, rather than seek more effective ways of serving policy matters and the public. Ventura argues that unless agents of change become extremely powerful, it requires either a significant crisis or an outside intervention to change the attitudes and beliefs of individuals in entrenched bureaucracies. Ventura also points out that MIS has also been resisted by some, for fear of what they call leading to unearthing of "skeletons in the closet". For others, MIS is

resisted as it may lead to the shifting of the power to influence decision making from the top-level management to the middle level management. Ventura asserts that under MIS, MIS operators may enjoy more control over information needed for planning than the senior staff, sometimes leading to straining interpersonal relations.

Ventura (1995) further asserts that long term stable support for MIS is necessary for the system to evolve and adapt to new conditions and problems. However, due to the continuous political turnover in local governments and the extended period in which benefits from a MIS accrue, such support cannot be taken for granted. Every five years, political offices under both the local and the central governments are subjected to elections that bring in new faces amongst key decision-makers.

Ivancevich et al. (1997) make several observations about MIS. Firstly, due to the rapid changes in the ICT industry the majority of the end-users are able to comprehend only a tiny fraction of MIS potential. Secondly, due to the rapid turn-over in hardware and software technologies, most technologies become obsolete prematurely. Thirdly, top management being ignorant of most ICT benefits can only give MIS limited support, thus resulting in limited resources. Finally, MIS in many organisations suffers from undue concentration on low level data processing applications. It is argued by Ivancevich et al. (1997) that users' needs need to be met both in terms of hardware and software. Ivancevich et al. further argue that hardware that does not deliver information fast enough, or software that does not provide information in a useful format for decision making can easily result in user dissatisfaction. Ivancevich et al. again argue that MIS must be matched to the user's background, experience and goals. Therefore it is very important to document the working of the system in a user-friendly manner, and to supplement this with training sessions that introduce the system's capabilities and illustrate its ease of use. Ivancevich et al. (1997) further emphasize the need for managers to encourage continuous use of the system, reinforcing this with demonstrations on how the system can help one realise better results.

Northrop (1990:505) argues that the major payoffs from computerization are still partial, as they are concentrated in fiscal control, cost avoidance and better interaction with the public. Northrop asserts that some anticipated benefits such as better information for

planning and managerial control are yet to be realized even by those that have been automated for over a long period. On the other hand, Collier and Dixon (1995) describe MIS as an intangible resource that suffers from a time lag between implementation and returns; and that there is little direct connection between MIS and the monetary benefits; thus MIS is a difficult product to market.

2.5 MIS: A Global Phenomenon

Despite the numerous challenges faced by MIS, nearly every country in the world today is looking up to MIS for the improvement of efficiency and effectiveness of both the private and public sectors. Hereunder, the study examines a few examples of MIS programmes in selected countries that relate to the public sector.

Northrop (1990:505) reports that in the United States, the federal government, in all 50 states, and virtually all city and county governments utilize computers. Northrop further observes that at the city and county levels alone, computers are used for some 450 different applications, including paying employees, sending utility bills, analysing demographic data, routing vehicles, and allocating manpower. According to Fletcher (1992) US investment in IT across all sectors in the 1980s grew from \$55 billion to \$190 billion, and the computer industry, by 1992, comprised 10% of the gross domestic product, thus contributing more than all the auto, steel, mining, petrochemical and natural gas industries combined. Fletcher further observes that computer supported activities in the United States comprise more than 22% of full-time equivalent employees and consume nearly 23% of total operating budgets. Dearstyne (2001) observes that the US, through such projects as ARMA International, is championing strategic information management that includes promoting skills that enable professionals and their organisations to make well informed decisions resulting in a distinct competitive advantage in the business world. Dearstyne also reports that state and the local government agencies in the US spend approximately \$35 billion annually on IT-related activities. Brown and Brudney (1998) also report that information system technology in the US is found across the gamut of government operations, including criminal justice and law enforcement, taxation and finance, human services, transportation, accounting,

budgeting, personnel, payroll, procurement and inventory control. According to Schachtel (2001), the US city of Baltimore has developed computerised databases to help track crime incidents by time and location, as well as potholes, vacant houses, and the like. Schachtel also points out that the World Bank spends 4 percent of its administrative budget on knowledge management. It is further revealed by Schachtel that the World Bank spends over \$50 million building a global knowledge management system; and that it leverages global knowledge sharing to attain its goal of becoming a clearing house of expertise on sustainable development. It is reported by one unnamed scholar that Ernst and Young spends 6 per cent of its revenue on knowledge management, and have in the process put up a system comprising of subsystems the totality of which can be referred to as a knowledge network. According to Durford (1997) KPMG PeatMarwick in the USA has put in place an internal knowledge web (Kweb) as part of its knowledge management practice intended to deliver a range of capabilities including knowledge collection and access to various databases.

As for Asia, Stotts and Kleiner (1995) reports that, since 1985, there has been a calculated effort in Japan to transform public administration into an information society with networking fronted as Japan's ICT strategy. The email system has since become the dominant IT service between agencies, followed by the creation of databases. It is further reported that Japan has taken the lead in championing fuzzy logic, with the Government investing US\$70 million consortium in research focusing on fuzzy control, information processing and computers. According to Stotts and Kleiner, fuzzy logic is used in Japan to regulate the smooth working of the railway system; and that it is also being used extensively in medicine. Stotts and Kleiner (1995) cite the extensive application of Computer-Assisted Diagnosis in Internal Medicine (CADIAG) 2 as an expert system for medical diagnosis in internal medicine; and that this has led to increased accuracy in various reports. Others reported medically related expert systems using fuzzy sets that include EXPERT (rheumatology), SPHINX (medical diagnosis) and SYNTEX (hospital management). Stotts and Kleiner also report that local governments in Japan are increasingly installing the info-communication system in various fields - health and medicine, education and research, administrative services, and emergency reporting systems. It is reported that online information systems are catching up in Japan, and that

the present orientation is towards intra-organisational communication rather than inter-organisational. Thus Japanese URLs rarely allow contact with a specific department, and never with a specific person.

Stotts and Kleiner (1995) assert that despite the progress made by Japan, IT still remains under-funded, when compared to other countries in the first world, as only 1 per cent of the local government budget in Japan is going toward IS. In contrast 2 and 3 percent in Denmark and the United States of the national budgets respectively are devoted to IT. It is also reported that pace towards automation has been much slower in Japan compared to other countries in the first world, with only 20 per cent of the government using the Internet in Japan. According to Stotts and Kleiner, Japan, generally, has had a very low preservation of legal documents, as digitisation of administrative procedures still remains undeveloped. It is again observed that only 17 per cent of 858 different documents that required to be preserved by citizens and industry were in digitised form by 1997; and only 2 per cent of almost 8,400 administrative procedures were digitised. It is further reported that progress towards informatisation in Japan has encountered several problems, including the predominantly closed system. In Japan the networking of organisations is still limited, partly due to the practice of lifetime employment which has left most jobs in public service dominated with age-old employees. Japan, according to Stotts and Kleiner, also suffers from limited movement of workers to and from the private sector to bring the rich exposure of the private sector to the public sector. Japan has, however, made good of the outsourcing mechanism through contracting specialised personnel for specific tasks. It is argued that IS application in Japan is oriented towards core business functions and that very few of the home pages allow citizens to send email to the department mail box or allow citizens direct access to any specific employee through the Internet. Notably this contrasts strongly with Western Europe where IS allows citizens to discuss local government issues via the Internet and from electronic villages.

Liang and Hung (1997) assert that over 50 per cent of the firms in Taiwan use DSS/EIS systems everyday; 22 percent use the system very often; and less than 30 per cent use the systems occasionally or rarely. The two also argue that low-level managers in Taiwan are

popular users of DSS and EIS. They go further to weigh the use of DSS and EIS by Taiwan as follows: a) data aggregation (78.94 per cent), and, b) what-if analysis (40.35 per cent). They also argue that the most popular domains for systems' applications are: production management, human resource management, quality control, financial management, marketing, procurement, accounting, economic analysis, environmental protection, energy management, factory safety, insurance, project management, and investment.

Liang and Hung (1997) identify the major obstacles to DSS/EIS adoption in Taiwan as follows:

- a) the difficulty in determining user requirements; b) user resistance to the use of computers; c) lack of user commitment; d) lack of support from other departments, e) lack of system builders; f) lack of top management support; g) lack of proper development tools; h) the difficult to build appropriate models; j) lack of well known successful cases, and j) the difficulty in integrating existing systems.

While looking at the MIS initiatives in Asia, the Information System in Public House Management by Town Council in Singapore need special treatment. Shi Ming Yu and Sun Sheng Han (2001) introduce us to the initiatives undertaken by Tanjong Pagar, a West Coast Town Council in Singapore (See Shi Ming Yu and Sun Sheng Han, 2001). Several information systems or modules have been set up under the MIS program by Tanjong Pagar Towns Council. These are concerned with resource management, physical environment, residents' needs, and minimum performance measures. Under each several subsystems have been put in place:

According to Shi Ming Yu and Sun Sheng Han (2001) the Resource Management Information System, has under it the following subsystems:

- a) General Ledger (GL) system is a central repository ledger of all transactions within the Town Council.
- b) Accounts Payable (AP) system, to enable tracking of all paid and unpaid invoices

and payments.

- c) GIRO system: to allow payments of service and conservancy charges and penalty charges by customers via the inter bank.
- d) Arears Management system: to enable the town council to track arrears.
- e) Services and Conservancy Charges system: to allow additions and modifications of charges
- f) Public Utilities Board (PUB) system: to facilitate the payment of utilities
- g) Customer's Information system (CIS): to supply detailed information on all unit account holders, i.e. residents of the town council.
- h) Front-End Receipting system (FER): to provides for collection and receipting of rental and instalment payments due.

Shi Ming Yu and Sun Sheng Han (2001) also report that the Physical Resource Management has the following as its sub-systems:

- a) Property Information System (PIS): containing information on all property attributes.
- b) Facilities Booking System (FBS): maintains the booking of common facilities

Cyclical Works System (CWS): maintains data pertaining to the cyclical works.

By-law Enforcement System (BES): tracks all the enforcement notices issued by the town councils. Similarly, Performance Measures is reported to encompass the following subsystems:

- a) Tele-Monitoring System (TMS); to cover emergencies;
- b) MASS: to track all complaints made by residents;

- c) Upgrading database: Information on the upgrading programmes, including all precincts, which have been completed and are undergoing or are earmarked for upgrading.

Other databases are maintained by the Town Council on stand-alone PCs. These include:

- a) Term contract information, e.g. value, size in dwelling units, contact persons etc.;
- b) Data on work carried out as required by law, e.g. washing and sterilization of water tanks, lift testing, and the inspection of electrical installations by the licensed electrical workers.
- c) List of contractors and suppliers debarred.
- d) Past and current contract rates for cyclical, town improvement and term contracts.
- e) Landscaping details, for example: number, location of trees, shrubs, et cetera.
- f) Plans of underground services, for example: sewer lines, water mains, et cetera.
- g) List of TOLs issued, for example: antennae, public telephones, storerooms, et cetera.

Two additional systems are also being maintained by the Town Council, namely, EMAPS, and eTown.

EMAPS is a GIS-based management information system, which integrates databases maintained by the town council, the IT consultant firm and HDB. EMAPS uses maps as interface, and allows users to query and analyze data in the form of maps, charts and tables. Information relevant to the management of the entire area, divisions, precincts, blocks and households can be made readily available by a simple click. This information could be in different formats including texts, charts, drawings, photos and videos. GIS application in town council management is a value-added portion of the nation's public housing programme which many countries can learn.

ETown which is accessible to the public via public information kiosks is a town council management portal on public terminals for payment of town council services, e-

commerce and the provision of community information. With ETown, the public is able to enjoy greater convenience in obtaining information and making transactions online at any one of the public terminals. It should, however, also be seen as convenient in collecting data that fall under the transaction processing system (TPS).

MS Office is the software in creating and maintaining the above databases (see Shi Ming Yu and Sun Sheng Han, 2001)

Smith, Nugent, and McLean (2002) report that the European Union's priorities today regarding MIS in health care service include the setting up of intelligent databases using techniques such as data mining. Salmeron (2002) argues that a total of 37.5 per cent of the largest Spanish companies possess EIS. Salmeron argues that the development of EIS was based on three major reasons which were weighted as follows: the need to have updated information (62.07 per cent); the improvement of information flow in the organisation (41.38 per cent); and the increase of managers' analysis capacity, 27.59 per cent.

2.6 MIS and the African Continent

Qureshi (1998) reports on several initiatives regarding MIS in public administration that are taking place on the African continent. Qureshi identifies NGONET, ESANET, HealthNet, and GOVERNMENT among MIS examples. Qureshi observes that these projects were mainly designed to link researchers on the continent through online services. GOVERNMENT by the Commonwealth Secretariat, for example, was designed to focus on public administration, promoting inter-governmental networking initiative to foster tighter linkage between Management Development Institutions (MDIs) in Eastern and Southern Africa in their effort to promote administrative reform. Qureshi reports that the GOVERNMENT enables public administrators to access easily data concerning reform programme through exchange including electronic messaging between members, provision of file transfer facilities that allow rapid sharing of draft policy proposals and discussion documents, provision of access to moderated bulletin boards; and the provision of access to databases offering practical information concerning good practice in specific reform areas.

The New Partnership for Africa's Development (NEPAD) (2003) in its attempt to set conditions for sustainable growth identified several strategies, such as bridging the digital divide through investment in information and communication technology. NEPAD observes that ICTs driven by the convergence of computers, telecommunications and traditional media, are crucial for the knowledge based economy of the future. NEPAD further observes that rapid advances in technology and the diminishing cost of acquiring new ICT tools have opened new windows of opportunity for African countries to accelerate their economic growth and development.

The Republic of South Africa reports on several initiatives on the continent which include National Information Communication Infrastructure plan (NICI), African Connection and Africa One. (South Africa, 2000). According to the report, African Connection is aimed at laying 50 million lines in Africa over a period of five years from 2000; while Africa One aims to put an optical fibre necklace around the African continent. The report also mentions the Telkom SAFE (South Africa Far East) cable initiative where South Africa in collaboration with Malaysia Telcom plans to lay fibre optic between South Africa and Malaysia (South Africa, 2000).

Other continental initiatives and plans include those under the Common Market for Eastern and Southern African (COMESA), The Southern African Development Community (SADC), Economic Community of West Africa (ECOWAS) and East African Co-operation (EAC).

According to Thapisa (1998), the Southern African Development Community (SADC) through the Cultural and Information Sector, a sub-regional cultural and information system, is envisaged to act as a network of networks that should be able to provide any type of information that is relevant to cultural development. The priorities, according to Thapisa, may include a database on cultural policies, resource persons in cultural activities, cultural events, institutions, associations, research training and cultural information sources.

Darch and Underwood (1999) report that South Africa, since 1994 has been investing in IT to effect transformation in public administration, including good governance. These

authors argue that over 90 per cent of internet hosts on the continent are in South Africa, and that, through the website technology, South Africa is on the fore-front of countries exploiting IT to promote participatory democracy, especially as the online consultative system is being heavily used by the Government to inform and give the public an opportunity to express themselves on Government policies under consideration (see <http://www.ecomm-debate.co.za>). Littlejohns, Wyatt and Garvican (2002) cites the project to install a computerised integrated hospital information system in Limpopo (Northern Province) so far as one of the biggest medical informatics projects in Africa. According to Littlejohns, Wyatt and Garvican, many enterprises in South Africa are integrating records management with other information management functions in the enterprise so that records management becomes a strategic management function towards attaining a competitive advantage.

Shibanda and Musisi-Edebe (2000) summarise IT constraints in Africa as follows: a) lack of sound legislation and policy guidelines; b) inadequate finance for investment in IT; c) official insecurity and bureaucracy against IT; d) the need for education, research and IT development structure; f) lack of manpower resources; g) curtailed freedom of information owing to political interference; h) need for regional integration and cooperation; i) need for IT cultural ethics; and, j) reduced access to knowledge and information.

Africa, as a developing region also presents problems which may be seen as unique on their own Qureshi (1998) conceives of the problem of incompatible systems on the continent as originating from excessive donor dependence. According to Qureshi, donor countries often insist on the recipient country to use the equipment produced in their respective countries. In the process, a country ends up with incompatible and inconsistent equipment. Qureshi cites cases in Africa where due to the influence of donor funding, the Ministry of Agriculture, by working with FAO databases is being forced to comply with FAO technology; while the Ministry of Planning which was supported by the European Union is required to use European equipment; and the Ministry of Health which had a bilateral project with USAID, was obliged to observe the rules decreed by the American Government. In Uganda, as will be noted in Chapter Three, MIS programmes in public

administration are still wholly donor funded. The Government's true colours towards MIS for public administration will become evident when the Uganda Government takes over. As of now the Government's support can only be described as lip service.

Odera (1990) observes that a mass of information is often produced by any one Government Ministry, and often this information is on demand by another ministry. However, due to limited knowledge of ICT capabilities, no attempt may be made to access the data. Odera also observes that it is not uncommon to hear complaints from the managers that the reports generated by their information systems are too limited, too late, and too narrow in focus; or it dwells on historical information rather than up-to-date *operating indicators*.

MIS's success depends heavily on accessing data online. Afullo (2000) asserts that telecommunication infrastructure in Africa remains undeveloped. He decries the problem of limited bandwidth which is unable to carry real time high volumes of data generated by the *multimedia*. Afullo also decries the problem of tele-density, pointing out that while the average teledensity in the developed world was 54 percent by 1996, that of low income countries was only 1.22 per cent; and a total of 31 African countries had a tele-density which is below 1 per cent.

Shibanda and Musisi-Edebe (2000) observe that information provision in Africa is again faced with challenges such as restrictive laws, intimidation by ultra-sensitive politicians and severe economic constraints. According to Shibanda and Musisi-Edebe (1999) many African governments look at information as power that can be used to defeat their imagined enemies. It is argued that rulers resort to curtailing free access to information among the ruled.

Ondari-Okemwa (1999) while reviewing the automation of cataloguing and circulation modules at Moi University Library in Kenya, noted that even after automation most library users still preferred to use the manual catalogue rather than the OPAC. Ondari-Okemwa notes the negative attitude towards automation by the clerical staff who may feel their job security is quite threatened. He again notes the problem of top management

that is used to execute operations the traditional way, and whose ability to change would depend on willingness to train and retrain.

Ondari-Okemwa (1999) also identifies the problem of excessive dependence on donor support with regard to the acquisition and management of ICT, as opposed to working with predictable budgets. According to Ondari-Okemwa, automation of Moi University had to depend almost entirely on foreign technical expertise, with a foreign body (ODA) meeting the bills; and that the attempt by the University to outsource the expertise to maintain the system on behalf of the University soon proved to be a problem due to lack of funds. Ondari-Okemwa again argues that the project at Moi University had to contend with frequent power blackouts and non-working telephone lines.

Various approaches are used by governments and computer technologists to minimise the occurrence of systems' failure. In the United States, for example, a series of legislative acts have been passed to address the organisational and management issues. Such legislation includes the Clinger-Cohen Act of 1996; the Paperwork Reduction Act of 1995; the Federal Acquisition Streamlining Act of 1994; the Government Performance and Results Act of 1993; and the Chief Financial Officers Act of 1990. Brown and Brudney (1998) argue for the need to re-examine and redesign current ICT policies to promote greater benefits from the adoption and implementation of ICT. The two emphasise the need to establish a process of selecting, managing, and evaluating the results of all ICT investments, promoting the integration of technology across organisational boundaries through the establishment of an inter-agency IT support structure, so as to promote information sharing among diverse departments and agencies. They also mention the need to appoint a Chief Information Officer (CIO) to take charge of developing, implementing, and maintaining IT for the agency aimed at promoting effective and efficient design and operation of all information resources. Smythe (1999) also observes that effective integration of information system in public administration demand the minimisation of artificial barriers, commonly found between and within organisations, and that MIS demands openness and transparency. Smythe (1999) further observes that MIS managers must be prepared for challenges such as continuous building of skills, knowledge, and abilities in information management. According to The World of New Technologies (1998), multimedia employment is characterised by a qualification

deficit due to the fast developing technologies and the constant changes. O'Connell (2003) argues for schools of public administration to play an active role in ICT knowledge transfer through the redesigning of curriculums. According to O'Connell (2003) efficient and effective use of technology is contingent on the active and continued involvement of public managers. Along the same line of argument, Brown and Brudney (1998) propose the redesigning of the Master of Public Administration (MPA) curriculum to include sub themes such as planning and coordinating information systems, information system life-cycles, evaluating information system outcome, developing information system policies, integrating information systems across organisational boundaries, and the legal implications of information system technologies. Brown and Brudney (1998) assert that the National Association of Schools of Public Affairs and Administration (NASPAA) in the United States has, since 1986, put in place a curricula on information system instruction in schools and departments of public administration that is centred on training in the management of computers and information systems; analysis and design of information systems, and organisational and social impacts. They also report that a new NASPAA curriculum was being proposed to focus on four broad areas, namely, Strategic Information Resource Management, Information Resource Management Planning Methodologies, Information Policy, and Internship.

It is argued by Shibanda and Musisi-Edebe (2000) that the African information society needs to be based on sectoral, national, and regional information infrastructure that facilitates the development of an information and communication system that targets the connection of libraries and information centres, promotion of the use of online communication, and development of a national information strategy. Shibanda and Musisi-Edebe (2000) also argue for the establishment of research and development programmemes for the assessment of viable trends and lines of action to ensure that Africa exploits the opportunities provided by cyberspace technologies. Shibanda and Musisi-Edebe (2000) submit that Africa should depend on the formulation of possible programmes that should depend on national or regional IT fund and resource committees, information task forces, network of programmes, IT promotion groups and a Government IT committee. Shibanda and Musisi-Edebe argue that there is a need to promote and foster the use of IT in public administration by teaching IT skills, providing people or

community centred helping lines; redesigning cost-effective services through networking and online access, placing emphasis on information content, flow and value; maximising the use of IT by advocating integration and resource sharing within Africa and beyond, advocating for freedom of information and alerting members and supporters to new legislation and regulations affecting IT, and initiating and calling for IT ethics (Shibanda and Musisi-Edebe, 2000)

Afullo advocates for the liberalization of the communication sector as the only way available for the immediate improvement of connectivity on the continent. Afullo also advocates for the revitalization of the PANAFTTEL Network and the Africa One programmes. Africa One, as Afullo points out, is aimed at establishing an undersea fiber-optic cable network, going round the continent and providing direct landing sites for more than 40 African countries.

Jimba (2000b) argues for broad parameters in the collecting, using and disseminating information. Jimba also argues for a proactive information policy concerning laws and legislations concerned with controlling and accessing information. Jimba again argues for the recognition of the diversity of user needs and the complexity of databases serving many programmes, levels of government and other information users. Lastly, Jimba submits that rules governing information-flows in a complex web of networks will become increasingly important.

User participation in the information systems' design and development is identified by many scholars as a key in the success of the system. User participation increases user acceptance of the system with a more realistic expectation on the system's capabilities and greater commitment from the users. When an EIS fails, the cause may be its inability to meet the expectations of the users

2.7 Relevance of MIS to the Study

The purpose of this chapter was to provide an overview of what the concept MIS is about, its relevance to management, the global attempts to implement MIS, and the challenges involved in this exercise. MIS, as a recent development of 1960s, is a phenomenon yet to be understood by most people including the information workers.

Furthermore, computer industry is ever changing in terms of hardware and software technologies. Correspondingly, the MIS phenomenon has experienced rapid changes. From the traditional MIS programme that mirrored the conventional organizational structure, consisted of top, middle and lower levels of management, the world is witnessing a chain flow of MIS programme under artificial intelligence, as well as those associated with the change in approach to management, including participatory decision making. In view of the changes taking place in the information industry, the concept MIS has tended to carry different interpretations according to usage. While these changes take place, the study shows that the traditional MIS system constituted by IRS, DSS, and EIS remain relevant and topical. With this new wealth of information, one will be able to examine critically the trends taking place regarding MIS in public administration in Uganda.

The discussion in this chapter thus helps to position MIS in the wider context of information industry. It helps to establish the relation between MIS and what has for long been known as information service. The presentation suggests that MIS at its basic level represents *effective information reporting that includes current awareness service, selective dissemination of information, indexing, abstracting, information analysis, consolidation and information repackaging*. It is an improvement to the work of quick reference tools in the form of indexes, abstracts, bibliographies and bibliographical services, dictionaries, handbooks, yearbooks, directories, statistical abstracts among others; the major difference being the ability to exploit ICT maximally. ICT has given MIS new capabilities including online databases, distributed data processing, and artificial intelligence, online data bases, among others. On the other hand, sustaining MIS is full of challenges. It is capital intensive, and is import dependant. Furthermore, for a developing country like Uganda, it also requires a wide range of new skills on the part of the information workers, some of which require continuous updating. Having treated the MIS concept in the forgoing chapter, chapter three will examine the working of the MIS programme in the public sector in Uganda.

2.8 Summary to Chapter Two

The above presentation summarises the meaning of the concept management information system. It presents MIS as an improvement to the traditional specialised information processing. MIS takes advantage of the power of the computer to amass enough data for the organisation which through regular updating is maintained as good quality data. MIS, according to the above presentation is about information reporting which covers changes in both the internal and external environments. It is about presenting data to managers that is amenable to further analysis in a customer tailored manner. It is also about presenting top management with highly processed data for strategic decision making. MIS, according to this presentation, does not thrive in isolation, but needs the support of transaction processing systems, office automation and the establishment of a knowledge base, or a collection of databases. Under what is referred to as a new approach to public administration, MIS is able to give support to group decision making through bulletin boards and teleconferencing. It is also able to give support to decision making in a complex environment through artificial intelligence. Most countries in the world, individually as well as collectively are actively engaged in the integration of the information resource in the day-to-day decision making of developmental institutions. On the other hand, the successful development of an information system, in particular MIS, is subject to numerous constraints.

CHAPTER THREE

PUBLIC INFORMATION SYSTEMS AND SERVICES IN UGANDA

3.1. Introduction

The aim of this chapter is to trace the justification and application of MIS in public administration in Uganda. The chapter begins with a critical review of the structure of the information system in public administration in Uganda. It examines the nature, strengths and weaknesses of the conventional information system. It also examines the attempts at modernizing the information system. Furthermore, the chapter traces the origin of the idea to introduce MIS for public administration, the effort made in this direction, and the challenges faced.

3.2. The Communication System

For any government to function efficiently and effectively it needs an efficient information and communication system. Communication systems provide the Government with the means to campaign for social objectives as well as to stimulate behavioral change; thus the government is able to mobilise society in its various social campaigns in fields such as politics, war, economic development, charitable work, and the like. It may also be pointed out that communication provides the government with the means with which to direct people's attention, opinions and thoughts, thus influencing people's perception with regard to social issues. It may be argued that it is through the communication systems that the government is also able to bring awareness of important issues to the public and thus enable the public to evaluate whether or not the issues raised are important.

The Uganda Government recognises information and communication as an economic resource in development (UPSRRC, 1990). UPSRRC, (1990:149) argues that the importance of communication in administrative systems stems from the nature of administration as "a process of working with and through others" to achieve its objectives. UPSRRC observes that communication in organizations has been likened to the nervous system in the human body which conveys or transmits messages to and from

the central nerve center to all the organs of the body. In administration, communication is the transfer of information and understanding from one person or administrative unit to another in order to make possible the essential administrative functions of planning, organizing, directing, controlling, monitoring and evaluation (UPSRRC, 1990:149). The UPSRRC also argues that 'the extent to which a society is organised may in one respect be gauged from its attitude to information and the systems in place for efficient information management (UPSRRC, 1990:149).

UPSRRC makes a distinction between two categories of communications found within organizations, namely the planned and the unplanned. UPSRRC describes the planned as the *prescribed or formal systems of communication, or channels which have been consciously and deliberately established to conform to the established lines of authority and structural boundaries*. UPSRRC refers to the Uganda Civil Service, Section R and some sub-sections of Section F of the Standing Orders. These, according to UPSRRC, prescribe in detail the rules governing both internal and external communications in public administration. According to UPSRRC, many regulations concerning official communication guidelines prescribe forms according to which information may be entered and transmitted, and that this often covers the minimum amount of information that should be provided and how it should be provided. The aim, therefore, is not to leave the choice in communication to the imagination or discretion of the person submitting the information (see UPSRRC, 1990:149).

Among the common modes of communication recognised by the Government Standing Orders are the minute system, memoranda and letters, travel and mass communication systems as printed media, radio and television.

3.2.1 The Minute System

This is a paper-flow communication system. It can be said to be one of the commonest modes of *internal communication in public administration*. Verbal messages are intended to create awareness or casual consultations on a subject matter already well known; but in more serious decision making processes, it is important that the basis of the decision is

recorded to avoid misunderstandings or controversies. Public administration in most communications between departments insists on submitting communication on a piece of paper attached to a file which moves between different points within departments. The minute system as described above lacks speed. It can, however, be easily augmented through the adoption of ICT so that communication takes place electronically.

3.2.2 Memoranda and Letters

Demands on government systems are always submitted in writing. UPSRRC (1990:151) refers to Section R of the Government Standing Orders of 1969 which prescribes in detail the manner and form letters, memoranda and other written communication should take. It is pointed out by UPSRRC that due to ignorance, or inadequate training or lack of interest, these regulations are sometimes flouted; and that letters that need to be written may not be written; or others are written but take unnecessarily long to reach their destinations.

Letter writing and distribution in public administration is a costly exercise that involves the employment of secretarial staff, and the purchase of stationery and postage stamps. Worse still, communication takes place at a snail's pace. Distribution of letters, parcels and telegraphic communications take place through the regular postal service. UPSRRC (1990:152) reports that Government parcels take weeks to arrive, including ordinary mail around Kampala. ICT through services such as electronic mail and the world-wide-web has the capacity to save public administration much of its expenditure through electronic mail (email). Email provides public administration with the means with which to communicate with an almost unlimited number of its officers efficiently and effectively, whilst exchanging data and information during decision making processes.

3.2.3 Travel

Physical travel is used widely by public administrators in Uganda to deliver or obtain information. Public servants often move physically between stations, within and outside the country, to deliver and/or receive reports or instructions; or attend conferences, workshops or seminars. According to UPSRRC, the country incurs huge expenditures on travel due to factors such as mileage, travel tickets, per diem, wear and tear of

government vehicles. The poor road network in the country does not make things any easier for public administrators on the move. With the decentralisation of public administration, travel has become even more regular. The Central Government ministries need to be in easy contact with the local governments in order to monitor operations, or pass on policies, techniques or even directives. The country's poor communication infrastructure makes the transaction of business between the Centre and local authorities, as well as among districts, extremely difficult and costly. Since the decentralisation of public administration, public administration is faced with the problem of constant physical movement of its officers between the Centre and the District to seek or relay information. In the process, a lot of one's time is spent outside the work place, thus *breeding inefficiency*.

The rehabilitation of the transport and communication network has been high on the agenda since the current Government came to power in 1986. Among the various programs created to ease travel within the country was the United States Dollar 1.5 billion Ten Year Road Sector Development Program (RSDP) 1997/2006. The program aimed at the extensive reconstruction of roads in the country, including tarmac of trunk roads and opening up feeder roads. While such developments as construction and rehabilitation of the road network is good for the infrastructure development in the country, focusing on the developments taking place in ICT as some of those already mentioned, will have far reaching effects on the flow of data and information within public administration.

3.2.4 Print Media

Newspapers are widely used by public administration as a form of mass communication. The print media is available in English, the national language, as well as the vernacular, and it is a valuable source of information on developmental issues for both the government and the general public. Newspapers circulate widely and are available in several languages. Moreover these newspapers are current in their reporting and are generally affordable. Much of what is written is often taken by the public as the gospel truth. Mutengu (1995) observes that to the poor, under-privileged, and oppressed, print media/press is looked at as a saviour. It is seen as the media for the voiceless. The

grievances and pleas of many have been acted upon. Mutengu observes that people's minds, attitudes and conceptions have been shaped according to what they hear from the press. Many politicians fear or even hate it, while others befriend it to avoid clashing with it. Corrupt officials have been retrenched or even deported due to press reports. The orphans, disabled, and street children have received help because of the press. In other words, press and print media is indeed a strong medium of communication.

The importance the current Government attaches to newspapers can be measured by the growth of the number of newspapers in the widely spoken languages in the country. Notably, many people have ventured into the news industry as a result of the enabling environment prevailing in the practice of journalism in the country. Mutengu observes that it is during the current government that so many newspapers have been born, only to die after a short while, largely due to economic factors as well as mismanagement. It is important to note that the state-owned *New Vision* has the widest circulation of about 38,000 copies (UMWHC, 2002). Along with *New Vision*, the Government owns several newspapers in local languages, namely *Orumuri*, *Etop*, *Rupiny* and *Bukedde*.

Several factors, however, militate against newspapers as a reliable channel of communication in public administration. Newspaper readership in Uganda is generally low, mainly due to the high cost of the newspapers. Kavulu-Kiwanuka (1993) reports that the majority of the general public in Uganda earn less than 1.00 US Dollar per day. This means that the majority of Ugandans cannot afford a newspaper on a regular basis. Kayodi (1998) points out that most of the newspapers are privately owned and thus focus on more topical issues such as politics, sports and leisure, as opposed to developmental issues such as agriculture. Kayodi (1998) again observes that newspapers are elitist, in that, they appeal more to the educated class. According to Kavulu-Kiwanuka (1993:18), the illiteracy level in Uganda stands at about 50 per cent, which means, half of Uganda's general public does not have a direct access to written literature. Instead, these people rely on secondary reporting, such as listening to those who may have read the newspaper.

Mutengu (1995) points out that newspapers in Uganda have a varying range of readership depending on the type of material, the publishers and what they stand for; and that most newspapers are classified as partisan, commercials, or Government propaganda. The Government newspaper, *The News Vision Newspaper*, for example, is seen by many as a mouth piece for the Government; while *The Monitor Newspaper* is seen by the Government as representing the opposition. The communication of information by the Government to its officers, as well as the general public through the print media is therefore never a sure deal. Other factors that again militate against printed media include mishandling and pilferage of packages when distributed with the help of public transport, delays in distribution due to negligence of the transporters, and indebtedness of government bodies to vendors and agents when receiving newspapers on a subscription basis.

Newspapers are characterised by slow speed in data transfer, as well as poor information retrieval mechanism. Until a system is developed to provide the newspapers with an index, information retrieval will remain a very big problem, especially if this is being done for management purposes. It is also important to note the present cost of a newspaper, that is, Uganda Shillings 800/- (approximately US Cents Fifty), is not cheap at all, especially for a country where income per head stands at USD200/-. Most Government departments around the capital city can only afford one or two of the daily newspapers, and in most cases one copy only. With the internet, however, current news from the leading newspapers, that is the *Daily Monitor* and the *New Vision* can be accessed at a nominal fee from the Internet network service. The electronic version is wide in scope and pleasant to read. However, it cannot be accessed offline. In its present form, it is only useful for current awareness; and thus not good enough for decision making in management.

3.2.5 Radio

Radio service in Uganda is one of the key links between Government and its field officers, as well as the general public. Time and again, announcements are put on radio arguing that public servants should take note of one development or the other. It is not uncommon for public servants to be summoned over the radio from any part of the

country, and in the event of failure, the officer is to be blamed for failure to respond. The radio, compared to other media, is swift in its reporting. It is very flexible in its geographical positioning, relatively cheap compared to other media both in capital outlay and running costs. It is also able to reach a larger section of the disadvantaged groups such as the illiterate, the blind and the poor when compared to other mediums. Radio Uganda, a state-owned radio station, is a major source of information for public administrators in Uganda (UMWHC, 2002). Radio Uganda monopolised the airwaves up until 1992. The liberalisation of the broadcasting service during the mid 1990s has since enabled over 100 licensed FM Radio stations to be licensed to operate in the country.

In *Uganda, the land of FM radio (2003)*, it is reported that through the live-talk-shows, FM radio stations have made political actors in Uganda more accountable, especially when the public is invited to put to them critical questions. It is also argued that Uganda's political stability is partly a result of FM radios which have given a forum to the public to express its feelings about Government policy. Often, the government quickly returns to the same radio stations to respond, thus, making FMs a forum for dialogue in Uganda's politics. On the other hand, it is reported that the FM stations have limited geographical coverage and mainly carry commercial and entertainment programmes. It is also reported that most of the FM stations are based in Kampala with a few in the regional towns; and that many of these privately owned radio stations rarely invest in news gathering, but depend on news drawn from the daily newspapers, and hosting interviews with local politicians

In *Our partners in development (2003)*, it is argued that all manner of government campaigns and other stake holders like corporate companies, as well as NGOs, have used radios to reach out to the rural areas. Dhujanga in *Our partners in development (2003)* point out that Radio Paidha has given the people of West Nile their power, and that the world is closer to anybody in Nebbi or any other area. Again in *Our partners in development*, Salim Nahdy, of the National Agricultural Advisory Services submits that use of the radio and television services has reduced the information divide and

contributed to economic growth; and that Government has effectively exploited the liberalisation of electronic media for its various programmes such as health campaigns to fight the Aids scourge, polio, malaria and cholera

Kayodi (1998) argues that the radio still remains the most effective mode of mass communication in Uganda for the rural community. It has no geographical boundaries, appeals to both the elite and the peasants, and is affordable. According to Kayodi, (1998), most people upcountry are able to listen to the radio, and those who cannot afford a radio set, can still listen to radio programs from the neighbourhood. Kayodi establishes that news is the favourite program on the radio for the rural folk claiming 36.83 % of the total amount of time spent listening to the radio, followed by commercial announcements coming in at 28.69%. Kayodi observes that development programs such as agriculture, health and trade programs are less appealing to people in Moyo District mainly because many of these programs are biased towards the Central Region. As already noted, radio communication is inefficient in as much as it has no memory where communications can be stored by one who might be away from the receiving station at the time of communication.

3.2.6 Television

Television is popular as a means of mass communication in Uganda because of its ability to combine audio and visual messages. Kayodi (1998) points out, however, that television sets are still expensive for an average Ugandan, and that television signals are only able to function over a very limited geographical area. According to Bamuhiga (1993), television broadcasting in Uganda still remains in three languages, that is, English, Luganda, and Swahili. Hamuli (1997), observes that only 38.8 percent of the population around Kampala City have access to television service. Hamuli also points out that 94 percent of those who own television sets use it effectively. UMWHC (2002) enumerates several problems affecting television services in the country, one of which is the timing of many programs being aired when people are busy. Secondly, television ownership is relatively low and is concentrated in urban areas. Thirdly, the cost of the television

programs makes the service expensive to most firms. Fourthly, lack of electricity in many areas of the country is also identified as a big hindrance. Nsamba in *Uganda the Land of FM Radios (2003)* report that Uganda has about 20 licensed television stations, of which seven are operational; and that most TV stations broadcast American movies, soap operas and comedies. Nsamba in *Uganda the land of FM Radios* also report that most rural areas in Uganda lack electricity thus making it difficult to access television broadcasting. Hamulus (1997) on her part mentions that television programs are expensive with the production cost standing at what is equivalent to USD60 per thirty minutes.

Like the radio service, it is impossible to reconcile the television service with the needs of public administrators as it operates without a memory to store incoming data. Again, like the radio, television is a one way communication system, meaning that one cannot interact with the system to seek data even when this becomes necessary. Public administration needs a system with a memory for storage and retrieval of data and information, which can be retrieved anytime when the need arises. Today, such a system can only be provided by the computer system.

3.2.7 Verbal Communication

According to UPSRRC (1990:150), the most obvious medium of communication is the spoken word. UPSRRC observes that verbal communication is also the commonest form of communication in use between government officials and members or sections of the general public. Ordinarily, it is only possible between persons in close proximity. It is often the main mode of communication between individuals and their immediate superiors or subordinates. UPSRRC (1990:150) points out that oral communication is widely used in casual consultations involving immediate action on subject matters well known to the parties involved, and is therefore helpful in quickening work. UPSRRC again points out that oral communication is influenced by the physical layout of the organisation, favouring cases where workers are in close proximity. It is however less helpful in decisions involving wide consultation. It is also argued that oral communication is adequate for decisions that require mere experience. Furthermore, it is argued that oral communication on its own cannot guarantee supply of adequate and

reliable data all the time. As the country tries to push towards scientific decisions in making for public administrators, oral communication need to be supplemented with easier methods of verification.

3.2.8 Conventional Telephone

The conventional telephone service has been, for many years, a major medium of oral communication in Uganda, and has been especially useful in quickening the dispatch of business. The liberalisation of the telephone service in the country through the enactment of the Communications Act in 1997 helped to bring into the country foreign competitors who have helped in the expansion of the telecommunication industry. This has led to an increase in tele-density as well as improvement in service itself. One problem regarding the telephone service in public administration, according to UPSRRC (1990:150) is the huge telephone bills. UPSRRC reports wide-spread abuse of the telephone facility resulting in heavy telephone bills to Government due to private international calls. Control measures include restricting international calls only to top management, use of secret codes, and use of switchboards with extensions.

According to UPSRRC, very often Government Departments still find themselves with heavy telephone bills, because they fail to notify the service provider when there are changes or movements. The incoming occupants of the premises thereafter enjoy the facilities for long periods before the department realizes the oversight. For a government that is unable to meet its recurrent expenditure, telephone bills are rarely paid in time leading to regular disconnection. Public administrators in Uganda indeed need a more reliable mode of communication; one that is cost effective. The telephone system operates without a memory for data storage. It is thus unsuitable when handling complex problems demanding access to massive or diversified data. The best way forward for public administration in Uganda is to exploit the new developments taking place in the information and communication industry (ICT). This will help the Government to revamp data communication in public administration through services such as electronic mail which is a lot cheaper and is supplied with a memory for data storage.

3.3 Information Service

UPSRRC (1990:144) identifies information as a national resource and an important requisite for development. According to UPSRRC, the extent to which a society is organized and its efficiency can be gauged from its attitude and the systems in place for effective information management. UPSRRC (1990:144) observes that where information is lacking there is wastage of time and opportunities. UPSRRC (1990:144) again observes that the inordinate time wasting involved in most transactions with the Public Service, is due, mainly, to the fact that there is no information readily available telling the applicant, step by step, what to do. What should be a straightforward, transparent transaction becomes a mystified process shrouded in secrecy, leaving the general public to know the procedure by trial and error.

Information management cannot be effected without adequate human resources and physical facilities. UPSRRC (1990:145), however observes that the creation of an information managers cadre has not been given adequate emphasis, despite the recommendations made by several quarters.

3.3.1 Library Service

Government policy on information service in public administration is articulated under the Circular Standing Instruction No.2 of 1976 of Uganda. This spells out the need for a hierarchy of officers, ranging from Records/Library Assistants to the Director of Records at top level management to manage archives, registries, libraries, documentation centres and information centres of the Public Service (UPSRRC, 1990:147). It is a requirement for every Ministry to have in place a library and documentation centre that is able to render information service to members of staff (UPSRRC, 1990:147). Government reports, as well as publications from non-governmental bodies, research centres, the public sector and international bodies should become easily accessible to Government employees through the services of the library and documentation center (UPSRRC, 1990:148).

A critical evaluation of the information service under public administration reveals an information service is of the general type, with no attempt being made to promote

specialised information service. The library collection, for example, ignores the vast mass of gray literature in the form of institutional reports and conference proceedings produced by Governmental, private and non-governmental bodies (UPSRRC, 1990:152). Gray literature, on the other hand, is topical, current and can easily be obtained free of charge, as it is often a matter of asking on the basis of first come first served.

Library service also suffers from limited indexing characterized by inadequate provision of content analysis and access-points. Information is presented to end users in its primary form due to the lack of specialized information processing services such as information analysis and consolidation, information repackaging, and abstracting service (Matovu, 1994). Matovu argues that most information systems affiliated to public bodies hardly make a tangible impact on the parent organization, as most employees visit the information centre for current affairs as opposed to accessing data to support them in decision making processes. As a result, in most ministries, information has limited support from the parent body, and is manifested only in maintaining the information personnel on the payroll.

3.3.2 Records and Archives

According to Luzira (1984), an archive is a place in which files of correspondences, diaries and minutes concerning the activities of the institution are kept. It also includes microfilms, discs, and computer software. It is the source of primary or original data, and contains documentary evidence concerning the activities of the members of the organisation. UPSRRC (1990) reports that registries are amongst the most unattended units within public service; often hidden away in a cramped corner, operating without stationery, or trained personnel. According to Luzira (1984), the neglect of archival service development by public administration in Uganda, is due to ignorance with regard to the value of archival documents, as opposed to a deliberate intention on the part of policy makers. UPSRRC (1990:144) while referring to the Central Registry which is the custodian of personnel files of the entire Civil Service in the Ministry of Public Service and Cabinet Affairs, observe that "the unit lacks management and trained staff. Officers take files from the Central Registry and keep them for long periods. Some files are locked

up in officer's drawers and get forgotten, and efforts of records management staff to trace and retrieve them are fruitless. Furthermore, registries very often have no stationery and this leads to backlog in filing and all the ills associated with it". The issue of "ghost employees" in the public sector is largely a result of poor record keeping.

UPSRRC (1990:144) notes that Circular Standing Instruction No.2 of 1976 introduced a hierarchy of officers ranging from Records Assistant/Library Assistant on Salary Scale U8 to Director of Records on U1. These were to manage records in Registries of all Ministries, Libraries and Information Centres of the Public Service. UPSRRC (1990:144) also notes that subsequent to this, a decision was made to create a Directorate of Records within the Office of the President and Establishment Notice No. 4 was issued to this effect. UPSRRC notes that the Director, however, was never appointed. UPSRRC again notes that The Presidents Office later handed over the management of the Registry Personnel Section to the Ministry of Public Service and Cabinet Affairs, but without surrendering the post of the Director of Records (UPSRRC, 1990:144). According to UPSRRC (1990), records management is poor and the supply of information erratic, and whatever information that is available is unreliable.

3.3.3 Documentation Centres

Documentation centres refers to information systems that are set up to render specialised or customer tailored information service over and above the conventional library service (Matovu, 1994). Many departments under public administration maintain documentation centres to render services such as selective dissemination of information, indexing and abstracting service, bibliographic service, current awareness service, referral service and document delivery. According to Matovu (1994), most ministries in Uganda maintain documentation centres at the headquarters to cater for the specialised information needs of the ministry. According to Matovu, documentation centres can presently be found at the Ministry of Gender, Youth and Labour, the Ministry of Finance, Planning and Economic Development, the Ministry of Industry and Technology, and the Ministry of Water, Energy and Environmental Protection. Again, Matovu reports that most donor funded projects in the country maintain a similar information system to meet immediate

information needs of the project personnel. Bamuroho (2002) reports that under the Ministry of Health is the Uganda National AIDS Information Service (NADIC), which provides information in the form of studies, articles, reports, newsletters, newspaper clippings, and posters. NADIC also provides access to international and local databases that contain references to HIV/AIDS prevention, press releases, and statements on HIV/AIDS, as these may come out in English language newspapers in Uganda. It also maintains basic data on AIDS control programs and activities in the country. Other similar specialised information systems, also under the health sector, include the Malaria Control Information System, and the Child Health Information System.

3.3.4 Information Analysis Centres (IAC)

Atherton (1977) distinguishes IAC from documentation centres, pointing out that IAC is involved in specialized information processing for the larger sector rather than the individual firms. According to Atherton, IAC may provide services such as indexing, abstracting, information analysis and consolidation, information repackaging, state-of-the-art reports, advisory service, critical reviews, trend reports, viability and feasibility studies. IAC may also publish quick reference tools such as databases and databanks, directories, handbooks, manuals, indexes, abstracts, almanacs, yearbooks, and biographies to cater for their specialised information needs of a well defined sector. Matovu (1994) cites the Uganda Manufacturers Association Consultancy and Information Service (UMACIS) as an example of IAC in Uganda. The new approach to national bibliographic control (NBC) is decentralization of NBC through sectoral legal centres. For Uganda, a long list of legal deposit centres was proposed which includes the National Agricultural Information and Documentation Centre operating under the National Agricultural Research Organisation (NARO) of the Ministry of Agriculture; the National Environment Information Centre under the Ministry of Water, Energy and Environment Protection; the Industrial Information Centre, under the Ministry of Industry and Technology, and the National Documentation and Legal Deposit Centre (NDC) under the Ministry of Public Administration. In addition to receiving materials deposited under legal deposit, these centers expected to undertake a wide range of information processing on the materials received including indexing, abstracting, information analysis

and consolidation, and information repackaging. Unfortunately, the national legal deposit centres (NLDC) in Uganda have not lived up to the expectations of the general public. Bamuhiga (1993) observes that 23 years after its establishment, the collection at the National Documentation Centre at the Uganda Management Institute (UMI) still remains in an unenviable state, with the processing of content limited to simple bibliographic description. Due to lack of technical know-how as well as adequate technologies, most services expected of the IAC are not provided.

3.3.5 Data Centres

Atherton (1994) defines data centres as those concerned with collecting raw data on activities taking place in a gigantic industry, such as, agriculture, manufacturing, and trade. The data collected is published as semi processed and in printed form, increasingly in electronic form. Matovu (1994) cites the Uganda Bureau of Statistics (UBS) as a data center. UBS is responsible for collecting demographic data on Uganda to assist the Government planners (Matovu, 1994).

3.4 Need for Modern Information and Communication System

The conventional information and communication system in public administration in Uganda, as pointed out in the above discussion is full of shortcomings. The radio and television service operate without a memory for information storage, whilst the newspapers operate without an index to facilitate easy retrieval of information. UMPS (2002) observe that as a result of the decentralisation of public administration, senior officers from the Central Government are expected to pay regular visits to districts to monitor as well as render technical advice on the ongoing work activities. The cost of this to the nation in terms of per diem, and wear and tear of government vehicles is enormous (UPSRRC, 1990:147). Any information and communication system that can enable the Government to cut down on travel by Government officers is indeed welcome to the country. As already noted under 3.2 the information and communication system via the radio, television, newspapers, newsletters, physical travel, or even printed reference tools fall far too short of what is required in the effective and efficient dissemination of data and information in the public sector (see UPSRRC, 1990:144-156). What Uganda needs

is the introduction of modern information and communication systems in the public sector. Besides, services by the various libraries, documentation centres, archives, information analysis centers and data centers affiliated to public administration need total overhauling, with a plan to take advantage of the latest technologies in information and communication technology (ICT). Developments in information and communication technology have given rise to a new set of information system, broadly referred to as Management Information Systems (MIS). Public Administration in Uganda is aware of the task facing it regarding MIS. Several attempts have been made towards adopting MIS in public administration. The remaining part of this chapter, therefore, will examine and evaluate the steps being taken towards the modernization of the information system in public administration via MIS.

3.5 Management Information System

3.5.1 Initial Steps towards MIS

Long before the decentralisation programme, the Government already had plans to computerise public administration piecemeal (UPSRRC, 1990:146). UPSRRC reports that with the introduction of decentralisation, the need arose to re-examine this plan to assess its adequacy in view of the new challenges posed by decentralisation; in particular the adequacy and reliability of the information infrastructure required to link districts to the co-ordinating agencies in Kampala. Presently, there are 56 districts, many of which are devoid of any form of infrastructure. Some of the districts are able to receive microwave signals and their telephone links have since undergone overhauling. It was the plan of the government to have all districts on MICRO-WAVE Transmission by 1995 (UMPS, 2002). This would make it possible for the computerised information in the District to have it transmitted on dedicated lines specially allocated by the telecommunications service to the District Computer Centres. Since dedicated lines can be very costly, data switch exchange systems would be considered as an alternative. Again, UMPS (2002) reports that the Government has extended radio links deep into the country side. The Digital Multiple Access Radio System is being used to reach remote sub-counties and townships, and that a government project designated "Development of Rural Telecommunications in Uganda" aims at expanding coverage to rural areas. In cases

where Micro-Wave transmission may prove too expensive, and thus not viable, the Government considered plans to establish a data collection centre at the District Administration which would send data to Kampala in a raw form and on "read only" computer diskettes using the experience drawn from Kenya and Tanzania. According to UMPS (2002) the courier system was to be seen as a temporary measure, to allow time for the modernisation of the transmission infrastructure to mature to higher levels of precision, and to enable use of dedicated lines for all the Districts in the long run. Dedicated lines would ensure on-line, or live, communication. The system required suitable, reliable, and compatible equipment at both ends of the information network; and ideally, each should have telephone exchange, telegraph, telex, tele-fax, and computers.

As a way of embracing modernization the Government adopted during the 1990s a program to computerise information systems in public administration (UMPS, 1997). The initiative gave birth to such information systems such as Personnel and Payroll System, Budgeting and Financial Management System, Pensions Management System, Physical Asset Management System, Physical Records Management System, and Audit and Inspection System (UMPS, 1997: 39). At the commencement of the public service reforms, payroll management proved one of the biggest problems in the management of public service (Byarugaba, 2005:8). It became necessary to computerise the payroll, as one way of putting a stop to ghost employee. The Personnel and Payroll Management and Control System (PPMCS) was therefore designed to replace the manual system with an integrated IT (computer) based Personal and Payroll Information System (PPIS) which could be networked to the districts and link with a new accounting system. It was to be part of the Financial Management Systems/Expenditure Management Systems (UPSRRC, 1990).

The Budgeting and Financial Management System (BFMS) was introduced to help in overhauling the budgeting and accounting systems in public service (UMPS, 2002:39). Under the Second Economic and Financial Management Project (EFMPII), a consultant was engaged in 1999 to define the overall framework for the Financial Management Systems (FMS) and the Expenditure Management System (EMS) of which the Districts comprise a big percentage (UMPS, 2002). Similarly, a Pension Management System

(PMS) was introduced in 1999 to replace the manual system which was characterised by inaccurate pensioner records leading to incorrect or invalid payments, or even non-payment. The Assets Management System (AMS) was introduced in 1999 to bring about improvement in the management of public assets (vehicles, buildings, equipments) in the country. AMS aimed at putting in place a computer based system concerning acquisition, management and disposal of government assets (UMPS, 1997).

Further interventions under public service reform included the physical records management system (PRM). According to Byarugaba (2005:7), the objective was to strengthen physical records management in the central and local governments. The exercise started with the establishment of 19 registries and 45 temporary systems in 14 ministries. The exercise also involved the rehabilitation of the National Records and Archives, and the enactment of Records and Archives Act by the National Parliament, and the design and construction of a National Records Centre and Archives building (Byarugaba, 2005:7). Despite the advances in information technology, Public Service in Uganda still considered physical records desirable (UPSRRC, 1990). Thus, under Physical Records Management (PRM), the Government undertook to rehabilitate the registries of various ministries, including the introduction of a new file classification system, and the training of records staff and sensitisation of records users at the centres and in the districts. A National Records and Archives Bill was drafted to give the public a right of access to information possessed by the State or any other organ or agency of the state. The PRM program also included plans for the construction of a National Records Centre for the safe storage and preservation of records, as well as the training of staff in computer application and the use of the new equipment (UPSRRC, 1990).

UMPS (1997) reveals the fact that the Audit and Inspection Management Information System (AIMIS) was developed to help the Government detect and prevent dishonesty and corruption in the public service. UMPS (1997) also reveals that the project, among other things, involved the establishment of the various anti-corruption agencies in the country which includes the Inspector General of Government, (IGG); the Auditor General's Office, the Public Accounts Committee, Internal Security Organisation; the

External Security Organisation; Criminal Investigation Department; Military Intelligence; Pre-Shipment Inspection Units; and the Uganda Bureau of Standards. According to UPSRRC (1990), millions of shillings were being siphoned out of the national treasury through over-invoicing and supply of substandard materials.

3.5.2 Renewed Effort towards MIS

Following the adoption of various NPM programs in 1995, it became a declared intention of the Government to introduce MIS to public administration (Uganda, Ministry of Public Service (UMPS) 2002). According to UMPS (2002), the MIS program had several objectives that included (a) the need to provide public administrators and decision makers with complete, accurate, timely and relevant information on (1) service delivery, (2) budgets, (3) costs and revenue (4) personnel (5) assets; (6) and other performance information; (b) the need to provide effective controls to protect public assets and resources, and guard against fraud and error; and (c) the need to ensure storage and efficient retrieval of official information and documentation. UMPS (2002) notes that among the first Government bodies to benefit from this initiative was the Presidents Office, which was provided with a Management Information Services unit which collects information required for decision making by the President and Ministers. Nsibambi (2002) argues that Ministers as political leaders must keep their political review to know what is happening among their constituents. Nsibambi contends that Uganda's Ministers are indeed over loaded and there is need for improved access to information. He points out that the Ministers are subjected to the principle of 'collective responsibility', a feature that calls for regular top management meetings where transparent discussions take place; and that this calls for a modern information system. Nsibambi concludes that the need for a well founded and modern information system is thus a critical feature.

According to UMPS (2002:20), the renewed effort towards the modernization of the information system in public administration resulted in a proposal to establish management information systems in selected areas. These include the Agricultural Management Information System (AMIS); the Health Management Information System (HMIS), the Judicial Management Information System (JMIS); Works, Housing and Communication Information System (WHCIS) and the Education Information System

(EMIS) (UMPS, 2002). The MIS pilot program also covered five district councils which included Iganga, Mpigi, Mukono, Rakai, and Rukungiri. (UMPS, 2002:20)

3.6 Specific MIS Programmes

3.6.1 Health Management Information System

Located at the Ministry of Health Headquarters, is the Health Management Information System (HMIS) which is designed to receive weekly data on service delivery by the district health services through out the country (UMH, 2000). According to UMH (2000), data is relayed by the districts to HMIS using radio calls, telephone, fax, email, or even hand delivered. Data received by HMIS which is largely in numerical form is integrated into the HMIS database. UMH also reveals that HMIS operates only up to the district level, and that the spread of the system is still limited to five districts, with Jinja and Pallisa districts having an online system.

UMH (2000) reveals that HIMS focuses on information health services at the District level regarding: a) the number of District jobs filled with qualified staff, b) the number of complete drug kits in stock within the District health facilities, c) the number of district health centres, dispensaries, sub-dispensaries and aid posts in place, d) the number of NGO health centres, dispensaries, sub-dispensaries and aid posts in place; e) the average probability that a patient will find health facilities open for business on any given day; f) the percentage of times that a patient will be given the correct treatment on his or her first calling at a District health facility; and lastly, g) the average time a patient will travel to have access to district health treatment measured in hours. HMIS supports a Website (<http://www.health.go.ug>), which is generally lacking in currency and coverage, and that HMIS tele-medicine service is still at the experimental stage.

UMH (2000) also reveals that working in close collaboration with HMIS is the DISH Database, a database by a private firm, and that, DISH, unlike HMIS, is able to provide images. UMH reports that DISH is, however, updated only up to 2002. UMH again reports that plans are under way to establish a local area network (LAN) system at MOH to enable end users access to HMIS online. Kigongo-Bukenya (2001) also reports that the Ministry of Health has established Aids Information Centres through out Uganda to

educate Ugandans of the dangers of HIV and AIDS. Other health information systems available in the health sector as listed by Kigongo-Bukenya include the Child Health Development Information System, Family Planning Units, and Maternal Health. Kigongo-Bukenya (2001) observes that telecentres, among other things, are able to offer specialised services as tele-medicine.

3.6.2 Integrated Personnel and Payroll System

As early as 1995, the Uganda Government took upon itself to establish an Integrated Personnel and Payroll System (IPPS), to provide timely and accurate information for human resources management and to improve processes for personnel and payroll management (UMPS, 2004). Byarugaba (2005:8) reports that it became necessary to computerise the payroll so as to remove the ghost employees. IPPS is especially designed to support such business processes as: human resource planning, human resources development and training, payroll management, recruitment and appointment of staff, staff appraisal, staff exit from public service, monitoring and control of the Public administration establishment (UMPS, 2004). UMPS reports that IPPS is meant to interface with other government information systems such as the: Integrated Financial Management System, Records Management Information System, Pensions Management Information System, Local Governments Information System, Education Management Information System, and Health Management Information System. UMPS argues that IPPS still requires a substantial investment in terms of capital outlay which, up to 2003/04, had proved difficult to find. Other challenges facing IPPS, according to UMPS (2004), include the need for the standardisation of business processes across Ministries and the Local Governments, improvement of the quality of data, and ensuring system security after implementation.

3.6.3 Integrated Financial Management Information System

The Integrated Financial Management System (IFMS) is reported to be a computerised budgeting, accounting and reporting application providing a new way of managing and conducting budgeting, general ledger, payments and commitment control, purchasing, cash management and revenue/receipting (*see: <http://www.finance.go.ug>*). It is designed

to make use of modern information and communication technologies to help the Government of Uganda plan and use its financial resources more efficiently and effectively (UMFPED, 2003:5). According to UMFPED (2003) IFMS was designed to provide for efficient capture of the highest possible proportion of transactions at the earliest possible point in the transaction business process cycle; and it is a system that is being funded by the Government of Uganda, and the international donor community under Second Economic Financial Management Project (EFMP11). UMFPED (2003) reveals that the system that became operational in 2004 focuses on the expenditure management systems to cover budget formulation payments, purchasing and commitment accounting, cash management, revenue receipting and accounts receivable. It is reported again by UMFPED that IFS is meant to provide real time information for planning, budgeting and management; enhancement of integrity, accountability and transparency; and the presentation of harmonized coding structure across the central and local governments (UMFPED, 2003:6). According to UMFPED, IFMS implementation was to take place in phases beginning with six ministries, namely: the Ministry of Finance, Planning and Economic Development; the Ministry of Education and Sports; the Ministry of Health; the Ministry of Water, Land and Environment; Works, Transport and Communications; and the Ministry of Agriculture, Animal Industry and Fisheries. It is also reported that the IFMS programme was to include four local government bodies, namely: the Kampala City Council Headquarters, the Kampala City Council, City Division; the Jinja District Local Government; the Lira District Local Government; and the Bushenyi District Local Government. Lastly, the system was to cover the Bank of Uganda (BOU), the Uganda Revenue Authority (URA), and the Debt Management Financial Analysis System (DMFAS) in the Foreign Funds Section in Treasury (UMFPED, 2003:11-13).

According to UMFPED (2003), IFMS has yielded several benefits to the country which include:

- a. increase in the ability of both the Central Government and Local Governments to undertake control and monitoring of expenditure and receipt;
- b. access to information on financial and operational performance;

- c. increased internal control in the quest to prevent fraud;
- d. increased access to information on economic performance; and,
- e. understanding the costs of groups of activities and tasks; and demonstrate accountability to both the donors and the public.

UMFPED (2003) reports that the Local Area Network if properly installed can provide secure transaction processing at the required speed. It is also reported that the second IFMS phase is already at an advanced stage, and this is designed to cover additional public bodies which include the Ministry of Local Government, Tourism, and Trade; the Ministry of Industry, Energy and Natural Resources; the Ministry of Gender Labour and Social Development; Ministry of Justice and Constitutional Affairs; the Prime Minister's Office; the Ministry of Foreign Affairs; the President's Office; the State House; and the Ministry of Defence. UMFPEd (2003) also reports that on the side of the Local Government, IFMS second phase is programmed to cover the remaining five divisions of KCC, namely, Nakawa, Rubaga, Makindye and Kawempe; and it will also cover Mbale District, Soroti District, Mpigi District, Masaka District, Mbarara District, and Arua District.

3.6.4 Records and Archives Management System

Closely associated with the Civil Service Reform Program was the need for improved management of national records and archives (UMPS, 2002:51). Byarugaba (2005:13) argues that a record is a point of reference for every organisation and clients or consumers with regard to important decisions and transactions that are made. As already noted the records and archives management system in the country as a whole is in a sorry state. According to (UMPS, 2004), the Government, by the year 2003/04, had identified several strategies for strengthening the management of records and archives, which included the following:

- a) equipping of records managers with appraisal skills to enable them to implement the retention and disposal schedules;
- b) completion of the Business Analysis of the proposed National Archives Agency;

- c) development of a strategic plan, budget and performance targets;
- d) printing of 650 copies of the National Records and Archives Act, 2001 and dissemination to the newly created Districts and lower local councils; and,
- e) rendering technical support in records management to Ministries and Local Governments. (UMPS, 2004).

These strategies were meant to complement the enactment of the National Records and Archives Act of 2001 (UMPS, 2004).

3.6.5 Local Government Information and Communication System

Uganda, Ministry of Local Government (UMLG) (2003), reveals that the Uganda Government is in the process of setting a Local Government Information and Communication System (LOGICS) to address the information needs of stakeholders in the local government administration. According to UMLG (2003) LOGICS is about developing an in-house database providing data on service delivery in key sectors such as health, education and community projects. It is a computerised system, designed to help the local governments monitor their own performance. UMLG (2003) points out that the system is designed primarily to benefit the Local Governments, much as it can be useful to ministries and other stakeholders including donor agencies. It is based on information needs as may be found in a typical local government. It is designed to serve as a tool for all those in local administration by supplying them with accurate and complete information from their subordinates. UMLG 2003 reveals that LOGICS comprises three main databases, namely, the District Database, the Inspection Database, and a One-Stop Information Resource Centre. The District Database, according to UMLG (2003) contains data on facilities such as schools and health centres; local council (LC) projects including school construction and road maintenance, local revenue collected, donor funds identified, pupils who completed primary education, pupils enrolled, primary health care delivered, farmers advised and trained, feeder roads constructed and maintained, crimes committed and solved, community participation in service planning; and the development plan published. The District database also covers the results of district or municipal compliance inspections. The Inspection Database according to

UMLG (2003) contains results of the Ministry's inspections of local administration activities. Lastly, the One-Stop-Centre contains data from all district databases. LOGICS according to UMLG (2003), is located at the Ministry of Local Government Headquarters, and its purpose is to reduce repeated requests for information from individual local governments, as well as various user groups. LOGICS has benefited greatly from its collaboration with Canada through the exchange of experience, and financial assistance. It has also benefited from local expertise through outsourcing (UMLG, 2003)

3.7 Critique of Uganda's MIS Policy

One feature to note about the MIS program in public administration in Uganda is that each Ministry was left to go about it alone and in isolation. Most MIS programs in public administration in the country are donor funded and it is not uncommon for the funding agency to dictate on the type of hardware and software the MIS program should take. The result of this has been the development of incompatible MIS programs by the different Government bodies.

Among the other challenges facing the MIS program in the public sector in Uganda is the very limited access to IT in the country as a whole. Biryabarema (2005) points out that Uganda remains awfully behind in accessing even the basic components of the IT revolution, and that the country's computer penetration stands at 0.7 percent of the population. Biryabarema compares this with South Africa and Botswana, two of the countries with the highest prevalence and use of ICT, whose email usage stands at 7 and 5 percent of the population respectively. Biryabarema (2005:17) while referring to a survey on the levels of E-Access in Uganda by the Uganda Communications Commission in 2005 discloses that computers in Uganda are concentrated amongst people in the urban areas and those earning above Shs 500,000/- per month; that 38 percent of the respondents in urban areas have never heard anything about the word Internet with the figure rising for their rural counterparts to 75 percent. Byarugaba observes that 80 percent of all existing computers in Uganda are having no Internet link.

Affordability is pointed out as the foremost barrier to more Internet access, pointing out that Uganda has not yet booked onto the Internet broadband (bigger bandwidth) to help cut down on service costs. The broadband width is not only cost effective but is faster and allows heavier traffic. Biryabarema points out that on average, the monthly bill for home connection is about Shs 85,000/- (USD50/-), which is above the means of more than two third of the population whose annual per capita income is about USD300.

Other challenges include computer crime. In a newspaper article "*99 year existence of the police force in Uganda*" it is reported that among the main challenges facing the police force today is 'white collar' crimes which include computer crimes such as accessing another person's account via computer technology.

3.8 ICT Coordinating Agency

According to UMWHC (2002), Uganda Government has since recognized the need for the establishment of the ICT Co-ordinating Agency. The ICT Co-ordinating Agency in Uganda is responsible for the implementation of the ICT development objectives, as well as act as a repository of ICT standards, registration and classification of documentation related to locally developed and imported ICT solutions. UMWHC (2002) further reports that ICT Co-ordinating Agency also assumed the responsibility of: a) fostering co-ordination of ICT initiatives in the country; b) ascertaining the ICT status in the country through regular national surveys; c) ensuring periodic review of the ICT policy to match the rapid changes in the ICT sector; d) establishing mechanisms for collaboration with the sector's implementing bodies, policy and regulatory bodies; and e) co-ordinating infrastructure rollout at national and regional level, as well as ensuring lower level co-ordination in implementing the policy, in line with the decentralization policy. It is reported that in executing its various responsibilities, ICT Co-ordinating Agency, according to UMWHC (2002) was to work with several committees as well as agencies that include: a) the national parliament; b) the cabinet sub-committee; c) Uganda Computer Society; d) the international donor community; and e) selected ministries that included Agriculture, Education, and Health.

3.9 MIS Infrastructure

3.9.1 Information Policy

The Government's commitment to the information resource is best illustrated through the information policy. Ikoja-Odongo (2002a) points out that most countries have recognised the critical importance of information in management and are designing legislation to ensure adequate access to information by the citizenry. The Uganda Government recognises the strategic role information plays in the overall development of the country, and under Article 41 of the Bill of Rights of the national Constitution, the Government guarantees freedom of access to information in possession of the state, or any other government agency to every citizen (UMWHC, 2002). The idea, according to UMWHC, is to promote openness and transparency, which are seen as fundamental attributes of democratic governance. UMWHC (2002) submits that openness and transparency, on the part of the Uganda Government, is operationalised by the "Access to Information Act of 2004". The Act according to UMWHC confers on every citizen the right to access to information in possession of the state. The Act, among other things, provides for the appointment of an Information Officer by government bodies, whose role is to create a favourable environment for easy access to information by the public (UMWHC, 2002).

Uganda's information policy can also be seen in the various Policies, Statutes, Acts and Regulations enacted by the Government which include The Communications Act, 1997; Rural Communications Development Policy, 2001; The Press and Journalist Statute, 1995; and the Electronic Media Statute, 1996. According to UMWHC (2002), ICT has led to a convergence in the working of the formerly distinct sub-sectors of the information industry that the information policy for Uganda is best analysed under the National Information and Communication Technology Policy Framework (NICTPF) (2002), popularly known as ICT Policy.

The Constitution of Uganda enacted in 1995 guarantees the right to access to information in possession of Government departments. The enabling law to this guarantee, "The Access to Information Act", was destined to come into effect on April 20, 2006 (*see* The

Daily Monitor, 03/14/2006). Critics of the Bill, however, described the Bill as a “catalogue of exceptions”, that amounted to very little in terms of concession by the state. Among other things, it did not address the pervasive culture of state bureaucracy. Furthermore, it was selective as it does not cover cabinet records and information considered prejudicial to state security and sovereignty of the state (see Larok, 2006).

3.9.2 The National Information and Communication Technology Framework

Bearing in mind the numerous bottlenecks facing the growth of ICT in the country, the Uganda Government in 2002 came up with a comprehensive ICT policy framework in the name of National Information and Communication Technology Policy Framework (NICTPF) (UMWHC, 2002). The Uganda Government, through NICTPF commits itself to championing the development and use of ICT in Uganda. According to UMWHC (2002) the Government comes up with the legal and regulatory framework to help ensure a coordinated and regulated approach to the overall development of ICT in the country. The regulatory framework aims to address numerous issues including the convergence of information and communication technologies in terms of development, delivery on single platforms, hardware and software designs, intellectual property rights, privacy, security of information, confidentiality, piracy, censorship and info-ethics, co-ordination of the various initiatives by government departments/agencies, companies, NGOs and individuals that are all participating in the ICT arena so as to maximize resource allocation and utilization; and the need to make Uganda become part of the Global Information Society. UMWHC (2002) reveals that numerous ICT related strategies are under consideration by the Government and these include:

- a) The development of a comprehensive public information and communications programme on ICT,
- b) promoting ICT awareness programs, promoting IT literacy through integrating ICT in the mainstream educational curricula,
- c) development of ICT Centres of Excellence,
- d) development of collaboration with professional bodies, business and other

organizations,

- e) establishment of a National Internet Protocol backbone network, and adequate connectivity to the Global Information Infrastructure (GII),
- f) providing Internet Points of Presence (PoP) to all district headquarters and a National Internet Exchange Point;
- g) establishing information and communication access points at all districts and sub-counties in Uganda;
- h) establishing a National Information Portal to promote dissemination and access to information in the public and private sector domain;
- i) establishing infrastructure that addresses ICT needs of crosscutting sectors like health, education, agriculture, local administration, et cetera.; and,
- j) making provisions for ICT development and sustenance in Government budgets,

According to UMWHC (2002) NICTPF is also designed to cover ICT training in the public sector. UMWHC observes that the public sector in Uganda needs new knowledge and new skills to understand, to feel at ease with, to take advantage of, to benefit from, and to operate ICT efficiently. The new information policy, according to UMWHC codifies the right of universal access by all Ugandans to public domain information. It also establishes mechanisms and structures through which various government ministries and departments will provide information at the lowest possible cost and with the fewest restrictions possible in order to maximize access to and use by all citizens. It initiates an e-government programme to digitize public domain information and make it available through Internet web sites, public library systems and other appropriate dissemination media. Furthermore, it strengthens libraries, archives and documentation centers to supplement communication channels for the development of communication. It also strengthens the utilization the of Local Council structures to facilitate information flow from the grassroots to the center and vice versa; and increasing accessibility to government information through the appointment of Government Information Officers.

3.9.3 Electronic Government

The above discussion suggests a close relation between the Ministry of Finance Planning and Economic Development and the line ministry in matters regarding the introduction of MIS. The initial effort concerning automation of public administration in Uganda was between MPS and MFPED. This was a strategic decision based on the close working relation that MFPED has with the donor community; and on recognition of the role the Ministry plays in resource allocation. UMWHC (2002), however, reports the later transfer of implementation of electronic Government from MFPED to MWTC. It may be noted that the downsizing of public administration during the 1990s led to the scrapping of several government departments and merging others. The Ministry of Information was transferred to the President's Office where it became a Directorate of Information. The tendency to look at e-Government more as a communication system rather than the management of information generated by Government led to the transfer of issues relating to e-Government Project to UMWHC. It is important to note that beginning with the 2006 Financial Year that commenced on 1st July 2006 the Government has elevated ICT to a full ministry, in the name of Ministry of Information Technology.

UMWHC (2002) reports that under the program towards the implementation of e-Government in Uganda, the National Information and Communication Technology Framework (NICTPF) established several ICT related committees that included the National ICT co-ordination committee, technical ICT committees, secretariat, and institutional ICT committees. It also reports that MWHC initiated programs relating to the holding of workshops on e-government, identification of action plan and strategy including pilot projects, and the implementation of e-government pilot projects. Again UMWHC (2002) reports that a task force has since produced a report on e-government covering several issues that include ICT infrastructure, human resource development, institutional arrangements for e-government management, research and development activities, investment in ICT development, policies and programs and on-going projects, planned or future activities SWOT analysis, possible sources of funding and action plan.

Musoke (2006) point out that according to UN Global E-government Readiness Report, 2004, Uganda leads in the EAST Africa region in e-government readiness.

3.9.4 The New Telecommunication Infrastructure

The biggest push to MIS under Government policies has been the liberalization of the telecommunications industry (see UMWHC, 2002). In view of the high demand for improved communication systems in the country, the Government, under the Communications Act of 1997 has since liberalised the communication industry in the country in order to permit private firms to invest in the communication sector. Presently, the fully liberalised telecommunication infrastructure is dominated by three major players namely, Uganda Telecom (Ltd), Celtel Uganda Ltd and MTN Uganda (Ltd) (UMWHC (2002). Below, is an account of some of the achievements attained by the three firms in Uganda so far.

3.9.4.1 Uganda Telecom Ltd (UTL)

The Uganda Telcom Limited (UTL) landline is the largest landline network in the country with a 100,000 capacity countrywide, and 55,000 customer connections (UMWHC, 2002:11). It provides a wide range of telephoning services including Basic Rate, Primary Rate ISDN Services, and 'Prepaid Landline Service' or 'Tele-save 95x.' The UTL Mobile Network covers several towns that include Kampala, Entebbe, Mukono, Lugazi, Jinja, Iganga, Tororo, Mbale, Masaka, Mbarara, and Kabale (with additional towns in-between). UMWHC (2002:11) reports that by the end of April 2002, UTL had 90,000 customers, and that it offered prepaid services, post paid services, SMS, Voice Mail and E-mail to Mobile. UMWHC (2002) also reports that the ISP Division of UTL offers dial up Internet & e-mail services (Analog Line, ISDN), dedicated Internet bandwidth (Broad band Wireless, xDSL), web hosting, domain name registration, mail hosting, and virtual private networks. The Data Division, on the other hand, are the dominant provider of data connectivity services, countrywide data network providing digital leased lines (local, national, and international); frame relay services (data packet switching); points of presence for Internet services; and professional services such as consultancy, solution design and implementation for customers.

The infrastructure deployed by UTL includes two International Gateways for the transmission of voice, data, Internet; National SDH and PDH Microwave Systems for

Inter- Exchange Transport; Optic Fibre Rings around Kampala; and PCM copper based systems for Inter-Exchange Transport. UTL provides access through GSM Mobile Switch, Analog and Digital Telephone Exchanges all over the country for landline services, and Data Nodes for a Country-wide Data Network. Lastly UTL provides access to Copper Cable Access Network in major towns, GSM base stations, Optic Fibre, and Broadband Wireless System.

3.9.4.2 MTN Uganda Limited

Regarding MTN Uganda, UMWHC (2002) reports that the company started to operate in Uganda in 1998, and that its services and products include: mobile phone, fixed line services; and international gateway. UMWHC (2002) also reveal that MTN has over 220,000 subscribers, and that its present coverage of 85 towns translates into: 65% of geographical coverage, 93% urban coverage, and 75% population coverage. Products and services available for mobile subscribers, according to UMWHC (2002), include, voice mail, call forwarding, call waiting, call holding, SMS, Short mail (Email2Mobile), SMS Info, and Roaming (66 operators in 43 destinations); and that MTN also provides fixed line service that include FWTs on the GSM Network, Wireless Local Loop (WLL) and Fibre Optic Line. It is further revealed by UMWHC that products and services available include Basic Telephony, Voice and fax digital lines, High speed dial up data service, ISDN services (First operator to offer ISDN services in East and Central Africa), Leased Lines and Internet Bandwidth. MTN owns two international gateways that provide direct connection to 260 countries. Moreover, MTN has direct links to East Africa that is Kenya and Rwanda.

3.9.4.3 Celtel Uganda Limited

UMWHC (2002) identifies Celtel Uganda Limited (Celtel) as the third mobile phone operator. According to UMWHC (2002), it is owned by Mobile Systems International (MSI) of the Netherlands, and International Finance Corporation (IFC). It is also reported by UMWHC that by March 2001 the Celtel network had reached several towns in the country, including Arua, Bombo, Bushenyi, Busia, Entebbe, Iganga, Ishaka, Jinja, Kabwohe, Kalangala, Kampala, Katikamu, Koboko, Kyazanga, Lugazi, Malaba, Masaka,

Matuga, Mbale, Mbarara, Mityana, Mpigi, Mugamba, Mukono, Njeru, Nkozi, Nsangi, Sembabule and Tororo.

3.9.4.4. Mobile Cellular Phones

According to UMWHC (2002) significant developments in the telecommunication infrastructure is made by the mobile cellular operators. UMWHC observes that the average growth rate for fixed lines has been very slow due to the inadequate spread of fixed line infrastructure. On the other hand, mobile phones provide quick deployment, ease of installation, and general mobility; and that mobile phones can offer a cost-effective way to provide service to rural and remote areas, especially those with mountainous terrain, where it is difficult to install fixed line infrastructure. UMWHC (2002) argues that mobile phone operators have brought some advantages to the users, including, lower airtime charges, increased coverage and the introduction of value added services such as voice-mail and text messaging. According to Wakabi (2006), all the three telecom service providers in Uganda are enjoying a growth rate that is above 20 per cent. Wakabi points out the two major threats faced by the three companies as the energy crisis, and the ever increasing government tax. Wakabi again points out that MTN is presently grappling with the high cost of running diesel generators at the bulk of its 300 plus base stations.

3.9.4.5 Internet Access

UMWHC (2002) reveals that by February 2002, there were more than 17 licensed Internet Service Providers (ISPs) in Uganda, with a majority of them located around the national capital, Kampala. According to UMWHC, the Internet and/or Email subscribers outside Kampala have to make "national" calls to connect to their ISP's access point, which makes these services very expensive. UMWHC reports that the use of the Internet in Uganda has grown substantially in recent years, and that most subscribers access the Internet/email by dial-up lines, mostly UTL fixed lines, but with an increasing number using broadband wireless connections. MWTC argues that there is a need to make email/internet access in all parts of the country affordable by making it accessible through local Points of Presence (POP) in all major towns in Uganda, and that this can be

attained through the installation of International Data Gateways in these towns by information service providers (UMWHC, 2002).

3.9.4.6 Tele-centres and Cyber Cafes

UMWHC (2002) reports that there is a growing number of private and NGO operated tele-Centres and cyber cafes in the country; with many of these offering a broad range of communication services including: telephone, fax, email, internet, computing, and photocopying.

3.9.4.7 VSAT International Data Gateways

According to UMWHC (2002), VSAT technology is increasingly playing a crucial role in providing Internet access to rural Uganda. UMWHC (2002) reports that the cost of VSAT terminals has dramatically dropped in recent years, whereas such terminals used to cost several tens of thousands of US Dollars, a terminal can now be purchased and installed for less than 4,000 US Dollars for small to medium internet access needs

3.10 Challenges

While MWTC has played a commendable role through the liberalisation of the communication sector, the issue of content management remains inadequately addressed. The Directorate of Information at the President's office has been more preoccupied with issues regarding censorship than promoting freedom of expression and access to information. Information in Uganda has become a strategic resource to the Government to fight the opposition. Cases of rumour-mongering, making unsubstantiated statements, false reporting, misleading the public, or releasing government secrets now dominate the work of courts in the country (see <http://www.monitor.co.ug>) Political leaders in the country today look at information more as a political weapon than a management tool. It would serve the information industry, the MIS program in particular, a lot more if the Directorate of Information was transferred to the Ministry of Public Service, or even more appropriately, became a full Ministry on its own.

Content management in the promotion of MIS in public administration requires the involvement of many institutions in the country, including the publishing firms, legal

deposit centres, information analysis centres, the public bodies themselves, private bodies, non-government organizations, and professional associations. The exercise calls for extensive supervision, guidance, monitoring as well as funding. Again, content management requires the service of a full Ministry of Information and Communication Technology to be able to execute effectively, the numerous activities as identified under NICTPF.

3.11 Summary and Relevance of the Discussion to the Study

The above discussion was an attempt to give a critical understanding of the working of the information system in public administration in Uganda. The discussion reveals that public administration in Uganda is MIS conscious, despite the fact that traditional information systems still dominate public administration.

The presentation reveals that public administration in Uganda has over the years recognised the importance of well processed data for public administrators, manifested in the establishment of documentation centres at the ministry headquarters. It is established in the study that the Government, has vigorously been pursuing the adoption of MIS in its systems. The program, however, has little to benefit from the traditional information systems of public administration. Libraries, documentation centres, as records and archival centres are all poorly managed due to limited training in specialized information processing of the information personnel. The study reveals that the Government still pays lip service to MIS developments in the country as the entire MIS programme, in relation to public administration is being funded by the international donor community. Lack of coordination in the management of MIS programmes has a direct relation with MIS funding as the MIS technology in use may vary according to funding agency. On the other hand, the study suggests that the country is reaping a lot from the liberalization of the communication sector, with the state of the art MIS infrastructure being laid down by the private sector. Strengthening MIS funding, information proficiency, training of information personnel, transparency, as well as democracy, as spelt out under the NICTPF are key issues in the future prospects of the MIS programme in public administration in the country. Chapter Four looks at the new approach to public administration and the way it is influencing the MIS program.

CHAPTER FOUR

NEW APPROACH TO PUBLIC ADMINISTRATION IN UGANDA

4.1. Introduction

Objective one of the study was to identify and describe the nature and scope of public administration in Uganda. The introduction of MIS in public administration in Uganda had direct bearing to the attempt to replace the conventional approach to public administration with what had come to be known as new public management. Uganda is among the countries that since the early 1990s, have worked towards the reinventing of public administration. This chapter begins with an attempt to analyse what is meant by scientific management, factors leading to the collapse of scientific management, the various theories under NPM, the implementation of NPM in Uganda, and finally, the relation between NPM and MIS. The objective of this chapter, therefore, is to come up with a deep understanding of the concept new public administration, which in Uganda formed the basis for adopting MIS. In Uganda, like many other countries, the practice of NPM again served as a catalyst for investing in MIS.

4.2 Background Information

4.2.1 Scientific Management

Dobuzinskis (1997) argues that since the beginning of civilisation, conventional management was well known to humankind. It was practiced through hierarchical organisational structures, characterised with top-down decision-making, unity of command, clear lines of authority and responsibility, and subordination of individual interest to the common goal. Van Riper (1995) places the successes of many Empires during the Middle Ages to the practice of scientific management manifested in bureaucratic systems and the division of labour. The emergence of the Industrial Revolution gave rise to greater understanding of scientific management that eventually led to contributions by such scholars as Max Weber and Henri Fayol. Dobuzinskis (1997) argues that the conventional approach to management gained tremendously from the works of Max Weber on the one hand, Fredrick Taylor, and Henri Fayol on the other.

Max Weber promoted the importance of unity of command, while Fredrick Taylor and Henri Fayol expounded on the importance of the division of labour, thus giving rise to specialization.

According Hughes (1998:3) bureaucratic systems that remained in operation since the 1930s believed in scientific management. Notably scientific management is a system characterised by centralised leadership, unity of command, unity of direction, clear lines of authority and responsibility, management control, subordination of individual interest to the common goal, limited span of control, departmentalisation, specialisation, economic rewards for good work, and all administrative positions carrying specific duties.

Spencer (1999) refers to scientific management as the most ideal approach to management of its time. Spencer argues that during the era of mass production, scientific management provided for easy reaction to increase in demand; whereby increase in demand would easily be met by adding workers at the bottom and filling in supervisory layers above; and that since the work is broken down into simplified tasks, new workers could be added quickly without much training.

Hughes (1998:1) points out that until the mid 1980s, the public sector was made of rigid hierarchical bureaucratic structures and distinction was made between the role of politicians and that of the administrators. While matters of policy or strategy were the preserve of the political leadership, the administrator's role was simply that of implementation. (Hughes 1998:1)

4.2.2 Scientific Management Challenged

Since the 1990s, scientific management has been criticized for leading to excessive red-tape. Red tape is defined by Rainey, Panday, and Bozeman (1995) as putting emphasis on rules, regulations and procedures that remain in force and entail a compliance burden for the organization but have no efficacy for the functional object. The challenge to scientific management arose from the increase in competition in the world market in the supply of manufactured goods witnessed during 1970s and 1980s. According to Spencer (1999), this was a result of the emergence of new industrial countries of South East Asia, with

Japan taking the lead. Spencer argues that the new industrial countries arrived with improved technology, which was more efficient, more effective, and because of limited size, more flexible. Spencer points out that while the new production environment called for structural adjustment in terms of cost reduction as well as diversification on the part of Europe, the gigantic nature of many of the historical industries coupled with the bureaucratic approach to change made it difficult for those industries to respond easily to the changing environment. Spencer further argues that soon European products were out-competed in the market. These developments triggered off an economic decline in Europe that led to the collapse of many industries, unemployment and an economic depression due to the falling demand for goods and services.

Spencer argues that scientific management is unresponsive to large-scale market changes as it lacks flexibility, and that it is designed for more predictable incremental changes on sustained growth. Additional criticism of scientific management comes from; Nguyen (2001); Stopford (2001); and Longenecker and Nykodym (1996), among others. Kenett and Waldman (1994) criticise the top-down approach by scientific management for concentrating all the authority at the top, and all the work but not the authority to the field commanders and their subordinates. Gulick (1990) describes governments as socio-biological systems rather than machines, and thus, criticises the scientific model for failing to recognize interpersonal relations as a valid source of new ideas. He points out that leaders depend for their authority on the structures of command and formal rules, but in the real world, they depend more on informal relations and/or charisma. Gulick points out that to achieve the necessary results, leaders often take short cuts, or communicate outside the formal channels of command, or choose to contact a junior officer directly after skirting a senior officer who seems uncooperative, or employ criteria other than technical merit when assessing the character of others. It is not uncommon in the real world, for people to seek informal ways around procedures that govern their work, or clients to prefer to deal with those they know can give service without demanding long *explanations or justifications*.

Stopford (2001) and Nguyen (2001) criticise the traditional model of management for downplaying the critical role of middle management by entrusting all strategic decision

making and policy formulation with top management. Nguyen contends that middle managers are in a much better position than their masters in generating useful ideas for an organization, since they are closer to day-to-day operations, customers and front line employees. Nguyen further argues that taken as a group, middle managers are more diverse than their senior counterparts in functional areas, work experience, geography, gender, and ethnic background, and as a result, their insights are more diverse. Longenecker and Nykodym (1996); and Kenett and Waldman (1994) condemn the traditional approach in its approach to performance appraisal which is based on strengths and weaknesses, without giving due consideration to the work environment.

Longenecker and Nykodym argue that performance appraisal should take into account the influence of the external factors, including information accessibility, leadership, group interactions, communication processes, and the like. The bureaucratic systems stood criticised for being slow and cumbersome, and thus inefficient in a new world of the 1980s that came to be characterised by rapid changes, lightening information technologies, tough global competition and demanding consumers. Ballard and Warner (2000) on their part argue that rapid changes in the economy on the one hand and the unrelenting demand for public services on the other have placed new pressure on all levels of government to "banish bureaucracy" and "reinvent" the public sector.

4.3 New Public Management

Balogun (1983:8) observe that though administration and management are sometimes used synonymously, they differ greatly. According to Balogun, management is about results, achievements, entrepreneurship, risk-taking, and being innovative, dynamic, adventurous, proactive, and being curious; while administration is about, stability, risk avoidance, mistake avoidance, self protecting, retroactive, and trouble fearing. The new approach to public administration is to make the institution more market oriented. This has given rise to a long list of new management theories with regard to public administration. These include result oriented management (ROM), market-based public administration, entrepreneurial government, downsizing, decentralised decision making, business process redesign, re-engineering, decentralization, deregulation, contracting out,

and managerialism. A collection of these theories represent what is being referred to as New Public Management (NPM) (Corrigan, 1996).

Kaboolian (1998:189) asserts that NPM aims to promote the three "Es" in public administration, that is, economy, efficiency and effectiveness. Kaboolian (1998:189) characterizes NPM with rationality, customer sensitivity; flexible management, as commonly found in the private sector. It is based on a market-based form of public management and as such is promoting managerial principles in public administration, thus managerialism. NPM concerns itself with management being innovative, marketing oriented, and being ready to take risks. It is against running a public body in terms of administration and control as this only represents the operational view of management. Kaboolian (1998:189) argues that NPM advocates for administrative technologies as customer service, performance based contracting, competition, market incentives, deregulation, privatisation and performance measurement.

Denhardt and Denhardt, (2001) in their contribution trace NPM origin to the work of a new breed of public service professionals consisting of economists, managers and accountants who after taking over public administration were more concerned with results than the means used to achieve the results. Dobuzinskis who attributes the origin of the concept NPM to one Minnowbrook conference in the United States in 1968, traces the same concept to the middle class taxpayers that became alarmed by the level of public spending arising from the welfare system and thus argued for more business-like efficiency in the government (Dobuzinskis, 1997).

Kearns (1994) associates NPM with administrative accountability, a system in which officials are held accountable for their actions. It is also a system in which administrative accountability makes a distinction between "general notions" of performance, consistent with societal norms and values, and formal or operational compliance with specific legal mandates.

NPM is about increased accountability from those entrusted with public administration, thus replacing a system where public service operates almost independent of society. Bardoville (2000) argues that NPM is the panacea for addressing the inefficiencies of

government and a means to ensure that governing practices become congruent with the principle of ideological constructs of globalisation. Scharitzer and Korunka (2000:941) maintain that under NPM, public administrators are put under pressure to execute their services in a more economical and citizen-oriented way.

Hughes (1998:2) describes NPM as a system based on user pay basis, quasi-markets, contracting out to foster competition, cost cutting, emphasis on output targets, limited term contracts, monetary incentives, and freedom to manage. According to Hughes, NPM is about the entrepreneurial governments promoting competition between service providers, and entrusts control to the public rather than bureaucracy, and they measure performance of their agencies focusing on outcome rather than inputs. They are driven by their goals and not by their regulations. Hughes (1998:3) goes further to point out that NPM redefines its client in public administration as customers. Hughes further argues that under NPM, public administrators are proactive rather than reactive, they put their energies into making money rather than spending it, and they decentralise authority and embrace participatory management.

NPM is about the introduction of strategic management to public administration planning. Thompson (1995) describes strategic management as management where decisions are taken and implemented in response to perceived opportunities or threats. Thompson argues that strategic management requires the ability to recognize and interpret signals (or changes) from the environment. Thompson points out that signals from the environment come into the organization all the time in numerous ways; and that it is essential that they are monitored and filtered in such a way that the important messages reach decision makers (Thompson, 1995).

Thompson (1995) equates strategic management to rational decision making and systematic approach to decision making, which according to him involves five steps, namely: a) clarification of the problem which means seeking more information about the problem than the obvious symptoms and manifestation; b) establishing clear objectives for the desired outcome; c) generating possible alternative courses of action,

assessing possible outcomes for each alternative; d) selecting a course of action by considering likely outcomes and desired objectives; and e) implementing the choice as well as monitoring and evaluating the progress. According to Thompson shortcuts are often taken due to lack of time, information, or even laziness. It is often argued that numerous factors influence decision making in public administration. Since it is almost impossible to analyse them all to enable one to identify decisions that stand to yield maximum returns, the choice of decision making is often based on the notion of being satisfactory.

On the need to introduce strategic decision making to public administration, Bryson (2004) argues that the environment in which public and nonprofit organisations operate has become increasingly uncertain, at the same time interconnected so that changes anywhere in the system reverberate unpredictably throughout the society. Public and nonprofit organisations, according to Bryson, must think, act, and learn strategically as never before. Bryson argues that strategic planning for public and non-profit organisations is based on the premise that leaders and managers of public and nonprofit organisations must be effective strategists if these organisations are to fulfill their mission, meet their mandates, satisfy their constituents and create public value in the years ahead. (Bryson, 2004:xi). Bryson argues that leaders need to exercise as much discretion as possible in the areas under their control; and that organisations that want to survive, prosper and do good and important work must respond to the challenges the world presents (Bryson, 2004:4). Bryson (2004:5) argues that the boundaries between public, private and non-profit sectors have eroded, especially with the adoption of multinational corporations, international organisations, and international alliances.

Green (1998) describes strategic management as management that embraces culture, excellence, vision, core competency, learning, empowerment, transformation, and sustainable competitive advantage. According to Green, strategic management, originally an exclusive preserve of the private sector has spread its wings into the public sector. Green observes that civil servants throughout the world have been introducing strategic management initiatives as a capstone of public sector reform and regulation.

Strategic management associates itself with numerous reforms including compulsory competitive tendering, prior options, formal market testing, efficiency audits, senior management reviews, and fundamental expenditure reviews. Thus its introduction to public administration is seen by many as a new approach to public administration.

NPM is about result-oriented management (ROM), or the measurement of performance based on results rather than input. It is management driven by goals rather than rules and regulations, treating clients as customers, being proactive as opposed to reactive, and putting emphasis on earning money rather than spending it (UMPS, 2002). NPM has its emphasis on achieving the results more cost effectively, and in this respect, ROM encourages personal judgment in the course of decision making. Wang equates ROM with object oriented approach to management.

NPM aims at promoting an enterprising culture by making agencies customer driven, and authorizing public bodies to operate independent of centralised administrative controls, while remaining answerable to political officials and the public for results. NPM through ROM is about transforming the traditional public administrative cultures to embrace flexibility, innovation, problem solving, entrepreneurship and productivity, political accountability, and promoting public agencies that do not require to report on, or defend their choice of means, as long as the means are legal.

NPM concerns itself with the decentralisation of public policy formulation to include more groups of stakeholders that include businesses, labor unions, non-profit organisations, interest groups, and ordinary citizens. In most countries today, the traditional top-down government structures have given way to the decentralization of policy interests. While the Central Government may be responsible for establishing broad principles of governance and the overall legal and political rules that frame public activity; the process and policy formulation at local level is left to the network of the various interest groups. Decentralisation, according to, Sandel (1996) represents unity in diversity, that is, accommodation of diversity without imposing a uniform will. It promotes democracy at grass roots through the improvement of communication between the general public and the upper strata of national government. This may lead to better

understanding of national policies and to improved contact between the different levels of the government. Furthermore, it contributes to more successful management of the national economic development as local governments are in a position to complete projects sooner by eliminating centralising bureaucratic institutions. This allows local officials to adjust policies to suit local needs.

Lubanga (1996) argues that political decentralisation is the cornerstone of good governance as it empowers the population to become the watchdog of transparency, participation, accountability, responsibility, efficiency and effectiveness. Lubanga argues that decentralisation creates a sense of ownership amongst the general public of the various projects embarked upon. It enhances accountability of public funds with the general public assuming the role of the watchdog and frees the local authorities from the central government's constraints and also assists in the establishment of a clear link between the payment of taxes and the provision of services they finance.

According to Nsibambi (1998) and Kisakye (1996) centralisation stifled local initiatives, contributed to misappropriation of revenues raised from local populations, promoted inefficiency in the utilisation of resources, leads to ineffectiveness in the delivery of services to local populations and lastly, provides fertile ground for the survival of dictatorship. They describe over-centralisation of the political and development process as disenfranchisement and alienation of the general population. The two view decentralization as presenting some degree of freedom of choice to the general public, giving an opportunity to the general public to focus on the local needs and opportunities. Moreover it reduces conflict with the central government level by enabling local governments to adopt policies that best suit their particular needs.

NPM is about a new approach to performance appraisal. It is about designing appraisal instruments that involve joint setting up, and agreeing on performance targets on which the staff appraisal is based. Kelly and Maes (2002) point out that many organisations are re-evaluating their methods of appraising and motivating employees, where annual employee evaluations are being replaced with performance management techniques aimed at improving administrative effectiveness. Curtis (1999) defines performance

management as an approach to management aimed at harnessing the endeavours of individual managers and workers to an organisation's strategic goals. It aims at measuring directly the contribution of individual managers and workers to the organisation's strategic goals. It defines goals and the outputs needed to achieve them, and gains the commitment of individuals or teams to achieve those outputs, whilst monitoring the outcome. Performance management, according to Curtis, involves data collection of individual performance. It requires a management intervention to set up the information system needed to monitor, supervise and establish the appraisal systems. Kearns (1994) describes performance appraisal as one form of increased accountability in nonprofit organizations including government bodies. Manfield in Kearns (1994:186) points out that accountability under the new approach to performance appraisal involves documenting answers to four main questions regarding service delivery and performance, namely: for what?; to whom?; when?; and, by what means?

NPM is against the total disregard of informal relations. It is argued, under NPM that *discussions with clients, and amongst managers at different management levels, provide management with a "gut feeling", or an instinctive understanding of how this or that organisation is performing.* Informal discussions to researchers represent an invisible college. Under NPM, the formal information system is needed to work together with the informal system in that the former is useful in providing the instinctive support to confirm suspicions.

NPM is about the devolution of decision making within organisations through a bottom-up approach. This is about taking the decision making process down to where the actual operations take place. It is analogous to participatory decision-making. It is argued by many that failure to involve lower level management in decision making is a major cause for their low level participation (Pashiardis, 1994). Using teachers as a case study, Pashiardis observes that teachers can take a greater role in the overall success of the school when they commit themselves to being active participants in the decision-making process. Prahalad and Hamel (1990) argue that collective learning, if harnessed effectively, enhances the organisation's success. They also argue that identifying, documenting, transmitting and utilising this information store requires effective

communication, involvement and a deep commitment to working across organisational boundaries.

According to Stopford (2001), NPM is about downsizing through liberalisation and restructuring in order to make public service leaner and more flexible in its response to market changes. This may involve reducing the size of the workforce, and reducing the management levels or removing certain tiers of management, and thus, flattening an organization's hierarchical structure. Stopford contends that in the past, success in business relied heavily upon controlling physical assets, whilst today the key asset is innovative satisfaction of customer needs using new varieties of quality products.

NPM, according to Spencer (1999) is about the introduction of reengineering to public administration. Reengineering, according to Spencer, is against breaking up tasks into numerous sub-tasks performed by different individuals. Instead it is for a coherent business processes using technology as the unifier. Reengineering creates a one-stop centre for the information previously scattered throughout the organisation, as well as simultaneous access to the same data in many locations. It is also about bringing together all the previous sequential tasks involved in a process under the responsibility of one worker or team of workers. As such it eliminates delays and errors that may occur when passing assignments between several workers in different departments, by having all the skills required to complete a process in one place (Spencer, 1999). Spencer describes re-engineering as a situation where many workers may see their role changed from specialists doing simplified tasks to multidimensional generalities involved in a wide range of processes; and that these generalities are equipped with expert systems technology that operates at nearly the level of highly trained experts. Thus, with reengineering, trained front-line workers are provided with sophisticated decision making capabilities through modern database technology and easy-to-use modeling and analytical tools. According to Spencer, this results in fewer managers being needed to make decisions and fewer layers of management, thus yielding flatter organisational structures. Spencer identifies additional benefits in reengineering, which include less overhead, faster customer response, and greater worker empowerment and satisfaction. On the other hand, Spencer points out that the increased span of control may lead to demand for

smart and adaptable people, thus raising the requirements for workforce entry (Spencer, 1999).

NPM also promotes social responsibility by organisations as opposed to exclusive focus on profit making. As Sandel (1996) argues, promotion of the notion of social responsibility requires knowledge of public affairs, a sense of belonging, a concern for the whole, and a moral bond with the community. Sandel calls for a civic engagement where elected officials, bureaucracies and citizens are able to exchange ideas on issues that affect them. He also calls for political leaders seeing citizens as citizens rather than clients, or voters, or customers; and thus, calls for active sharing of information between the leaders and the led; and increased emphasis of participatory policy analysis. According to Sandel people acting as citizens must assume personal responsibility for what happens in their neighborhood and their community; and those in government must be willing to listen and put the needs and values of their citizens first.

4.4 Global Approach Towards New Public Management

It may be pointed out that the new approach to public administration is a global phenomenon. Scharitzer and Korunka (2000) point out that NPM has been embraced by most governments in Europe including the United Kingdom, where it is seen as the second great wave of radical reform in the administration of the modern state; (the first being the 19th Century "Progressive Era"). According to Green, Ireland, Northern Ireland, Australia, New Zealand, Japan, and England, have all embraced strategic management (Green, 1998). In the British Commonwealth, NPM and related reforms have been introduced through Programmes, such as the efficiency unit, value for money, user fees, quality assurance, privatisation, decentralisation and corporatisation.

According to the New Partnership for Africa's Development (2003), nearly all countries in Africa have embraced public service reform and reorganization. Such countries include Burundi, Cameroon, Eriteria, Kenya, Morocco, Nigeria, South Africa, Uganda and Zimbabwe. Scholars including Bashe and Jongman (2005); Langu, (2005); Ngware and Baria (2005); Taylor (2005); Oyugi (2005); Ntagungira (2005) and Bwalya, (2005), all

report about the various effort being made toward public service reform by South Africa, Botswana, Malawi, Tanzania, Namibia, Kenya, Rwanda, and Zambia, respectively.

Mauritius in its Action Plan of 2001/03 aimed at civil service reform adopted several strategies that included: a) reengineering and restructuring the civil service for greater efficiency and effectiveness; b) improvement of asset management and financial procedures; c) strengthening of the internal support system of ministries including computerisation of the library services and registry; d) promotion of research and development; and d) institutionalization of a quality culture in public service (The New Partnership for Africa's Development, 2003).

In South Africa, decentralisation took centre stage immediately after independence in 1994. Under what came to be referred to as the Government of National Unity, a cooperative type of government consisted of three spheres, namely national, provincial and local governments (South Africa, 1997). The National Government assumed the role of supervising local governments in their role as project implementers. Local governments in South Africa are neither a subordinate of, nor independent or autonomous from national and provincial government. Instead, local governments are required to maintain an open, co-operative and constructive relationship with both provincial and national government (South Africa, 1997). This relationship calls for an improved information and communication system in the way the three spheres relate to each other.

With the establishment of the Government of National Unity, South Africa has, since 1997, remained preoccupied with the transformation of public service into an institution that is representative, coherent, transparent, efficient, effective, accountable and responsive to the needs of all (Russell and Bvuma, 2001). The Government of South Africa has remained committed to the development of a dedicated, productive and people centred public service, one staffed with public servants whose performance is maximized, and whose potential is fully developed via a comprehensive provision of appropriate and adequate training and education at all levels.

The new model of public administration, as manifested in the Public Service Statute, 1997 of South Africa aims at replacing excessive centralism of public administration with

an approach that permits departmental autonomy, and managerial responsibility within a coherent national public service. It also aims at replacing a rule-bound culture with one that is goal oriented and promoting efficiency, development and the effective delivery of service. The transformation Programme in South Africa identified six priority areas, namely, Right Sizing Public Service, Management Philosophy, Human Resource Development and Capacity Building, Affirmative Action, People First or "Batho Pele", Democratising Management of Public Service and Access to Information (South Africa, 1997).

The downsizing of public service aims at putting in place a leaner and more cost-effective public service. This is to be realized through retrenchment, contracting out of services through partnerships between government and the private sector, and more importantly through application of modern technology (South Africa 2000)

The human resource development and capacity building strategy aims at establishing a learning culture, where work practices and behavior are constantly re-appraised, and where mistakes are viewed as opportunities to learn from, and need not be concealed. The exercise involves equipping all public servants, whether workers or managers, with the necessary knowledge, skills and competencies that are required for one to carry out his, or her job effectively. This is meant to enable public servants to acquire a commitment to the goals of transformation, development of oriented professionalism, and customer care orientation (Russell and Bvuma, 2001). It also involves training Programmes for public servants based on a coherent national training strategy. The South African Management and Development Institute (SAAMDI) was invited to make a direct contribution to the restructuring process by ensuring that training Programmes for public servants corresponded with the training needs of the country. This involved the evaluation and assessment of curricula content as well as the auditing of training, professional qualifications and skills of internal staff by SAMDI.

The transformation Programme aims at putting the people first, or "Batho Pele". This is based on eight principles, namely: consultation, accessibility, service standards, courtesy, information, openness and transparency, responsiveness and value for money. Lastly, the

1997 Transformation Programme aimed at democratizing the management of public service as one way of enhancing accountability and transparency.

According to Russell and Bvuma, (2001) if the public service is to fulfill its essential mission of serving the public, and meeting their needs, it is imperative that the public has a role to play in policy evaluation and formulation. Efforts to promote public participation in decision making took several dimensions. The following are some of the dimensions worth noting:

- a) strengthening the role and capacity of parliamentary committees; extending the work of the Public Service Commission from policy making body to advisory and monitoring body so as to preserve the integrity of public administration,
- b) extending the work of the Auditor-General to include the monitoring of "consumer" satisfaction,
- c) publicising the work of the office of the Public Protector in respect of investigations and complaints received and those conducted on own initiative, and strengthening its capacity to effectively deal with them; and
- d) establishing structures and mechanisms to facilitate regular contact and communication between departments, administrations and service users, and ensuring that all members of the public have easy access to information, irrespective of their levels of literacy; and, the introduction of legislation of freedom of information (South Africa, 1997).

Management information systems in public service in South Africa are seen as a priority issue with the Government working on a strategy to ensure universal access to municipal services (South Africa, 2000). The programme demands an active support of information management and services systems, including information and communication technologies (ICT). The ability of the information system in South Africa to contribute towards an improved public service need to be seen from the context of the library and information system of the country as a whole.

4.5. Application of New Public Management in Uganda

The introduction of NPM in Uganda can be traced to the recommendations of the Public Service Review and Reorganisation Commission Report (UPSRRC), 1989 to 1990. The Uganda Rehabilitation and Development Plan 1987/88 - 1990/9 in Uganda launched by the Government in May 1987, came to the realisation that public service in Uganda had become inefficient, ineffective, irresponsible, and demoralized (UPSRRC, 1990). Uganda adopted several programmes that included the downsizing of public service through rationalisation of ministries and departments, decentralisation of power to the districts, liberalisation and divestiture of production activities, putting emphasis on result oriented management (ROM), transparency in the management of public affairs, and participatory decision making (UPSRRC, 1990). The above mentioned programmes were informed by the provisions of the Civil Service Reform Programme of 1989. Byarugaba (2005:2) argues that civil service reform in Uganda was done in phases, the first phase Civil Service Reform Programme (CSRP), from 1991 to 1997, focused on reducing the size of the public service, rationalisation of its structure, and retrenchment. According to Byarugaba this was effected by means of compulsory retirement, voluntary retrenchment, payroll cleaning, establishment control, and the abolition of the Group Employee Scheme (Byarugaba 2005:4). The Second Civil Service Reform Programme (CSRP) from 1997 to 2002 had among its programmes: management of the reform, management of information and control system, development of human resources, time management and organisational discipline, and good governance (Byarugaba 2005:3).

4.5.1 Decentralisation

Decentralisation changed the role of local governments in Uganda from mere administrative units, to managers and community mobilisers in charge of service delivery. Local governments such as the Kampala City Council that were limited to the traditional roles of licensing, graduated tax collection, physical planning, garbage collection and law enforcement, assumed additional responsibilities of planning, resource mobilisation, investment and accountability, agriculture and veterinary extension services.

Decentralisation is one Programme under NPM that has received countrywide acclaim in Uganda (UMPS, 2004). The decentralisation of policy formulation in Uganda today goes down to the general public with local councils formerly known as resistance councils being given the power to actively participate in taking decisions that affect their lives, and doing so with minimum interference from the Central Government. Much of the power is, however, exercised by District Administration through Committees such as the Finance Management Committee which is responsible for financial resource mobilisation, budgeting, accounting, financial control and expenditure and the District Service Committee (DSC) is mandated to recruit, remunerate, confirm, promote, discipline, retire and fire civil servants. DSC is also responsible for overseeing the implementation of various projects, staff performance, delivery of services, accountability and the identification of problems and opportunities for development. Other Statutory bodies include Tender Boards, Land Boards and the Public Accounts Committee.

Mugasha (1998:4) refers to the Sixth Schedule of the 1995 Constitution, which defines the functions and services, which are reserved for the central government as policy formulation, national planning, setting of national standards and regulating the execution of sector function. These functions, according to Mugasha were to be taken up by particular ministries or state organs. The Local Government Act 1997 according to Mugasha, specifies additional responsibilities for central government ministries in relation to the decentralised functions. These include monitoring, inspection, coordination, provision of technical advice or assistance, support supervision and training where necessary. Mugasha further reports, that local governments have a mandate and discretionary power over all residual functions and services (Mugasha 1998:5)

Lubanga (1997:2) observes that decentralisation in Uganda took a definite turn toward devolution when cabinet in April 1991 accepted a Memorandum entitled " Measures to Strengthen Democratic Decentralisation" which carried proposals for the devolution of powers, functions, resources and competence to local governments. Olum (2002) argues that the Local Government (Resistance Councils) Statute of 1993 introduced decentralization in the country when it catered for the principle of non-surbordination, or

prevented the higher local governments from dominating the lower local governments. Olum also points out that the decentralised system as entrenched and expanded in the 1995 Constitution, and the Local Government Act of 1997, led to a two power structure of government in Uganda, that is, of the Central Government on one hand, and Local Governments on the other. This resulted in the transfer of numerous powers, functions and responsibilities from the Central Government to Local Authorities; and the establishment of districts as corporate bodies of local governments devolving upon them powers and responsibilities in areas such as finances, legislation, planning and personnel matters. With the adoption of the decentralised system, local governments ceased to be an appendage of the Central Government responsible for implementing decisions made by the former, and became strategic planners in their own right.

District Administration in Uganda forms the pivot of local administration in the country. The District Council, which is the highest political organ under local government administration, is provided with an executive committee whose functions include: *Initiating and formulating policies; overseeing the implementation of Central Government and District Council policies; monitoring and co-ordinating activities of NGOs in the district.* District Administration is constituted of various departments such as *Finance, Education, Health, Production and Marketing, Works, Administration, Community-based services; Natural resources, and Planning unit* (UMPS, 2002)

Today, local governments in Uganda are accountable for all issues concerning service delivery in their geographical areas of jurisdiction. These include district hospitals, referral hospitals, health training schools and primary health care; primary education, feeder roads, rural water supply, urban water supply, and agricultural extension. On the other hand, the Central Government, under the new power structure, is left to manage the national external relations, security, defense and immigration as well as to formulate national policies. These include co-ordinating and setting of national standards and regulations in these areas, and the inspection, advocacy, monitoring and provision of technical advice and support to the Local Governments whilst they execute their new responsibilities

4.5.2 Result Oriented Management (ROM)

Since 1998, Uganda has been pursuing result oriented management (ROM) in public administration as one way of ensuring efficiency in public service (UMPS, 2002:20). ROM as already noted is a system that focuses on results rather than process or inputs. The concern is not on what items the money is spent but on what is achieved with the money spent. It is argued that ROM ensures that public services are well targeted, appropriate and relevant, and that they adhere to performance standards that are measurable and well publicized. ROM aims at involving the consumer/client planning to enable better service delivery and thus enhance client/customer satisfaction.

In its Financial Year report (2004/05) the Ministry of Public Service indicates that by the year 2004, all Ministries, Districts and some Urban Authorities, had developed a results framework that included a mission statement, strategic and departmental objectives, key outputs and performance indicators (UMPS, 2005:11). The results framework was increasingly being used to inform and improve strategic planning, budgeting, performance monitoring, and the evaluation (including reporting) of processes (UMPS, 2005). It is again reported that by 2003/04 an evaluation of ROM implementation had been carried out in selected Central and Local Government institutions; and that, this evaluation revealed improvements in time management, attendance at work, preparation of duty schedules, customer care and general consciousness about service delivery (UMPS, 2005:17). Byarugaba (2005:6) points out that ROM focuses on key measurable outputs, and that it involves setting targets, key outputs of performance indicators, and monitoring. Byarugaba asserts that ministries are presently applying ROM as a planning tool in the Annual Performance Plan, Policy Statement, and in Staff Appraisal; and that the Local Governments are applying ROM in their three-year development plans.

On the other hand, the Ministry of Public Service reports that the ROM Programme faces several problems. Firstly, the Programme is faced with resistance to change by some public servants. Secondly, the keeping of records and collection of data which, support transparency and accountability in the ROM implementation process remain wanting. Thirdly, the Programme suffers from inadequate resources, pointing out that this has forced both the Central and Local Governments to cut down ROM activities to a bare

minimum. It is argued that due to the limited resources, local governments, for example, are still unable to carry out sensitisation of political leaders, and that the Central Government ROM Unit (CRU) is also unable to make monitoring visits to the Local Governments to provide technical support. Lastly, the programme suffers from the slow progress towards the harmonisation of ROM with other related initiatives such as planning budgeting and performance monitoring and evaluating systems in government, resulting in these programmes running parallel instead of complementing each other. According to UMPS (2005:32) this has led to competition for scarce resources and confusion with regard to terminology. Again UMPS (2005:32) argues that the net result of these drawbacks has been a low application of ROM principles in the day to day management of the Public Service.

UPSRRC (1990:55) reports that to many public administrators in Uganda, the functions of the Government cannot be easily specified, and their control largely depends on trust. According to UPSRRC (1990:55), this explains the resistance to ROM in Uganda. UPSRRC (1990:55) argues that properly designed public policies, corporate strategic plans and Action Planning Workshops are the prerequisites for result-oriented management. Byarugaba (2005) observes that implementation of ROM requires heavy investment in terms of personnel, time and financial resources. Again Byarugaba argues that the need for public officers to change their attitude towards open and participatory staff appraisal process still poses a big challenge.

4.5.3 Performance Appraisal

Closely associated with ROM under Uganda's NPM Programme is performance appraisal. The Ministry of Public Service reports that by the end of the 2003/04 Financial Year, its staff appraisal instruments had been issued to all Ministries, Departments and Local Governments. (Uganda, Ministry of Public Service (UMPS), 2004). The Ministry further reports that the sensitization of stakeholders was yet to take place as it required heavy investment in personnel, time and financial resources. Training regarding the use of the instruments was yet to cascade through the staff in the Ministries/Departments and Local Governments; and that most people were yet to master how to set **SMART** targets. The Ministry of Public Service argues that the need for an attitude change in public

officers towards an open and participatory staff appraisal process still poses a big challenge (UMPS, 2004).

4.5.4 Downsizing Public Administration

UPSRRC (1990: 59-65) asserts that by 1990 the Government in Uganda had become the leading player in the economic and social development of the country, marked with an expanded public service. The original twelve ministries at the time of independence had multiplied up to thirty-one. This occurred with the splitting of ministries. UPSRRC cites the Ministry of Agriculture as one example, which was split into three ministries, namely, the Ministry of Animal Industry, the Ministry of Cooperatives and Marketing, and the Ministry of Environment. UPSRRC further reports that over the years, the rational principles of establishing control had been abandoned, and was replaced with the practice of creating jobs as political rewards. The size of group employees (support staff) had increased to 43 percent in the public service sector. Downsizing of public service was manifested through liberalization, privatization and retrenchment programmes. According to UMPS (1997) the retrenchment programme saw the reduction of ministries from 32 to 22 in 1992 and from 22 to 17 in 1998. It also saw the reduction of public servants as they were reduced from 310,000 to 165,000. Byarugaba (2005:3) points out that this was achieved through a combination of compulsory and voluntary retirement, payroll cleaning, and establishment control. It also included the abolition of the Group Employee Scheme. Group employees were to be reduced by more than 70 percent (UPSRRC 1990).

4.5.5 Programme Performance Budgeting

Programme Performance Budgeting (PPB) also referred to as Project management approach is a system whereby the various skills necessary for the designing and execution of a project are brought together from different Ministries as a task force. It is a system adopted by the Uganda Government in the management of selected tasks since the mid-1990s. This is contrary to the traditional approach where the organization of government is on a functional basis where each Ministry has its portfolio of responsibilities and specialized staff to execute them. It is an approach characterized by

emphasis on territorial and jurisdictional boundaries. This means that engineers are for the Ministry of Works, and educationists are for the Ministry of Education. Under PPB, the task force remains in place until the project is completed and the members then revert to their respective Ministries.

4.6 Relevance of the Discussion to the Study

There is a close relation between MIS and the various programmes adopted by public administration in Uganda under what is described as NPM. With local authorities getting involved in strategic planning, they need a modern information system to enable them to have good access to quality data that relates to strategic planning. In strategic decision making, local administrators need a good understanding of their environment, including central government policies, resources at their disposals, other opportunities available including donor funding, and the threats involved. These are demands which can only be met by a modern information system that is computer based, and set up with a good understanding of the information needs in public administration. Similarly, MIS is important in enabling the Central Government to monitor and supervise activities of different local governments. Documentation service, which, for many years has been a preserve of central government at the ministry headquarters, needs to be duplicated at the district level, and preferably upgraded to MIS Status.

UPSRRC (1990) points out that one of the problems in handling a Result Oriented Management system is the volume of data and information to be processed. UPSRRC argues that depending on the duration of the tasks and results, there will be a need for daily, weekly, quarterly and annual reports. UPSRRC further argues that the use of modern technology as a tool for ROM is one of the diverse uses and application of modern management information systems. Downsizing of public service that resulted in extensive reduction of the support staff called for automation of clerical work at the operational level, and the introduction of expert systems and artificial intelligence at management level to overcome the challenges of widened span of control.

NPM advocates (PPB) program performance budgeting where a few individuals drawn from different ministries are entrusted with the execution of a well-defined task. Under

the project approach, PPB provides room for *flexibility in decision making* by the task force. Decisions are based on circumstances rather than long term agreed processes and procedures. PPB calls for adequate empowering of the task force with quality data in their day to day decision making. PPB has its success based on the ability of the individual managers in exploiting the opportunities as may be presented by the environment. This, partly explains why most projects supported by donor countries collapse when they are handed over to recipient governments. This can be seen at the Malaria Control Department under MOH. Downsizing of public service, especially the substantial reduction of support staff also meant the need for the automation of routine operation, and the establishment of electronic mail services to ease communication. It also meant the introduction of artificial intelligence to aid individuals in areas in which they were less competent, but imposed on them as a result of widening the span of control

NPM is again based on participatory decision making. All workers in decision making positions, need to be empowered with quality data to be able to contribute effectively to the decision making process. ICT through networking of workstations can provide an effective way of information sharing without undue cost to the organization. Without MIS participatory decision making can only remain a theoretical proposition.

As public administration strives to promote participatory decision-making, the establishment of group decision support systems becomes a critical issue. GDSS makes organisational meetings more productive through increased participation. It provides an *enabling environment* for the generation of ideas and thus enables attendants to contribute without undue fear of feeling personally criticised. It also permits objective evaluation of contributions by creating an atmosphere in which an idea is evaluated on its merits rather than on the basis of the source of the idea. Laudon and Laudon argue that GDSS is an efficient way of organising the many ideas that can be generated in a brainstorming session, and evaluating those ideas within appropriate time constraints. It also provides for efficient documentation of meetings so that the attendants have as complete and organised a record of the meeting as they may be expected to continue the work on the project. It is further argued that GDSS allows for access to external information and that

it allows for the preservation of organisational memory so that those who do not attend meetings can also work on the project. Public administration in Uganda stands to save a lot on the money spent on regular meetings in terms of travel allowance, per diem, and stationery, and even staff time itself. GDSS effected through decision networks, or tele-computer conferencing and bulletin boards could go a long way in enabling public administration to perfect the conducting of participatory decision making.

As noted above, NPM appreciates the role of informal relations in management. Thus NPM appreciates the tapping of data even from sources such as letters, memos, newspapers, organisational gossips, or even from the grapevine. The organisational knowledge base includes informal internal knowledge, or 'tactic knowledge', which resides in the minds of individual employees, without being documented and is not in structured form. This means the information system must be powerful enough to capture, process, store and disseminate data from both formal and informal sources. Computer power through its multimedia capabilities as well as artificial intelligence is able to cope with almost all types of information systems today. Downsizing through the reduction of the managerial levels leads to widening the span of control, with workers assuming more responsibility, including areas where they may be less competent. Artificial intelligence, as noted above, has helped many organizations to handle some of the pecialized tasks.

According to Collan and Shuhua (2003) very large investments, a category to which public administration belongs, are projects of strategic importance. They have a long economic life cycle, and have many unknown risks and potentials, difficult to be foreseen at their initial planning stage. The nature of these ventures, according to Collan and Shuhua, may change during their long economic life and the changes can be fundamental. Such uncertainty and possibility of change in the fundamentals of large investments call for constant dynamic managerial actions over long periods of time, which translates into a proactive style of management. Collan and Shahua argue that the process of planning and implementing very large investments with a long economic life should become more of an active process of constant reviewing and updating relevant information than just a "plan, decide, and forget" situation. Collan and Shahua (2003) further argue that this

translates into a need for constant access to up-to-date information about the changes in the business environment, plus easy access to advanced analytical tools.

4.7 Summary

The above discussion shows that public administration is, indeed, undergoing transformation. The country has shifted from a centralized system to a decentralized system in policy formulation and long term planning. It has shifted from the top-down to the down-up approach in decision making. As such it is committed to a lean type of public service and favours a system that places emphasis on results rather than the simple observation of the agreed process. Public administrators are thus encouraged to be innovative, enterprising and results-conscious. It is noticeable therefore that public administration in Uganda concerns itself with regular performance appraisal at both individual and organizational level. Lastly, public administration in Uganda today is about participatory decision-making. The new approach to public administration is information prone. The local governments need modern information systems to support them in their new role as planners and policy formulators.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 Introduction

This chapter examines the purpose and objective of the study, research design, type of research, the research methods used, the validity of the research instruments used the target population, sample techniques and sample frame, and the fieldwork itself. The chapter also explains the role of the research assistants.

5.2 Research Purpose

The study's objectives were to examine the nature and structure of public administration in Uganda, the information needs in public administration, focusing on selected public bodies, the information management system's in place and the way it conforms to the MIS phenomenon, and lastly, the MIS infrastructure. The researcher hoped to come up with recommendations that would lead to a suitable MIS program for public administration in Uganda.

5.3 Research Objective

This study was meant to be an independent critical analysis of the MIS phenomenon in Uganda bearing on public administration. It was meant to lead to a set of recommendation that would give rise an ideal MIS model for public administration in Uganda. It was meant to be a scientific research. In scientific research, according to Neuman (2000) a researcher gathering data on actions and interactions, reflects on their meaning, arrives at and evaluates conclusions, and eventually forward an interpretation.

5.4 Research Design

5.4.1 Background Information

Research design may be defined as thinking creatively about the research methods to be used by a researcher in the generation of data to guide the study, its analysis and interpretation. A distinction may be made between external research designs in the form of writing a research proposal for an outside audience with the purpose of to gaining funding and internal research design primarily used in a dynamic fashion by the researcher to spell out the type of research to be undertaken. Internal research design focuses on such issues as the type of research, that is whether qualitative or quantitative, the research methods to be used, target population, scope of the study, study areas, sampling methods and techniques, data analysis and interpretation. Durling (2002) also describes research design as identification of the research methods to be used, determining the form of data collection to be used, explaining how the methods are to be used including the articulation of the problems and limits of the methods used. Durling points out that research design must aim at answering the research questions unambiguously, articulating the contribution to knowledge by explaining the generalised findings from the research program, explaining any problems and limitations of the study as a whole, as well as suggesting future work to be done. According to Durling (2002), publishing of the thesis is an important aspect of research design in as far as it provides for an enduring record which is searchable and accessible publicly, among others. The discussion below details the way the study was carried out, including the data collection methods used. Thus, in the subsequent paragraphs, the researcher presents the highlights of how this study was carried out, beginning with the research question.

5.4.2. Research Questions

Poggenpohl (2000) argues that one way of sustaining the focus of a study over a long period of time, despite the many diversions and opportunities that may present themselves along the way is through the articulation of clear research questions. For fear of the temptation to be carried away by one interesting phenomenon or another, the

researcher came up with five research questions to guide the study, and these questions were as follows:

- a. What is the form of public administration in Uganda?
- b. What are the information needs of public administration in Uganda?
- c. To what extent does the information system in public administration conform to a Management Information System?
- d. How favourable is the external environment in Uganda with regard to MIS in public administration?
- e. What MIS model may public administration adopt to realize a viable MIS program?

5.4.3 Research Methods

The study opted for the application of both the quantitative and qualitative methods mainly to satisfy the need for triangulation. Morgan and others (1996) argue that it is necessary to use both quantitative and qualitative methodologies if we really need to develop and advance logistic research, and that a given field may be underachieving if all its research is conducted within a narrow methodological domain. Quantitative research is often referred to as a positivist approach (Neuman, 2000:66). It is also called top-down or outside-in research approach which is helpful in providing a broad picture. On the other hand, qualitative research is a bottom-up, or inside-out research approach, helpful in viewing a situation at the micro-level. Today, it is popular to combine the two approaches in what is known as triangulation, or bridging the gap between two extreme view points and assuming a middle ground (Neuman, 2000:124).

There are several ways of executing triangulation. Mark (1993) identifies data triangulation, investigation triangulation, methodological triangulation and triangulation of theories. This study chose to apply quantitative and qualitative triangulation. Triangulation helps in overcoming the potential bias and sterility of single method approaches. Kigongo-Bukenya (2001) points out that triangulation is necessary because no single research method can adequately address all aspects of a problem fully.

5.4.3.1 Quantitative Approach

Quantitative research, as described by Dilanthi, et al. (2002) is based on observations that are converted into numbers which can be analysed statistically. It is characterised by a *language of variables and the relationships among variables*. Patton (1990:13) argues that quantitative research is about developing standardised measures, in which varying changes concerning the phenomenon are fitted. It is an approach used to study the characteristics of a sizeable population. Quantitative research involves a limited set of questions that can lead to variant comparisons in various ways. It is largely used to generalize a set of findings. It often involves a structured questionnaire which assists in approaching a problem in a systematic manner, thus providing a method of addressing the specific objectives scientifically. Questionnaires can be self administered, and with advancements in technology, they can be administered via a website. In quantitative research a structured or closed questionnaire is often preferred because it carries standardized questions with a common and transparent meaning, thus saving the respondents the need to make their own interpretation of a question. This is ideal for statistical analysis and interpretation.

Guided by the observations identified above, the researcher opted for the application of the quantitative approach to enable him to involve a large number of respondents. Public administration is a large, complex and heterogeneous institution. Through questionnaires the researcher was able to capture the views held by a large number of respondents representing a wide range of social groups, and at minimal cost.

5.4.3.2 Qualitative Approach

Qualitative research is important because it takes into account the context in which events occur in an attempt to describe these occurrences. According to **Bailey (1994:241-274)**, this is used as a means of determining the process in which events are embedded, and the perspectives of those participating in the events, using induction to derive possible explanations based on observed features. Bailey points out that qualitative approach is often described as a naturalistic inquiry as it minimises investigator manipulation of the

study setting, without prior constraints on what the outcome of the research will be. Bailey argues that it is an approach not tied to a single treatment or predetermined goal or outcome, but focuses on the actual operations and impact of a process, programme or intervention. Marvasti (2004) observes that survey questionnaires define situations in advance, and do not allow researchers to follow up interesting ideas. Marvasti further observes that with the survey questionnaire, elements of everyday life, including conversations, often go unrecorded, yet conversations give a fieldworker an opportunity to get a better understanding and sympathy for the informant's point of view. With qualitative research, the researcher is able to share the culture of the informant; get acquainted with the various shades of meaning that informants attach to situations (Marvasti, 2004). Dilanthi, et al. (2002) characterise the qualitative approach as exploratory, fluid and flexible, data driven and context sensitive. It caters for a deeper understanding of a participant's lived experience. Dilanthi and others point out that it is essential in the study of human experience to know how people define their situations. They further point out that qualitative research enables one to gain insight into attitudes, beliefs, motives and behaviours of the target population; whilst dealing with emotional and contextual aspects of human response. Padgett (1999) argues that the primary strength of qualitative research lies in its uniquely valuable combination of in-depth interviewing and observation. Padgett also argues that studies using qualitative methodology fare a little better in terms of their adherence to those principles that represent good practice in qualitative research.

5.4.3.2.1 Guided Interview

For this study, the qualitative approach took two forms, namely, the guided interview and the literature survey. The researcher applied the guided interview as it is known to yield large amounts of data quickly. It is also resourceful in uncovering respondents perception of various concepts and issues. According to Neuman (1997) face-to-face interviews have the highest response rates and permit the longest questionnaires.

Details of the interviewed have been attached as Appendix Six. The interviews focused on several issues, including, the comprehension, appreciation and application of NPM by

public administration, the information needs of the respondent at the work place, the evaluation of the organizational informational system by the respondent, and the evaluation of the MIS infrastructure.

While implementing the guided interview research method, the researcher remained conscious of criticisms leveled against the approach, such as, the possibility of the respondents being aware that they are being studied, and thus creating an artificial impression; the researcher and respondents developing a close relationship which may affect impartiality; and the fact that qualitative and descriptive data is difficult and time consuming. These arguments notwithstanding, it is considered by many that the naturalistic inquiry is the only valid and meaningful way to study human beings.

5.4.3.2.2 Literature Survey

Literature review helped to demonstrate the researcher's knowledge about related research and the intellectual traditions that surround and support the study. It also helped the researcher to identify the gaps in previous research, and thus make an effort of providing for ways of filling up those gaps. Neuman (2000) observes that, scientific research is the collective effort of many researchers who share their results with one another and pursue knowledge as a community. Neuman also argues that a specific research project is only a small portion of the overall process of creating knowledge, and that, today's studies build on those of yesterday. Neuman submits that researchers read studies to compare, replicate, and criticize them for weaknesses, and that literature review helps to increase the reader's confidence in a given study and helps one to place a specific problem in the bigger picture. It is further argued that literature review helps one to trace the development of an issue over time and that this helps one to compare how different theories address an issue. This then affords one the opportunity to summarise what is known at a given point in time, and also enables one to indicate how methodology varies from study to study.

In view of the observations identified above, the researcher reviewed a wide range of literature pertinent to the study. Such literature took various forms including,

monographs, scholarly journals, dissertations, government documents or policy reports, conference proceedings and institutional reports. Scholarly journal literature was popular for being current, while institutional reports were used for being focused and topical. A number of approved PhD dissertations were also used.

The researcher made good use of the Internet to access current literature in full text journals, with the Emerald Website sticking out prominently in its ability to provide excellent and current literature on 'Management Information Systems'. A good use of the library and information services of Makerere University in Uganda, and that of the University of Zululand in South Africa was made. Equally resourceful were the library and information services of the Uganda Management Institute; the Ministry of Public Service, and the Ministry of Finance, Planning and Economic Development, all of which are in Uganda. The researcher also made good use of the United States Information Service in Kampala.

5.4.4 Data collection Instruments

5.4.4.1 Survey Questionnaire

The questionnaire created for the study used both closed and open-ended questions. The questions touched on various issues including, the general background information of the respondent, such as employer, department, age group, management level, job description and information needs. They also covered the type of information system(s) in place and the ability of the information system to manage the transaction and management of data within the organisation. The questionnaire went further to examine the capacity attained in developing the information and communication technology (ICT) capacity, and the degree to which this is being utilised effectively for data and information management. Furthermore, the questionnaire endeavoured to examine the wider environment in which ICT operates, including its sustainability. A sample of the questionnaire in question is attached as Appendix 2.1

5.4.4.2 Interview Guide

The face-to-face interview is known to yield large amounts of data quickly. According to Judd and others (1991) the interview guide is one of the most costly research method. Guided interview, also known as an in-depth interview, or conversation with a purpose, is especially popular for providing room in which to seek clarification. Interviews often have a good response rate as they consist of direct questions to the respondents about their experiences, opinions, feelings and knowledge. They can be especially resourceful in uncovering the perceptions of the respondents of various concepts and issues.

For this study, the guided interview examined the following issues, among others: a) the way public administrators comprehend the NPM concept; b) the information needs of the respondents at the work place; c) the evaluation of the information system for public administration, including the evaluation of the of the MIS programme; and lastly, d) the evaluation of the strengths and weaknesses of the MIS wider environment. A sample of the interview guide is attached as Appendix 3.

5.4.5 Pre-Testing of Research Instruments

Synodinos, (2003) argues that questions containing clarity and consistence in meaning to all respondents can be instrumental in reducing bias; and well-constructed questionnaires may contribute to reduce non-response. On the other hand, poor construction may lead to erroneous conclusions. Pre-testing of the research instruments is meant to ensure that the indicators would yield the same results, irrespective of when or where they are applied. Neuman (2000) argues that research instruments need to be tested during their development and application for acceptability, feasibility, reliability, sensitivity to change and validity. Neuman further points out that reliability and validity are central issues in all scientific measurements. Reliability means dependability. It also means that the indicators are able to provide the same results each time a measurement is conducted, as long as what is being measured remains constant. Neuman (2000) submits that errors in a research exercise can be either systematic or random, whereby; systematic error refers to those arising from poor wording of questions. The researcher made an effort to

minimise systematic errors by subjecting the research instruments to a rigorous process of editing and pre-testing through a pilot study in a study carried out under the topic "Information Needs in the Education Sector in Uganda" (Matovu, 2003).

5.4.6 Pilot Study

Pilot study was based on the education sector mainly because the Ministry of Education was among the five ministries that were selected by the Government for piloting ROM, as well as MIS. Others Ministries selected by Government for piloting ROM included Ministry of Agriculture, Animal Industry and Fisheries, Ministry of Works, Transport and Communications, Ministry of Health, and the Judiciary (UMPS 2002:22). The pilot study focused primary, secondary and tertiary under the direct support of in the Central Region. The aim of the pilot study was to test the research instruments for their reliability, validity and applicability. Hagan (2000:154) argues that pre-testing is "a reconnaissance operation or exploratory testing of the instrument using subjects who are familiar to the group to be studied".

The pilot study enabled the researcher to polish the research instruments by getting rid of unnecessary repetitions, as well as improve the wording of the questions. The findings of the pilot study, (see Matovu, 2003), include the following:

- 81 per cent of the information system in the Education sector in Uganda is manual as it consists of traditional libraries, registries, archives, filing cabinets and desk drawers. The system was described as effective by 27 percent of the respondents.
- Financial related data is of the greatest demand amongst information needs followed by data regarding human resources. On the other hand, data regarding primary, adult and special education was found to be the least important.
- Economic and technological related data was found to be the most desirable regarding the external environment, and legal related data, being the least desirable.

- A large number of institutions were found to be generating data relevant to the effective management of the education sector, among which are all public and private universities in the country, teacher training institutions, technical colleges, the Uganda National Examination Board, and the Uganda National Curriculum Development Centre,
- Several international organisations were found to be producing data.
- Individual educational institutions were found to be generating management related data concerning income and expenditure, nominal role, examination results, and inventory. The same data is then disseminated through traditional practices such as printed reports, newsletters, radio, meetings, and television.
- Data storage mostly takes place in printed form. Limited data storage also takes place on the hard discs of stand alone systems as opposed to the server.
- Seventy per cent of the respondents claimed to be conversant with IT benefits.
- A good percentage of the respondents claimed to be familiar with ICT. This was possibly due to the fact that the study focused on the Central Region.
- Due to the active involvement of parents and the community at large, almost every government secondary school in the Central region has at least one computer in place. This was also the case with tertiary institutions. Only a few primary schools, mainly those that benefited from the World Bank Project concerning the spread of ICT in the Education Sector in Uganda, can claim to have at least one computer.
- The majority of schools in Uganda have no concrete plan with regard to attaining or improving their ICT status in the near future.

- The majority of the respondents had little hope in the Government contributing significantly towards the growth of ICT in the education sector in the country.

In conclusion, it can be argued that ICT is *gradually picking up in the education sector*, in that every secondary school in the Central Region is supplied with at least computer a workstation. Computers are being used for financial management and student undertakings. Managerial information needs in the education sector revolve around financial and human resource management. Library and information services are still manual and are contributing very little to the MIS phenomenon.

5.4.7 Target Population

Five public bodies formed the case study. On the one hand, were two Central Government ministries namely, the Ministry of Finance Planning and Economic Development (MFPED), and the Ministry of Health (MOH). On the other hand, were local governments of five districts, namely, the Arua Districts, Bushenyi Districts, Kampala City Council, Masaka District, Mbale District. Woodside and Wilson (2003) refer to the case study approach as an extensive examination of a phenomenon of interest, an inquiry that focuses on describing, understanding, predicting and/or controlling the individual (that is, process, person, household, organisation, group, industry, culture, or nationality. Voss and Frohlich (2002) describe case study research as one of the most powerful research methods in operations management, particularly in the development of new theory. The case study, according to Woodside and Wilson (2003), is an empirical inquiry which investigates a contemporary phenomenon within its real life context. It represents deep understanding of the actor's interactions, sentiments and behavior occurring for a specific process through time (Woodside and Wilson, 2003). The case study approach, according to Coughlan and Coughlan (2002), can also be described as action research. The two describe action research as one that is meant to yield both action outcomes.

5.4.8 Sampling

5.4.8.1 Sampling Techniques

Sampling is a powerful technique used in survey research. According to Neuman (1997), it is not always necessary to study the whole population in order to draw valid conclusions. Neuman argues that time and cost often make the desire to cover an entire population almost impossible, yet he states that *the results of a well designed, carefully executed probability sample can produce results that are equally, if not more, accurate than those produced by reaching everyone in an entire population.* The common practice in quantitative research is to get a representative sample, or a small collection of cases, from a much larger collection or population, and by studying the smaller group, produce accurate generalisations about the larger group.

Sampling in a research undertaking can be *random, non-random, or a combination of both.* Patton (1990) categorises probability sampling into random, systematic, stratified and cluster sampling techniques. Patton also categorises nonprobability sampling into convenience, quota, dimensional, purposive and snowball sampling techniques. According to Patton, most qualitative studies use the non-probability sampling technique, or purposive sampling, because of the need for in-depth information, rather than generalisations or inferences.

The term *Public Sector* includes the central government, local governments and other semi-autonomous bodies. The study was, however, limited to central and local governments. With the decentralisation of public administration in Uganda in 1995, local authorities became the focal point of social service delivery in the country with the Central Government remaining only to play a supervisory and advisory role. The study, thus covered both central and local governments.

The Central Government in Uganda is constituted of seventeen ministries out of which two ministries were selected, namely, the Ministry of Health (MOH) and the Ministry of Finance, Planning and Economic Development (MFPED). MFPED was selected due to the strategic role it plays in the allocation of resources. It is sometimes said that, "charity

begins at home". Thus, being the key player in the allocation of resources in the country, it represents the most ideal environment in MIS development in the country. Furthermore, all major decisions by the public administration in the country have a direct and indirect bearing on the planning programmes of MFPED. MOH was also selected because of its strategic placement in the well-being of the ordinary population. Furthermore, unlike the agricultural sector, the information system of the health sector in the country is yet to be fully explored.

As for local governments, out of the 56 districts that make up Uganda, only 5 were selected. Four of these, namely, Arua, Mbale, Masaka, Bushenyi were selected to give equal representation to the five regions that make up the country, namely, the Northern Region, Eastern Region, Central Region and Western Region respectively. The Kampala District, which is also the capital city, was added on the list for being the hub of economic activities in the country. Respondents, to some degree were carefully selected with the focus falling primarily on departmental heads.

5.4.8.2 Sample Size

According to Neuman (1997) a reasonable size sample is needed for a study to yield dependable results. Neuman observes that for a population of 1000, a sample ratio of 30 percent is advisable, (that is, 300 respondents), and for a population of 10,000, a sample ratio of 10 per cent is preferable, (that is, 1000 respondents). He goes further to recommend a sample ratio of 1 per cent for a population of 150,000 and above, that is, 1500 respondents; and a sample ratio of 0.025 for a population of 1 million and above, (that is, 2500 respondents) (Neuman, 2000:217). According to Neuman, the choice of what sample size to adopt must take into account the degree of accuracy required by the study and the degree of variability or diversity of the population. With Public administration in Uganda containing a total of 230,000 employees (Uganda, Ministry of Public Service, 2002), a sample size of 530 respondents, that is, (4.9 %) was considered as adequate.

5.4.8.3 Sampling Frame

Public administration in Uganda can be structured according to Public Service Commission Salary Structure into 8 management levels, that is, U1, to U8 (UMPS,2004). In constructing the sample frame, the study adopted and restructured the above structure into 4 management levels, as shown in Table 1.

Management Level	Salary Scale
Top level management	U1
Upper middle level management	U2/U3
Lower middle level management	U4/U5
Lower level management	U6/U7/U8

Table 1: Public Service Restructured into Four Management Levels

With the scaling down of public service, the structure of public administration in Uganda is less pyramidal than what was the case under the traditional approach. It has a higher concentration of personnel at the lower middle level than at the lower level. Consequently, the distribution of questionnaires was based on a 1:1:2:1 formula; whereby for any five questionnaires distributed to a government body, one questionnaire went to top level management, one to upper middle level management, two to lower middle level management and one to lower level management. The actual distribution of questionnaires to both Central and Local Governments was as depicted in Tables 2 and 3 respectively.

	MOH	MFPED	Total
Top	15	15	30
Upper Middle	15	15	30
Lower Middle	30	30	60
Lower	15	15	30
Total	75	75	150

Table 2: Sampling Frame, Central Government

	Arua	Bushenyi	Kampala	Mbale	Masaka	Total
Top	15	15	15	15	15	75
Upper Middle	15	15	15	15	15	75
Lower Middle	30	30	30	30	30	150
Lower	15	15	15	15	15	75
Total	75	75	75	75	75	375

Table 3: Sampling Frame, Local Administration

A total of 53 public administrators submitted to the guided interview. These were distributed as shown in Table 4.

Management Level	MOH	MFPED	KCC	Bshy	Arua	Msk	Mbale
Top Level	2	2	1	1	1	1	1
Upper Middle	2	2	2	2	2	2	2
Lower Middle	4	4	2	2	2	2	2
Lower	2	2	2	2	1	2	1
Total	10	10	7	7	6	7	6

Key: Bushy: Bushenyi; Msk: Masaka; KCC: Kampala City Council

Table 4: Sampling Frame: Guided Interview

5.4.9 Field Work

Attempt were made by the researcher to comply with the policy governing academic related research in Uganda. The study was registered with the University of Zululand, and Makerere University School of Post Graduate Studies. It was also registered with the National Council of Science and Technology (NCST) of Uganda, a body governing research in the country, from where permission in form of letters of introduction to the three ministries and District Authorities were obtained. Photocopies of the letters of introduction are attached as Appendix 5.

5.4.9.1 Administration of Survey Questionnaire

Nine research assistants administered the survey questionnaire to the respondents. Six of the research assistants were newly trained graduates from the EASLIS of Makerere University, all with a Bachelor's degree in Library and Information Science. These were utilised to cover the governments. Care was taken to match the research assistants to ones district of origin so as to minimise the cost of accommodation. The two Ministries, MOH and MFPED, were covered by information personnel already working with the two organisations. This was a private arrangement between the researcher and the individuals in question. The idea was to exploit the close working relationship already existing between information workers and the administrators who were also part of the respondents to the study. Research assistants were deployed with the brief to distribute the questionnaire, render all possible assistance to the respondents in the completion of the questionnaire, retrieve and return the completed in questionnaire to the researcher.

An orientation exercise was organised for the research assistants to acquaint them with the objectives of the study and the survey questionnaire. The research assistants were provided with the necessary upkeep before being deployed to the field to administer the questionnaire.

The researcher made an effort to obtain the organisational structure of all Government departments selected for the study with further attempts being made to identify in advance the departments and individuals that could be approached by the research assistants. However, the actual distribution of the questionnaires, and the execution of interviews varied according to context. While the researcher aimed at six respondents from each department, some departments, due to their limited size, could not provide the required number of respondents. In a number of cases, priority was given to members of staff found at the work place during questionnaire distribution. In most cases, the questionnaire was given out directly to each respondent to establish a personal relationship with each respondent, as well as ease the task of making follow ups. In a few cases, however, the Heads of Departments offered to distribute the questionnaire to their staff and assist in its recovery.

5.4.9.2 Administration of Face to Face Interview

Face to face interviews were carried out by the researcher himself who traversed the five districts for a period of two months. A total of 53 public administrators were interviewed, representing 0.49% of the total population of public administrators, or 10% of the number of public administrators contacted under survey the questionnaire. The distribution of those interviewed was as follows: MOH, 12; MFPEd, 12; and the Districts: Arua, 6; Bushenyi, 7; Kampala, 7; Masaka, 7 and Mbale, 6. The face-to-face interview exercise started with Kampala, then Mbale, Masaka, Bushenyi, and finally Arua.

5.5. Return of Survey Questionnaire

Out of a total of 530 survey questionnaires distributed for the study, 261, or (49.2%) questionnaires were returned duly filled, while 3 questionnaires were returned unfilled. Questionnaire return by central government was 33, or (44%) for MOH, and 18, or (24%) for MFPEd. On the other hand, questionnaire return by the local governments was as follows: Arua District 36(48%); Bushenyi District 26(34%); Kampala City Council 56(77%); Mbale District 26(34%); and Masaka District 60(80%).

Department	Questionnaire Return
Community Health	6
Nutrition	4
Clinical Services	6
Health Planning	5
Finance and Administration	8
School Health	3
Total	33

Table 5: Questionnaire Return by Department at MOH

Departments	Questionnaire Return
Treasury	5
Economic Development and Policy Research	4
Macro-economic Policy	3
Aid liaison	2
Public Administration	4
Total	18

Table 6: Questionnaire Return by Departments at MFPED

One notable thing about the number of questionnaires returned was the low response rate by MOH and MFPED when compared to that of the five districts. This was partly due to the excessive traveling of public administrators from the headquarters spending a large amount of their time in the field executing, monitoring and supervising work. Many administrators received the questionnaires from the research assistants, or through their departmental heads. A considerable number of these administrators were, however, unable to return the questionnaire in time.

The overall return of questionnaires according to gender was as follows: male 64%, female 24%, while 12% did not indicate their gender status. The overall return of questionnaires according to age group was as follows: 21 to 30, 14.1%; 31 to 40, 43.5%; 41 to 50, 29%; 51 to 60, 11.7%. The overall return of questionnaires according to management level was as follows: Top Management Level, 9.5%; Upper Middle Management Level, 38.9%; Lower Middle Management Level, 34.3%; and Lower Management Level, 13.4%.

5.6 Data Processing and Analysis

Most of the questions were coded prior to data collection in order to ease data entry and analysis. Questions were assigned numerical values, and for each question, a scale was provided that presented different options to the respondents from which they could choose accordingly. The unstructured questions were coded after questionnaire return. The different responses made by respondents were grouped and coded accordingly. Capturing data from questionnaires (data entry) was done using the Epi Info

(Epidemiological Information) Package. This was then edited to leave only reliable (complete and consistent) data used in this report. Copies of data were then exported to SPSS (Statistical Package for the Social Scientists), and Ms Excel, where convenient analyses could be carried out.

After the data had been edited, summaries of details of data were compiled using terms and variables. This was then followed by data tabulation to generate general results such as computing averages, frequencies and percentages of the entire data set. The principal aim of tabulation was to bring out the most important features of the data. Further data analysis was done using Epi Info, SPSS, Stata and Ms Excel. This involved scrutinizing and categorizing the tabulated data in order to allow the application of descriptive and inferential methods of analysis.

Descriptive analysis involved the construction of frequency distributions to responses, calculation of measures of central tendency and measures of dispersion, and determining proportions, rates and ratios. Inferential analysis involved the investigation of multiple variable correlation, employing processes such as multiple and comparative graphing. Also carried out was the analysis of whether specific relationships existed between various factors and events, and if so, of what nature. Where possible, the relationships were quantified and defined as functions, with one or more dependent variable, or in a *specific relationship to one or more independent variables*. The objectives of this process were to define relationships or dependencies which are substantial and not accidental.

In highly complex systems, to which information, communication technology belongs, events are rarely brought about by one single cause, but rather by a number of causes operating simultaneously. Therefore, in the analysis, the researcher looked for the basic causes of events.

5.7 Data Interpretation

Bearing in mind the possibility of external factors that could affect the results, tables, charts and all subsequent analyses of the data discussed in the preceding stages, were

subjected to interpretation. The researcher made an effort to come up with a textual interpretation of the statistical findings to make them easily understood.

5.8 Problems Encountered

Several problems were encountered by the researcher during the course of the study. The research team could not meet a good number of the public administrators working with MOH and MFPEd, as many of them spend a great deal of their time on fieldwork assignments. In most cases, it proved very difficult to access top level management, which was found to be extremely busy with cabinet related activities. In many of the cases, the researcher had to content himself with their personal assistants, or other senior officers.

In view of the shortcomings mentioned above, many questionnaires from the Central Government were not returned, while others were returned long after the completion of data analysis and interpretation. Similarly, face to face interviews could not be conducted with some of the key informers as the officers.

5.9 Summary to Chapter Five

This study used both the quantitative and qualitative approaches. It focused on MOH and MFPEd for central government, and the district administrations of Arua, Bushenyi, Kampala, Masaka and Mbale districts, for local administration. A total of 530 questionnaires were distributed, and a total of 53 public servants were interviewed. The return rate of duly filled questionnaire was 50 percent. Excessive travel by the personnel under the Central Government adversely affected the return of questionnaires from the Central Government. Data collected was analysed using several statistical programs to derive the findings, which were analysed accordingly.

CHAPTER SIX

PRESENTATION OF RESEARCH FINDINGS AND DATA ANALYSIS

6.1 Introduction

This chapter presents the findings of the study made using the survey questionnaire research method. Data analysis is based on the data extracted from the survey questionnaire. The survey questionnaire research method set out to examine the functional activities taking place, the transaction and management data generated, information needs, the rationale for MIS, and the viability of the infrastructure for MIS; focusing on the Ministry of Health (MOH), and the Ministry of Finance, Planning and Economic Development (MFPED), as well as, on five selected District Administrations in the country. Below is a presentation of the findings made by the researcher.

6.2 Structure of Public Administration

Objective One of the study sought to identify and describe the nature and scope of public administration in Uganda. The study sought to establish whether public administration was under a centralized, or decentralized system, or any other. Secondly, the study sought to establish the functional activities of selected departments under public administration. It may be pointed out that literature review reveal that there is a relation a between demand for MIS and the system of administration in place.

6.2.1 System of Public Administration

The study established that public administration in Uganda operates under a decentralised system in which national policy formulation is limited to the line ministries under the Central Government, and policy implementation, including service delivery, which is left

to local governments. However, local governments are permitted to pass by-laws, so long as these do not conflict with the laws passed by Central Government.

6.2.2 Functional Activities in Public Administration

Below are the functional activities as reported by respondents under the questionnaire survey.

6.2.2.1 Ministry of Finance Planning and Economic Development

The Ministry of Finance, Planning and Economic Development (MFPED) headquarters consists of several departments which include Economic Development and Policy Research Department, Macro-economic Policy Department; Treasury Department, Aid Liaison Department, Public Administration Department, Infrastructure and Social Services Department, and The Directorate Budget Department. The functional activities of the departments at MFPED headquarters that formed the focus of the study can be summarised as follows:

a. Economic Development and Policy Research

Functional activities of Economic Development and Policy Research Department include Policy evaluation, Poverty analysis, Information Dissemination, Economic policy formulation, coordination and review, Formulation, coordination and review of the economic development policy.

b. Macro-economic Policy

Among the functional activities of the Macro-economic Policy Department are: external debt management, analysis of the economy, management of fixed assets of government, rendering advice on debt strategy, and the formulation and monitoring fiscal policy.

Others include coordinating negotiations with donor agencies, fiscal policy management, external debt management, and economic analysis.

c. Treasury

The Treasury Department reported the following functional activities: managing consolidated funds, reviewing financial policies, supervising the utilisation of public funds, and the control of all Government funds. Other functional activities listed by the Treasury Department include preparation of final Government accounts, deployment of accountants to government ministries, training accountants cadre, writing treasury memoranda, follow-up on tax revenue issues, servicing external debt, processing of disbursement, processing of grants, debt management, managing government expenditure, managing government cash, keeping stock of public debt, and open bank accounts.

d. Aid Liaison

The Aid and Liaison Department listed the following as functional activities: concluding loan and grant agreements with donors, maintaining the donor databank, and disbursement and monitoring of donor support to various sectors.

e. Public Administration

The Public Administration Department identified itself with the following functional activities: policy and project analysis, budgeting, and the release of funds, preparation of budget estimates, analysis of votes and advising ministries on the position of their votes, release of funds, and policy and project analysis.

f. Infrastructure and Social Services

The Infrastructure and Social Services Department listed its functional activities as: reviewing and reporting on PAF mechanics, ensuring compliance with PEAP, identifying and budgeting for sector objectives, execution of national budget, and developing and evaluating sector plans.

g. Directorate Budget.

The Directorate Budget Department identified itself with the following functional activities: preparation of medium term expenditure framework, mobilising foreign resources, and coordination and monitoring of the National Budget.

6.2.2.2 Ministry of Health (MOH)

The Ministry of Health (MOH) also reported on several departments at its headquarters that include Reproductive Health, the Clinical Services Department, the Community Health Department, the Planning Department, and the Administration and Finance Department. The functional activities of the individual departments at MOH were reported as follows:

a. Community Health

The Community Health Department identified itself with the following activities: improving post abortion care, sensitising the public about family planning, providing HIV/STD integrative curative services, and giving support to health campaigns.

b. Planning

The Planning Department identified itself with only one activity, that is, strategic planning for the health sector.

c. Finance and Administration

The Finance and Administration Department listed the following among its functional activities: the payment of salaries and wages, and the payment of allowances. The functional activities at MOH include community health education, social mobilisation, behavioral change research, development of policies and guidelines, technical support, supervision, quality assurance, policy formulation, monitoring and evaluation, health campaigns, community health initiatives, control of disease outbreaks, capacity building, inspection and detection of public nuisances, promotion of small water sources, enforce Public Health Act, water quality surveillance, data management; emergence response, resource mobilization, general administration, and coordination of various activities relating to community health.

6.2.2.3 Local Administration

The study revealed that local administration in Uganda is decentralised at district level. The researcher established that departments under local administration vary according to district, although plans are underway to establish a uniform structure. The study also revealed that under the decentralized system of governance, local administration is responsible for the delivery of public service in the country, while the central government is limited to planning, policy formulation, monitoring, and giving advice. Functional activities at local government are thus wide ranging. Among the many activities rendered by local administration in the country are the following: policy formulation, management of sub-county plans and budgeting, implementation of local council policies and

decisions, implementation of central government programs, public relations, offering technical advice to politicians, and trade promotion. Others include: enforcing by-laws, assurance of security protection for local administration property, environmental protection, poverty eradication, mobilisation of the population towards development, promotion of rural development initiatives, improvement of welfare for marginalised groups (such as the youth), coordination of NGO/CBO activities, coordination of work in departments, control of animal diseases through curative and preventative methods, conducting environmental awareness, training of farmers in modern livestock techniques, and general livestock projects

6.3 Information Needs in Public Administration

Objective two of the study sought to explore the information needs in public administration in Uganda. Respondents were requested to state the information needs at the work place. The aim here was to establish the degree to which the information service is important to the public administrators, as individuals, and groups of individuals. It needs to be reiterated that MIS is about addressing the information needs of the requirement workers in their day-to-day decision making, and doing so in the best way possible.

Two sets of questions were put to the respondents to address the issue of information needs. Questions 11, 12, and 13 aimed at establishing the external data that features in the day-to-day decision making process of the respondent. Questions, 14 and 15, on the other hand sought to identify the internal data generated by the organizations at both transaction and management levels.

6.3.1 External Environment

External data relates to data concerning the wider environment in which the organization find itself, that include the political, economic, social, scientific and technological changes that may take place. The study sought to examine the information needs relating to the external environment with regard to the management of physical resources in use, the management of services rendered and the management of financial resources. Unfortunately, most respondents found it difficult to make a distinction between the three, that is, the information needs for management of the physical resources, the information needs for management of financial resources, and the information needs for management of service rendered. Instead, the majority chose to respond to question 11, and chose to say "as above" for questions 12 and 13. Others simply chose to leave the question 12 and 13 as blank. In view of the above, the researcher opted for generation of a simple list of the information needs of the three government bodies. Having failed to break the information needs into the three categories relating to financial, physical resource and service management, the study opted for the production of a simple list of the information needs as pointed out by the respondents. Figures 6, 7 and 8 provide a comparative analysis of the degree to which the various types of data are sought by the administrators.

6.3.1.1 Ministry of Health

Findings from the survey questionnaires reveal that financial management, capacity building, annual reports, service delivery and HIV/AIDS, in a decreasing order, are the most widely sought data at MOH. As figure 3 illustrates, other widely sought data includes technical cooperation, service utilisation, health inspection, epidemiology, research advances, financial release, the exchange rate, the environment, and community health, listed again in a decreasing order. Still, other types of data on demand at MOH

include school health, health education, consumer prices, the blood bank, accounting and auditing, and banking institutions. The amount of emphasis placed on accountability under NPM has made data regarding financial activities an important issue in public administration. International donor funding, presently the main source of funding at MOH, is tied to specific projects. Funds are released in installments and before a new release is made, each department must account for funds previously released.

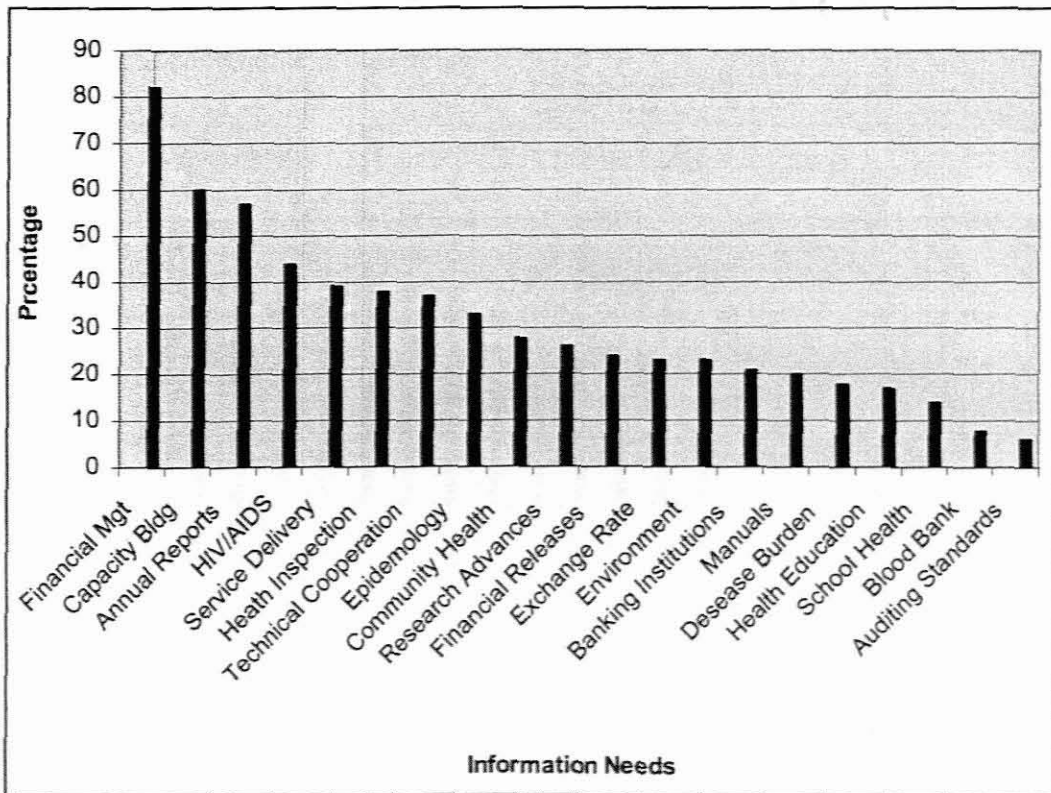


Figure 3: Information Needs, MOH (Survey Questionnaire)

6.3.1.2 Ministry of Finance Planning and Economic Development

Information needs by MFPED as presented in figure 4, indicate that information regarding national policies by the Central Government is the most sought after data. This is followed by data concerning international donor funding, poverty, financial management, economic indicators, capital grants, financial release, training programs, fiscal policy, public debt, procurement, external debt, and project management, listed in the decreasing order of importance. On the lower end of the scale, information needs include data relating to office equipment, memos, the internet, NGOs, accounting methods and conference proceedings.

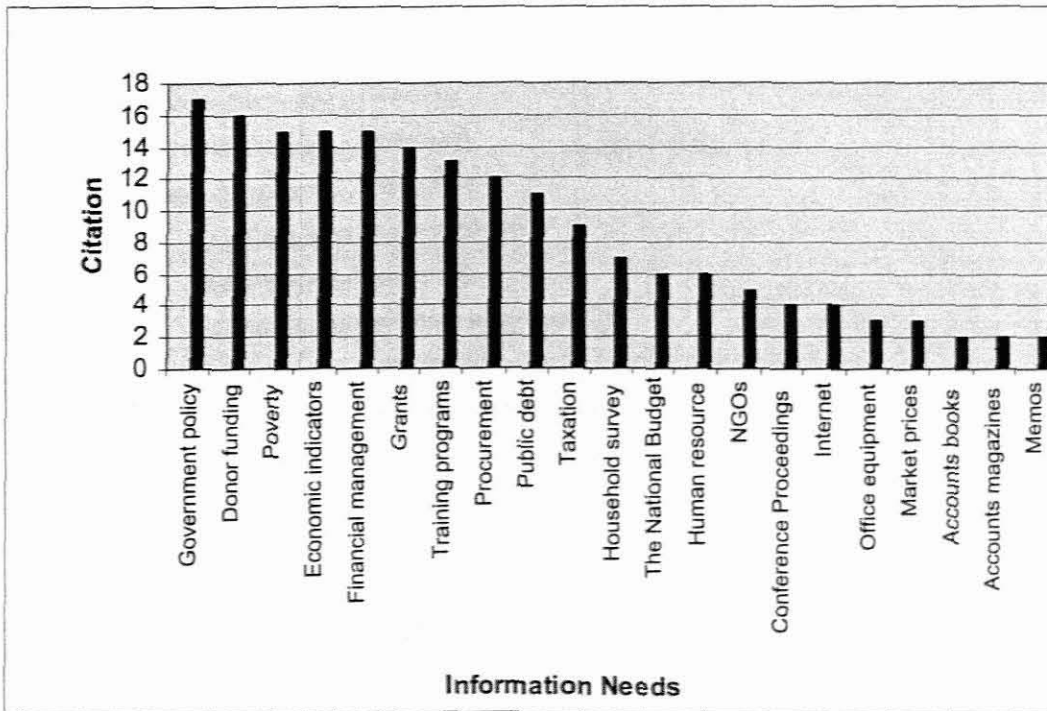


Figure 4: Information Needs, MFPED (Survey Questionnaire)

6.3.1.3 Local Government

The most sought after data by local governments, as indicated in figure 5, is data concerning central government policy statements, financial management, health issues, local administration, sanitation, and community mobilisation. At the lower end of the scale, the information needs of local governments relate to agricultural production, law and order, appropriate technology, research advances, education, taxation and physical planning. Though Uganda is an agricultural country, the agricultural practices are mainly of subsistence type rather than commercial farming. The current Government has often been accused of investing more in political mobilisation than in the production of goods and services. This explains the high demand for data concerning local administration.

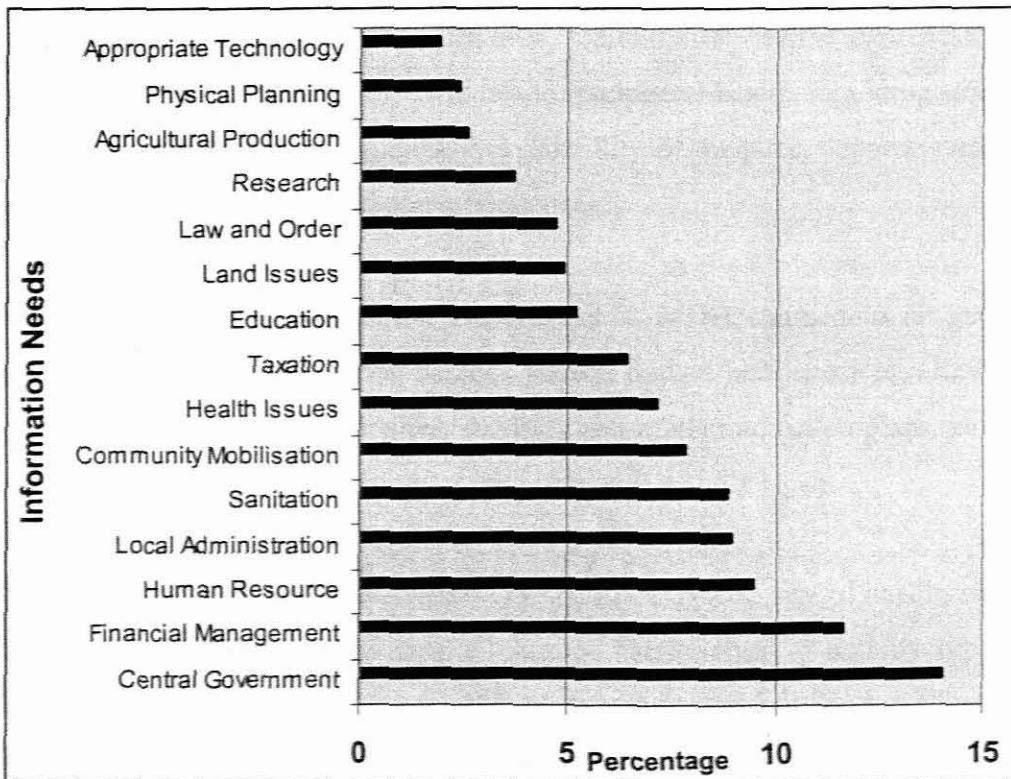


Figure 5: Information Needs, Local Government (Survey Questionnaire)

6.3.2 Internal Environment

Data generated by individual firms in public administration constitute an important part of the information needs of public administration as a whole. In trying to establish the information needs for in public administration, the study made an attempt to establish the range of data produced by the public sector itself. Below, is a catalogue of data produced by the public sector in Uganda, as reported by the respondents.

6.3.2.1 Data Generation by MOH

The Community Health Department claimed to be generating data such as accountability reports, memorandums of understanding, research reports, minutes of meetings, activity reports, annual reports, latrine coverage, environmental health resource personnel, training institutions, trainees, community health awareness, community behavior, community attitudes, child health, peripheral health, (e.g. drug stock), technical personnel, availability of equipment, availability of supplies, support staff, monitoring and evaluation, IEC data, and correspondences.

The Finance and Administration Department at MOH claimed to be generating data relating to expenditure returns, balance sheets, budget performances, allowance claims, personnel claims, suppliers claims, monthly reconciliation, action plans, storing records, registry records, accounts records, work plans, and activity reports.

However, not much data was claimed by clinical services, school health, nutritional and reproductive departments, as they all limited them selves to activity reports. Clinical Services, for example, listed the number of trainee doctors only on top of activity reports. The Planning Department was, however, more responsive, as it listed health sector performance, health unit summaries, PHC monitoring data, HSSP indicators, outpatients,

DPT, Financial management, compliance, trend indicators. The Information Unit also listed data such as rules and guidelines, newsletters, bulletins, HMIS, health sector strategic plan indicators,

6.3.2.2 Data Generation by MFPED

The Macroeconomic Policy Department claimed to be generating data such as cash flows, debt service, national accounts, budget, mid-term expenditure framework, macro-economic frameworks, activity reports, work plans, performance reports, and statutory operations. The Treasury Department claimed to generate data that include: the quarterly statement of accounts, draft budget estimates, quarterly reports on funds received, consolidation of government accounts, disbursements per loan, active loans, repayment of loans, total foreign debt, disbursed loans, the main donors, grants disbursed, cash releases, loan repayments made, quarterly grants, quarterly accounts, total principal and interest paid, revenue received by the Uganda Consolidated Fund, release of funds to various government departments, cheques printed from Uganda Computer Services, financial internal controls, Appraisal of funds management, letters. The Public Administration Department, also claimed to be generating data such as budget operation database, donor funded activities, recurrent budget activities, administrative policy activities, performance reports, revised estimates for ministries, release ceilings for each quarter, monthly releases, budget performance reports, mid-term expenditure reports, framework ceilings, budget performance by ministries.

Other departments at MFPED did not claim much data being generated. The Aid Liaison Department, for example, only claimed donor lists and activities, activity reports, and concluded agreements. The Economic Development and Policy Research claimed to be producing economic policy reviews, policy research reports, and poverty data. The

Infrastructure and Social Services Department claimed to be generating only data such as sector expenditure reports, budget drafts, work plans, quarterly reports. Lastly, the Directorate of Budget Department could only claim to be generating activity reports and budget drafts.

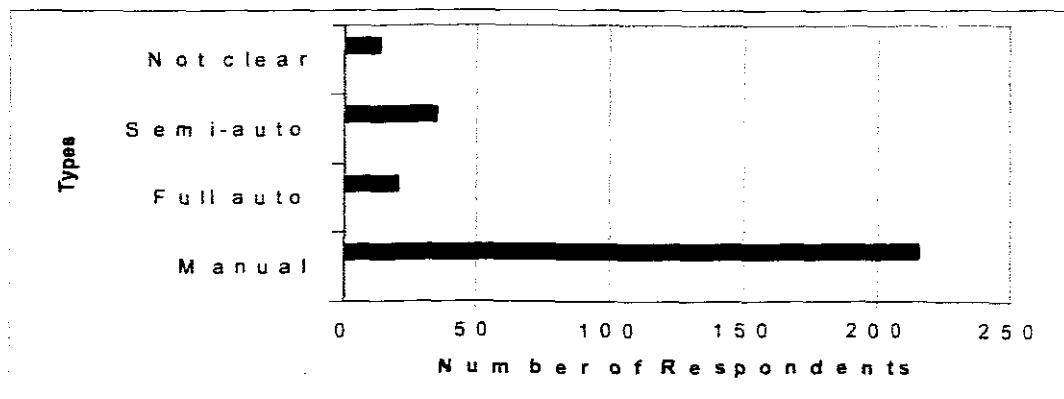
6.4 Evaluation of the Data Management System

Objective three of the study sought to examine and evaluate the quality of the information system under public administration, with a view to establish the rationale for MIS. It sought to establish the degree to which the obtaining information system conforms to a Management Information System. Five questions were put to the respondents in relation to the above objective. These were questions 16, 17, 18, 19 and 20.

6.4.1 Data Processing System

Question 16 on the questionnaire required the respondents to spell out the type of data management system that is dominating in one's department. They were required to indicate whether the system is manual, semi automated, or fully automated. Response to this query suggested that the data management system at both MOH and MFPED is partly manual and partly automated; while that of local government is completely manual. As figure 6 suggests, all of the respondents when put together, only 20 (6%) claimed to be working under a fully automated information system, while 34 (21%) claimed to be using a semi automated information system. It is, however, also important to note that 13 of the respondents could not tell whether the information system was manual, semi-automated, or fully automated.

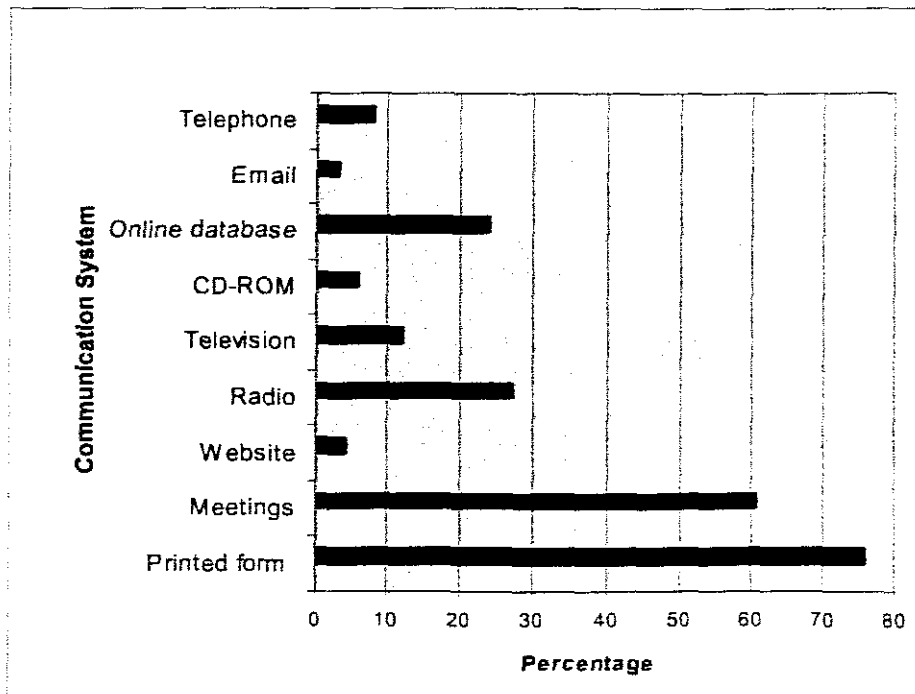
Figure 6: Data management System in Use



6.4.2 Data Communication Systems

Question 17 sought to establish the forms in which data is communicated to end-users in public administration. Presented with a list of different ways to communicate data, respondents were asked to indicate the degree to which the different methods were being applied by the department. The response to the above question as summarised in figure 7 suggested that 198 (75.8%) respondents rely on printed form for data transfer. Others were cited as follows: oral including departmental meetings 158 (60.5%) respondents, radio service 71 (27.2%) and television 31 (11.8%). Modern methods of data transfer, which are a characteristic of MIS featured poorly. Online databases, for example, were cited by 62 (23.7%), website by 11(4.2%), electronic mail by 8 (3%), CD-ROM by 15 (5.7%), and traditional telephone by 21 (8%). It must be emphasized that NPM, among other things, is about transparency, openness and participatory decision making, a requirement that leads to large meetings being conducted regularly and for long hours. The traditional methods of data and information transfer can be very costly to an organization with regard to time. Modern organisations have found an escape through teleconferencing, online database and website to keep workers informed of latest developments, whilst soliciting for their input at the same time.

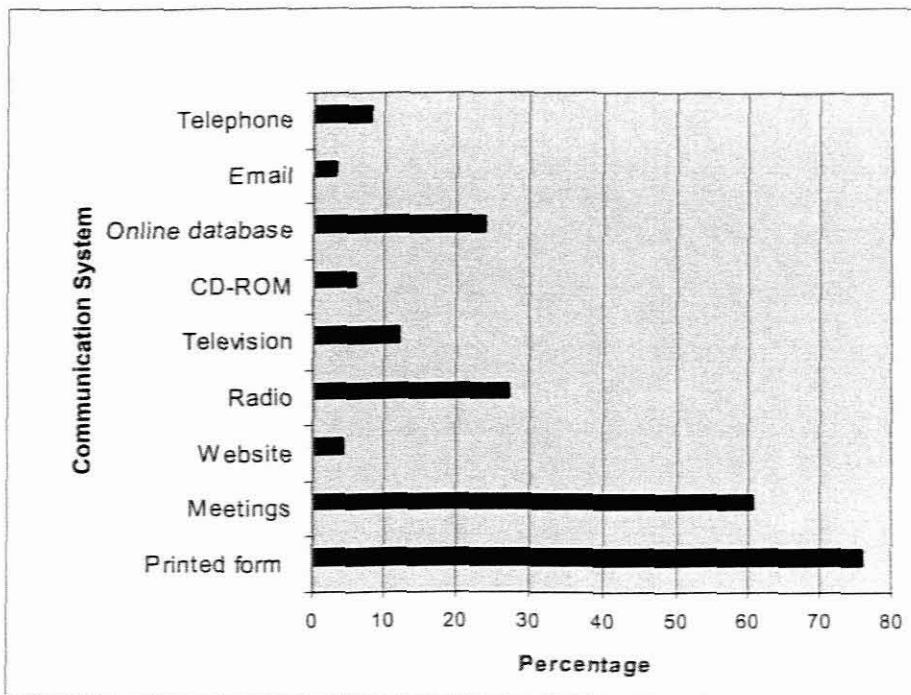
Figure 7: Data Communication Systems in Use



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Figure 7: Data Communication Systems in Use



6.4.3. Computer usage

In trying again to examine the data management system, questionnaire survey under question 18 sought to examine the way computers available to public administration are being utilised. MIS is about effective data collection, storage and dissemination. It is about information repackaging, and presentation of data to decision makers in a format that is amenable to further analysis. It is about establishing in-house databases able to report quality data to decision makers in a customer tailored manner.

Figure 8 presents a summary of the response to computer usage. The figure reveal that computer usage is predominantly confined to word processing, with 179 (69%) of the respondents claiming as such. This is followed by spreadsheet 91(34.8%), database management 80(30.6%), and email service 32 (12.2%). Other forms of computer usage include surfing 18 (6.8%); graphic design 18 (6.9%), desk-top publishing 30 (11.4%), modeling 4 (1.5%), teleconferencing 12 (4.6%), real-time processing 5 (1.9%); and voice mail 9 (3.4%) The report on computer usage suggests that MIS in public administration is far from being developed. This is so because while database construction is about promoting the interests of management, while using computers for word-processing, or even spreadsheets, is often for advancement.

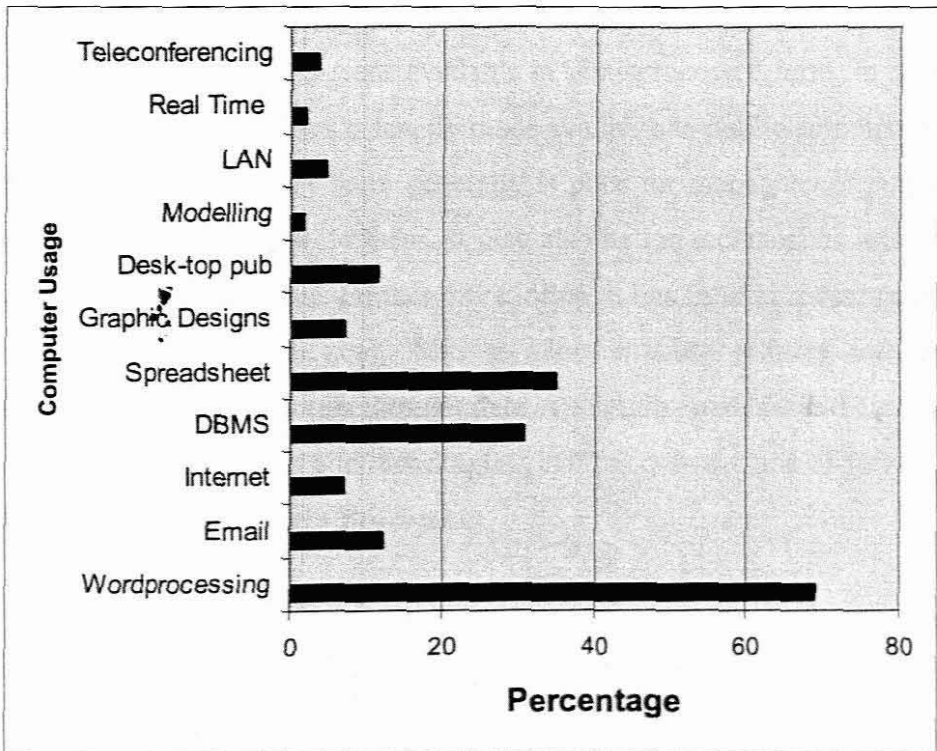


Figure 8: Computer Usage

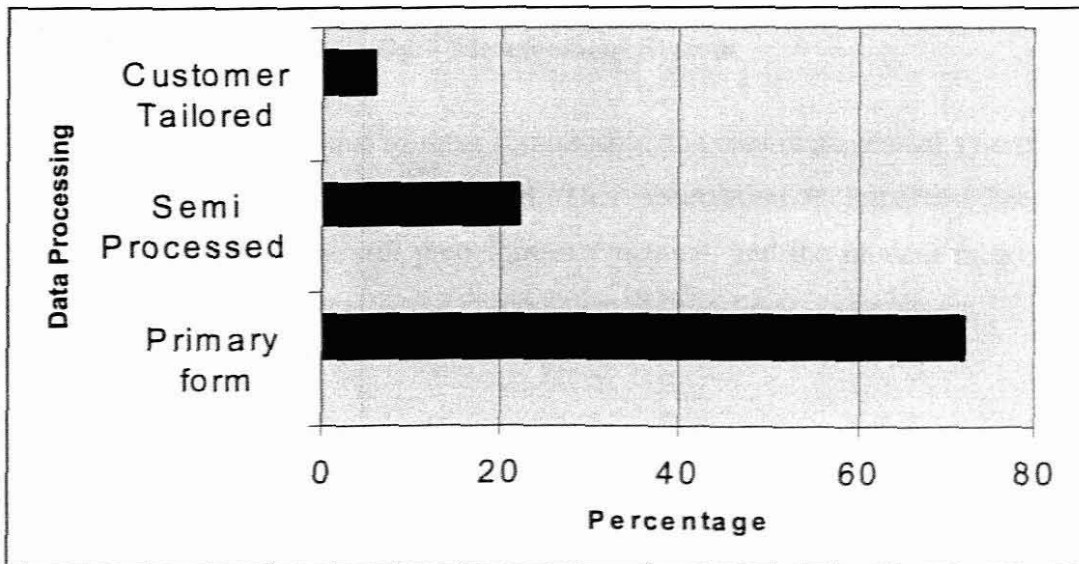
Issues such as modeling and graphic presentation of data are critical to MIS. Modeling makes handling complex decisions relatively easy. Equally important is real time processing for timely access to data. In the absence of real-time processing, important decisions may be deferred. Teleconferencing, on its part, enhances group decision making. Without LAN, data transfer within and between departments becomes less efficient, and so does the sharing of resources. In other words the hurdles that the MIS program needs to overcome are numerous and extremely fundamental.

6.4.4 Level of Data Processing

Question 19 of the survey questionnaire asked the respondents about the degree to which data processing takes place before it is made available to end users for decision making

purposes. As figure 9 suggests, customer-tailored data is almost non-existent in form; and only a limited amount is made available in semi-processed form. In other words, data for decision making purposes is largely made available to public administrators in its primary form. Data in a primary form generally is poor for management purposes as it is often bulky, and has a very wide focus. It may also be too technical as it is often the case with specialized presentations. Further more, often, it has limited access points, thus rendering data retrieval fairly difficult. MIS is about making primary information more user friendly to decision makers through data evaluation, analysis and consolidation. It is also about data restructuring and repackaging, such as construction of factual databases.

Figure 9: Levels of Data Processing



6.4.5 Evaluation of the Data Quality

Question 20 of the survey questionnaire required respondents to make their own evaluation of the data management system at the work place. Such evaluation rested on considering a check list of issues such as data reliability, timelines, and ease of use,

adequacy, currency, sharable, and protection from unauthorised use. Respondents were asked to grade the information system using labels such as excellent, good, poor and very poor. Table 8 reports the outcome from the evaluation exercise:

Data management	Excellent	Good	Poor	Total
Updating of data	25(10%)	137(56%)	83(34%)	245(100%)
Data reliability	24(10%)	155(64%)	63(26%)	242(100%)
Data timeliness	16(7%)	129(53%)	97(40%)	242(100%)
Data retrieval system	24(10%)	118(48%)	100(40%)	247(100%)
Data adequacy	27(11%)	122(49%)	99(40%)	248(100%)
Data currency	29(12%)	131(54%)	84(34%)	244(100%)
Protecting data from loss	27(11%)	101(42%)	112(46%)	240(100%)
Data sharing	26(11%)	119(50%)	94(39%)	239(100%)
Protecting data from falsification	43(18%)	78(34%)	111(48%)	232(100%)

Table 7: Evaluation of the Data Management System

Table 8 above suggests that to most respondents, the data management system in public administration is satisfactory, or good. This observation is important because, data management systems are still predominantly manual, and the modern methods of data collection, processing, storage and communication are almost non-existent.

6.5 MIS Infrastructure

Objective four of the study sought to examine the infrastructure needed to ensure the effective working of MIS. Having established the suitable MIS infrastructure as it has been professed by various scholars through review of literature, the study, sought to examine the suitability of the MIS infrastructure with regard to public administration in Uganda. Examination of MIS infrastructure focused on several issues including, computer stock, computer accessories, computer literacy, IT structure, and IT utilization.

6.5.1 Computer Stock

In trying to examine the MIS infrastructure, question 21 of the study sought to examine the degree to which computers are accessible to public administrators at the workplace. Of the 33 public administrators at MOH who responded to the question concerning computer stock, 2 (7.4%) did not have any computers in their departments, 21 (77.7%) have 1 to 10 computers in their department, 3 (11.1%) have 11 to 20 computers in their department and 1 (2.7%) claimed to have more than 20 in their department. At MFPED, of the 18 administrators who responded to the question, every body had at least one computer in their department. 13 (75%) claimed to have 1 to 10 computers in their department, while 5 (25%) claimed to have 11 to 20 computers.

Local Administration painted a picture that is in big contrast with the Central Government. At Arua District, 13 or (36%) respondents claimed that they do not even have one computer in the department. At Bushenyi, respondents who made a similar claim were 7 or (30%); KCC, it was 25 or (41%) respondents. Mbale this was 15, or (60%) respondents; and at Masaka, 21 or (35.5%) respondents. In total, 81 respondents claimed to have no computers at all in their departments. Only 7 respondents claimed to have more than 20 computers in their department, and these were distributed as follows.

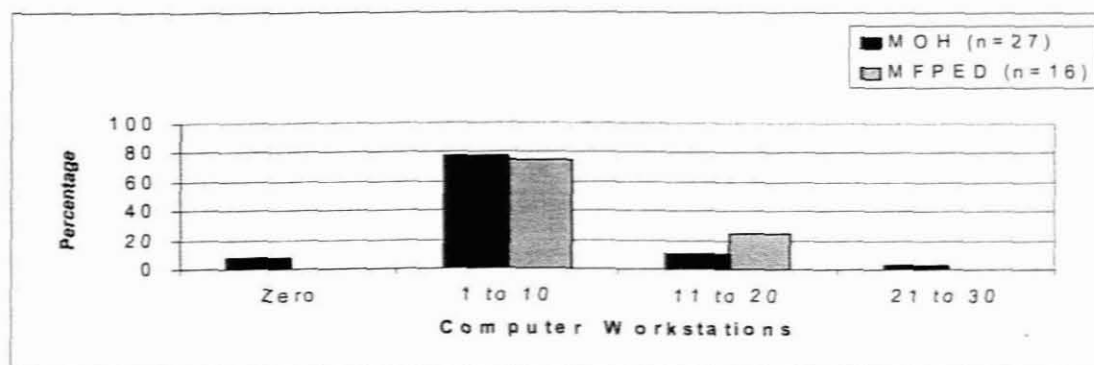


Figure 10: Computer Stock

Those claiming to have more than 20 computers in their department came from Busyenyi, 1 (4.3%); Kampala, 3 (5%), Mbale, 2 (4%) and Masaka, 1 (1.6%). The study thus revealed that Central Administration is more endowed with computers than Local Administration. Figure 10 also helps to reveal that computers are more evenly distributed at MFPED than at MOH.

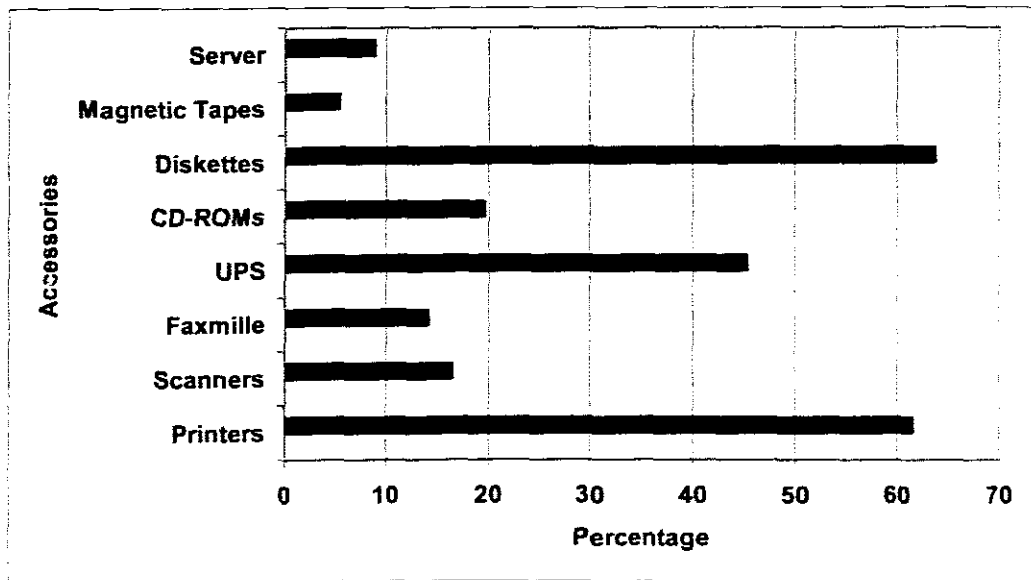


Figure 11: Availability of Computer Accessories

6.5.2 Computer Accessories

A complete IT system involves the use of a wide range of accessories which include data input, storage and output devices. Question 22 of the study thus sought to examine user satisfaction with the supply of various computer accessories. Respondents were supplied with a list of computer accessories and were requested to indicate whether these accessories were easily accessible, not easily accessible or not available. To ease data presentation, easily accessible and accessible were renamed satisfactory; and not

accessible and not available were renamed unsatisfactory. The supply of various accessories, measured in terms of respondents who responded claimed this to be 'satisfactory' was as follows: printing services 171(65.5%), scanner 43(16.4%); facsimile machine 37(14.1%), uninterrupted power supply (UPS) 118(45.2%), CD-ROM 51(19.5%), diskettes 166(63.6%), magnetic tapes 14(5.3%), server 33(12.6%). (see also figure 11)

6.5.3 Net Working

One important feature of MIS program is computer networking. This facilitates the easy flow of data within and between organisations. All public bodies constantly exchange data with other organisations within and outside the public sector. Developments in one department of public administration impact differently on decision making of public administration of other departments. Question 23 of the survey questionnaire examined the IT structure supporting public administration in Uganda. This could be a stand alone computer system, PCs networked to a server, a minicomputer system, or a mainframe system. Networking of computers facilitates online data transfer. It also permits sharing of computer resources and accessories. Networking of the computer system thus promotes effective and efficient MIS.

The study revealed that the IT structure in public administration is basically a stand alone computer system. Figure12 reveals that 145 or (68%) of the computer system measured in terms of respondents are stand alone systems. PC to PC networking account for 33, or (16%); minicomputer networking account for 12, or (6%); and mainframe computer systems account for 21(10%). The above finding suggests that 68 percent of the computer resource is unable to share data, nor is it able to share computer resources online. It means that public administrators have to use the crude methods of data transfer,

such as, working with printed copies, or copying data and files on to diskette or compact disc.

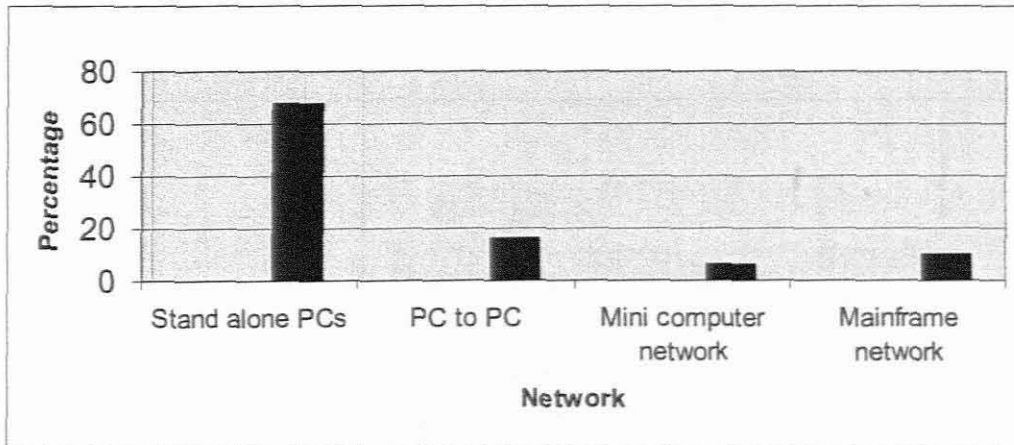


Figure 12: Computer Networking

6.5.4 Perception of ICT Benefits

While examining MIS infrastructure, it was found necessary to examine the perception of ICT benefits by public administrators. MIS is capital intensive, calling for heavy investment in ICT. Expenditure on ICT takes place at both implementation and maintenance levels. The sustainability of MIS involves sizeable capital outlay. This is again dependant on how public administrators perceive the benefits of ICT. **Parker (1992:50)**, for example argues that a computer is able to sort data at speeds measured in micro seconds. Under question 25, the questionnaire survey research method provided respondents with a list of capabilities regarding ICT perceived to be positive features. Respondents were asked to express themselves about each feature on whether they strongly agree, or simply agree, or are uncertain, or disagree. However, for the purposes of simplifying data presentation, those in the strongly agree category was combined with

those in the agree category to represent 'agree'. Those who expressed agree were as follows: increased data security 202 (77.3%), timeliness 183 (70.1%), reliability 177 (67.8%), data currency 142 (54.4%) data accuracy 189 (72.4%) data sharing capabilities 176 (67.4%) communication capabilities 166 (63.6%) manipulation capabilities 155 (59.3%) and data storage capacities 179 (68.5%) (see also Figure 13).

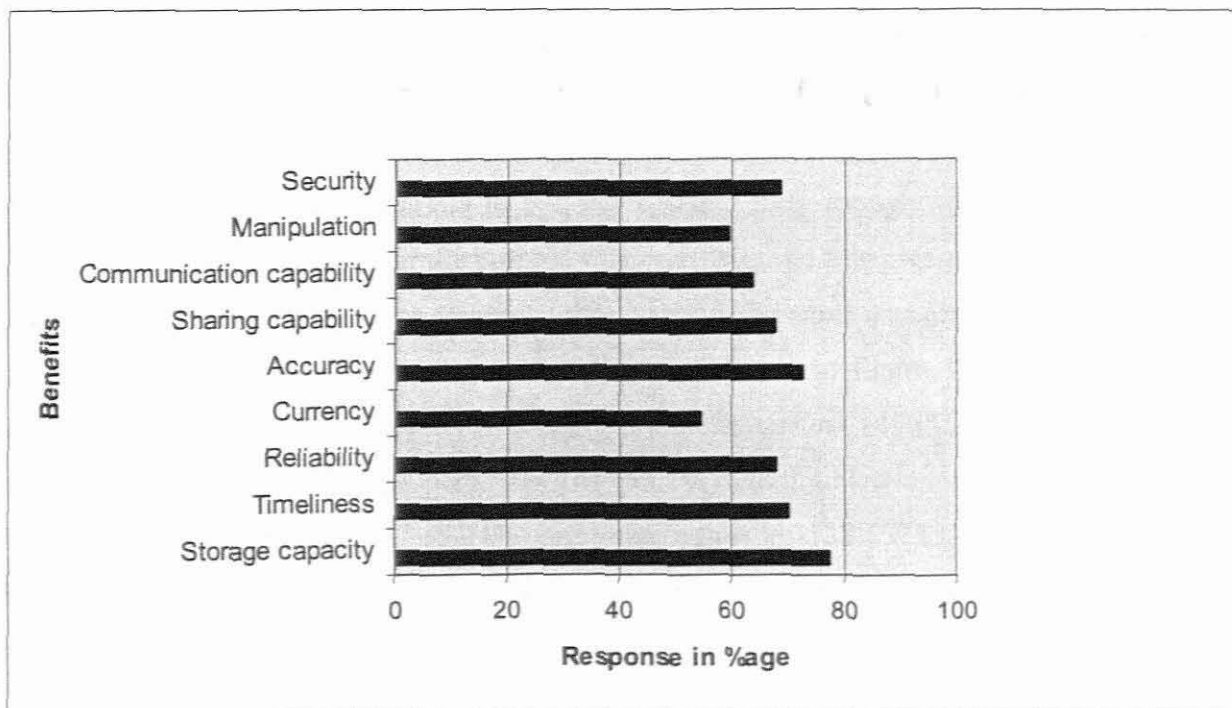


Figure 13: Perception of ICT Benefits

The finding with regard to the perception of ICT benefits by public administrators suggests a good appreciation of ICT in data management through out public administration. Thus, the need for increased awareness of ICT to ensure increased commitment from public administrators is no longer an issue. The problem that stems

from inadequate funding of ICT by public administration springs from factors other than inadequate awareness or appreciation of ICT.

6.5.5 Perception of ICT Hindrances

Much as public administrators may be well sensitised about ICT benefits, promotion of ICT may still face hindrances such as high maintenance cost, high recurring expenditure, among others. The study, under question 26 sought to examine the degree to which public administrators in Uganda assess the impact of such issues. Respondents were provided with a list of hindrances and asked to indicate whether they strongly agree, agree, are uncertain or disagree. Again, for the purpose of simplifying the data presentation, those in the strongly agree category were combined with those in the agree category. The findings of the study in terms of 'agree' were as follows as shown in figure 14. This can be summarised as follows: initial cost 126 (48%); maintenance cost 145 (55.5%), recurring expenditure 125 (47.8%) skilled personnel 144 (55.1%), communication infrastructure 52 (19.9%) limited awareness 137 (52.4%) and other priorities 138 (52.8%), management hostility 142 (54.4%) data security 81 (31%); and data confidentiality 68 (26%).

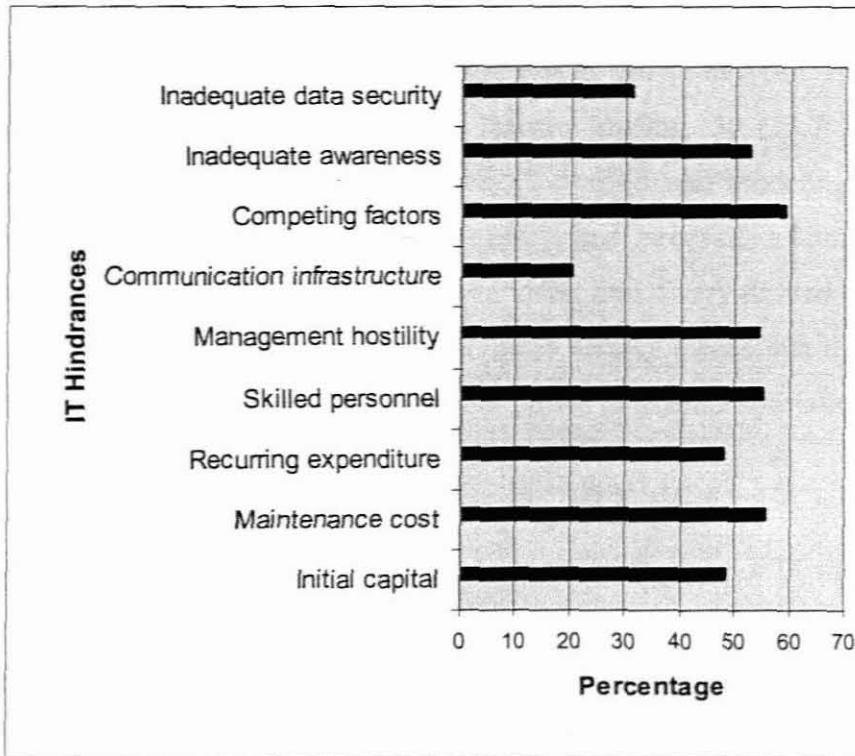


Figure 14: Perception of IT Hindrances

6.5.6 Computer Competence

While still looking at MIS infrastructure, the study looked into issues regarding computer competence. Computer competence means familiar with a given computer operation. Optimal exploitation of MIS can easily be hampered by limited computer competency on the part of end-users. Indeed, some MIS operations, such as modeling demand a high level of computer competence. Question 26 asked respondents to indicate their level of

computer competence in various computer operations. They were required to indicate whether they considered themselves very good, good, poor or very poor.

Again, for the purpose of easing data presentation, very good and good were combined to represent good, while poor and very poor were combined to represent poor. Claim of those who considered themselves good was as shown in figure 15: word processing, 169 (64.7%); spreadsheet, 99 (37.9%); Internet surfing, 36 (13.7%); Email, 37 (14.1%); Website 22 (16.9%), Graphic design, 12 (4.6%); and Modeling, 7 (2.7%) Therefore, while most public administrators can word process, a limited number can use spreadsheets, the internet and email services; and a very limited number claimed having knowledge of modeling. Limited computer literacy means that the public administration can not take full advantage of computer power to execute specialised data analysis.

6.5.7 Training in Information Technology

The study, under question 27 sought to examine the type of IT training ever taken by the respondents (whether this was in-service, pre-service, or on job training). As indicated in Figure 16, most IT training undertaken by public administrators takes place on the job, that is, 133(39.9%) respondents. Other readings were as follows: in-service 99 (35%); and pre-service training 62(21.9%). 21 or 7.4% claimed to have had no training at all.

Figure 15: Computer Competence

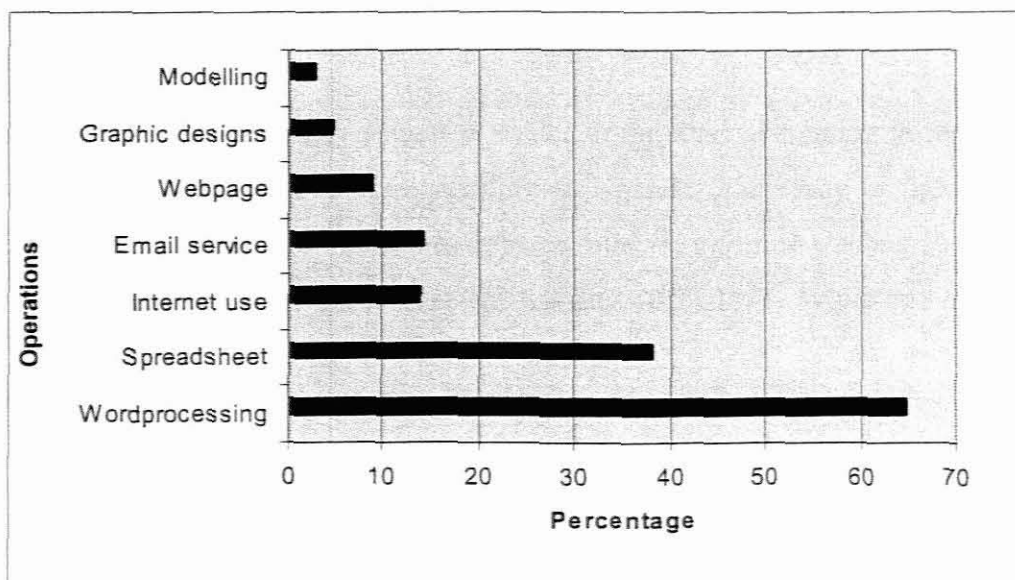
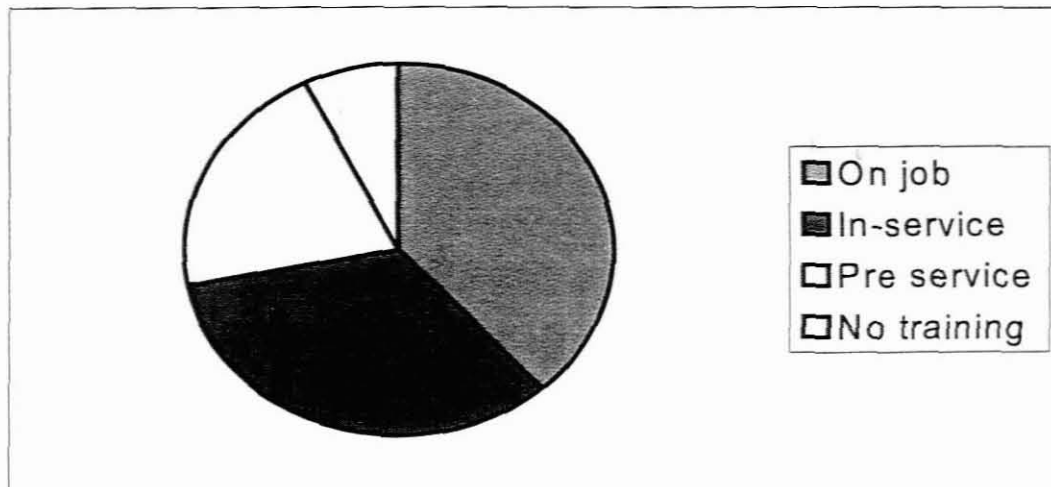


Figure 16: Training in IT by Public Administrators



6.5.8 Training in Information Resource

Information proficiency amongst public administrators is vital to ensure continuous and favorable funding of the information service, including MIS. Information proficiency is about end users having sufficient knowledge about information generation, gathering, processing, storage and dissemination. This is important as it enables them to evaluate an information system, as well as make suggestions.

Under question 28, the study sought to establish the kind of training in the information resource available to public administrators in Uganda. The study in figure 17 reveals overall training in the information resource as follows: informal training 110(42.4%), in-service training 94(36%), and pre-service training 40(13.1%). While training on the job

may be recommended, the strategic importance of information in what is described as the information age calls for formal training. Formal training involves long term planning and is often part of the established curriculum.

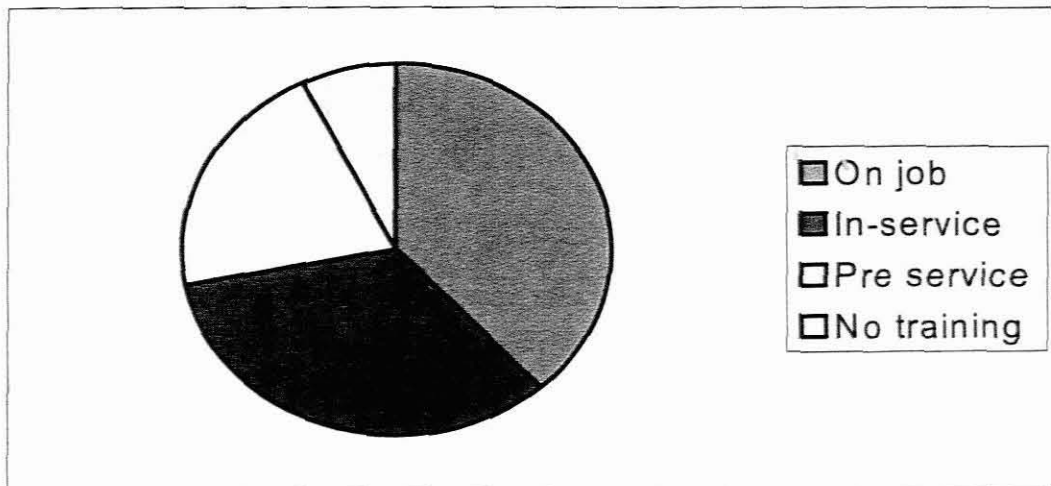


Figure 17: Training in Information by Public Administrators

6.6 Summary of the Findings Made Under the Survey Questionnaire

Findings from the survey questionnaire reveal a decentralized system of public administration where administrative power is shared between the central government and local governments based at district level. It reveals a wide range of functional activities by the various departments under the central government. At MFPED, these include macroeconomic policy, debt management, and financial policies. As for MOH, functional activities include family planning and community health. On the other hand, functional activities under local governments include policy formulation, service delivery and project implementation.

The survey questionnaires reveal a wide range of information needs on demand by both central and local government bodies. These include financial management, capacity building, HIV/AIDS, government policy, economic indicators, and community mobilization.

Regarding evaluation of data management systems, the survey questionnaire reveal that this is partly automated for MOH and MFPED, and manual for local governments. The study reveals that computer usage is largely limited to word processing, spreadsheet and database management. It is important to note that database management is an important form of information reporting, a key feature under MIS. Databases can be bibliographic, factual, statistical, images /or even full text. The questions here are: "what type of databases are these? Secondly, how relevant?; how rich?; how current are these databases. The survey questionnaire, unfortunately, did not pose these questions to the respondents.

On the other hand, the study notes that there is very little use of computers for teleconferencing, email service, real-time processing, internet surfing, modeling, and networking. Other than modeling, the others are key features of MIS. Teleconferencing is important for group decision making, email is important for communication, and networking is important for online access of data.

Regarding the MIS infrastructure, the study reveals a computer distribution that is heavily in favor of central government as opposed to local governments. Within central government departments, computer distribution also varies. For example, the study reveals that MFPED is more endowed with computer resources than MOH

The study reveals a stand-alone computer system still dominating public administration in the country. MFPED, is however, taking the lead in the establishment of local area networks. Bearing in mind that the entire IT program in public administration is being funded by international donors, it becomes difficult to put a time frame as to how soon, networking may spill over to other government departments including MOH.

Despite the dismal application of IT in information management, public administrators are generally satisfied with the information systems, rating the information systems above 60 percent, in their ability to supply data that is current, reliable, timely, easy to retrieve, adequate, and well from loss of falsification. The contradiction here, however, is that most respondents, as reported under 6.4.3 claim to be receiving data in unprocessed form. Questionnaire survey reveals a good appreciation of ICT benefits by the public administrators, meaning that public administrators are well sensitized about MIS and its benefits. The major hindrances to greater IT exploitation, according to survey questionnaire include lack of skilled personnel, maintenance cost, limited awareness, poor communication infrastructure, and initial cost. However, the issue of data security is down played by most respondents. Reports from survey questionnaire suggest that training in information resource by public administrators is informal or, on-job training, rather than pre-service, or in service training. Increased information proficiency would demand increased investment in formal training, that is, pre-service and in-service. The study suggests a computer competence as less than satisfactory as it is largely limited to word processing and spreadsheet, with the key MIS features such as modeling almost lacking.

In conclusion, it can be argued that according to the findings by survey questionnaire, prospects for MIS success in public administration in Uganda are fairly good. However,

it is also important to note that survey questionnaire depicted several contradictions. For example, while many respondents from local government claim not to have access to computers; many claim to be computer literate. Similarly, while many are comfortable with the level of information processing, a good number of them claim to use unprocessed data.

CHAPTER SEVEN
PRESENTATION OF RESULTS OF FINDINGS:
INTERVIEW RESPONSES

7.1 Introduction

This chapter presents the findings of the guided interview. The main objective of the guided interview was to look at the issues concerning MIS in public administration from a different perspective, a process commonly known as triangulation. Neuman (1997:151) defines triangulation as looking at something from a different angle using different types of measures, or data collection techniques. He argues that the guided interview helps to shed more light on numerous issues that surface through the review of literature, or through the use of questionnaires. Face-to-face interviews gave the respondents an opportunity to illustrate in their own words issues affecting the information systems around them, and in particular the MIS program. The guided interview was based on four specific objectives, namely, identification and description of the nature and scope of public administration in Uganda, exploration and evaluation of the information needs and information services in public administration in Uganda, examination and evaluation of the exploitation of ICT by information systems in public administration in Uganda, and lastly, examination of the working of MIS programs in the public sector of Uganda. The questions put to the respondents under the guided interview were almost an exact replica of those used under the survey questionnaire, save for the clarification that became more readily available. It, however, proved difficult to draw the respondents from among those that responded to the survey questionnaire.

This chapter, therefore, presents the researcher's findings about the awareness, application and appreciation of NPM in the country, the information needs in public administration, a description and evaluation of the data management system prevailing in public administration, and a description and evaluation of the MIS infrastructure.

7.2 Background Information

Like the survey questionnaire method, the interview was administered to public administrators working at the MFPED, and MOH headquarters, and those working at the local administration headquarters in the five districts of Arua, Bushenyi, Kampala City Council, Mbale and Masaka. The researcher opted for a semi-purposive and semi-stratified sampling technique, where the selection of respondents was based on a fair representation of the different levels of management. However, the selection of the interviewees was to a large extent accidental, as the researcher drew them from among those found at the work place at the time. In some cases, the head of the department in question referred the researcher to his or her deputy.

The guided interview was aimed at a total of 53 respondents, that is, 0.49 percent of the total population of public servants, or 10 percent of the sample size that was set for the survey questionnaire. Though the guided interview is time-consuming, it gave both the interviewer and interviewee an opportunity to clarify issues when the need arises. 10 of the respondents were drawn from each of the two central government ministries that formed the focus of the study, and 7 were drawn from the local administration of each of the five districts. For both the central and local governments, the study was limited to the public servants stationed at the headquarters.

7.3 Findings

7.3.1 Nature and scope of public administration in Uganda

Objective one of the study as noted in the previous chapter sought to identify, and describe the nature and scope of public administration in Uganda. The literature review established that public administration in Uganda is based on a decentralised system in which policy formulation is a preserve of the Central Government, and service delivery a responsibility of the local governments. The literature review also established that under what is described as the new approach to public administration, public administration in Uganda is based on participatory decision making, result oriented management,

performance appraisal, down-sizing of public administration, and the like (UPRRC, 1990:54). Under the guided interview, the researcher undertook to examine the truth about NPM by examining the level of awareness, application, and appreciation of new public management (NPM) amongst public administrators.

7.3.1.1 Awareness and Application of NPM

Nearly all the public administrators interviewed, including local administrators confessed to having been sensitised to the various theories concerning NPM through workshops and seminars. This claim can be supported by the large collection of literature available at the Ministry of Public Service Library and Documentation Centre concerning workshops organised by the Ministry on NPM. To most of the respondents, the application of NPM varies according to individual departments.

The implementation of various NPM programmes, ranges between zero and 10 percent, with decentralisation being the only exception. One Nzabanita of MOH observed that the bottom-up approach to planning and policy formulation at MOH begins with the health units at the grass root, through sub-dispensaries at the sub-county level, then district health services up to top level planning in the ministry. The Head of the Human Resource Department at the MOH, however, observed that actual strategic decision making at MOH still rests with top-level management, despite the claim of participatory decision making. The same respondent observed that it may take time for ROM to be appreciated by public administration as most people fear assuming responsibility.

As for local governments, the respondents from the Masaka District Administration pointed out that previously, local governments were limited to licensing, graduated tax collection, physical planning, garbage collection and law enforcement; and that, as a result of NPM responsibilities such as strategic planning have been added. The Masaka District Administration also observed that without a corresponding increase in personnel, capacities of local governments are being over-stretched, particularly in the areas of health, veterinary services, education and administration. It was reported that due to limited personnel, many administrators play a multiplicity of roles, such as being a Personnel Officer and Clerk to the Council.

The study revealed that only about 40 percent of the public servants were familiar with the term participatory decision making and that even a smaller percentage was familiar with terms such as result-oriented management, re-engineering and managerialism. The respondents from MFPED pointed out that participatory decision making is still at sensitisation and awareness creation level. A Kyambadde from MFPED argued that while some public servants may claim to be sensitised to NPM theories, the implementation of NPM in some departments take place sub-consciously. The researcher was made to understand that the application of ROM had only gone up to the design of appraisal forms by the Ministry of Public Service, and that the official release was yet to be made.

7.3.1.2 Appreciation of NPM

Most of the respondents from MOH and MFPED were of the view that the advantages of bottom-up decision making were being overstated. To many of the respondents, decision-making still remains within the broad guidelines set up by the top executive. A Ssekandi of MFPED observes that while junior officers may make proposals or recommendations, they cannot implement anything without the approval of top-level management. Dr. Twatwa of MFPED also observed that ROM and its related features need more streamlining to become clear to a majority of the public administrators.

The study revealed a general appreciation for the decentralisation theory. The local governments in particular expressed full commitment to decentralisation. To many of the respondents, decentralization changed local authorities from being mere appendages of the Central Government, to administrative units involved in the active delivery of service. One respondent from the Bushenyi District Administration argued that decentralised planning enabled the construction and maintenance of the infrastructure within the district, which in turn, has led to economic growth and development. Water wells have been well maintained because the general public was directly involved in the construction process. One Kalule of MOH emphasised the importance of ease in access to data at MOH, especially during joint review meetings.

Some of the respondents, however, were doubtful about the relevance of some NPM theories to the public sector. MOH when referring to ROM, for example, pointed out the

difficulty inherent in quantifying achievements in the medical sector, as one failure in the medical sector can easily nullify all the previous successes. MOH, here, cited an example of the occurrence of an epidemic due to negligence. One Kanyesigye, in particular, of the MOH questioned the relevance of ROM to public administration, as opposed to Total Quality Management (TQM), arguing that TQM would be more suitable to public administration, the same way ROM would be more suitable to the industrial management.

The study established that as a result of NPM, staffing at the headquarters for both MOH and MFPED is top-heavy, that is, it is largely constituted of top-level and upper-middle-level management. The top level contains ministers and deputy ministers as the political leaders, the permanent secretary as the accounting officer of the ministry, and a range of directors, commissioners and deputy commissioners. The top-level public administrators are responsible for formulating strategic or long-term plans and programmes for their respective ministries, as well as monitoring, supervising and giving advice on the implementation of government programs by the local authorities. The upper middle level, on the other hand, contains senior administrators promoted on the basis of experience and additional qualification. The study noted that giving support to top and upper middle level management in the management and coordination of activities at the headquarters is a skeleton of lower middle-level administrators and support staff. The study established that as a result of decentralisation, the majority of lower middle and lower level public administrators are being employed by the local administration.

It was pointed out by the respondents from the Bushenyi District Administration that the district lacks specialised manpower in professions such as agriculture, human medicine, surveying, and physical planning. It was also pointed out by the Bushenyi District Administration that local administration is unable to attract and retain experienced personnel due to meager financial resources. One Kiberu of Kampala City Council identified the problems facing local administration in Uganda as lack of basic planning and financial management skills and failure to integrate sub-county plans into District plans, thus making it difficult for the district to effectively monitor, coordinate and evaluate development programs within it.

7.3.2 Information Needs in Public Administration

Guided interview were conducted, in response to objective two of the study, to solicit additional information on the information needs of the sectors. The Interview focused on a wide range of information needs in the political, economic, social and technological areas. as outlined below

Examination of the information needs of the administrators' focused largely on work related activities and domains. These included public administration, economy, local administration, education, health, politics, law and order, agriculture, industrialisation and commerce. For example, Local Administration expressed information need in political, economic, social and technological spheres as their operation is highly diversified at the local levels of government. Although MFPED information needs largely focused on economy, interviewees also demonstrated moderate interest in data relating to politics, public administration, local administration, industrialisation, commerce, and politics. Data and information requirement relating to agriculture, law and order, and health was insignificant...Expectedly; MOH administrators expressed a very high interest in health related information. This was followed by information pertaining education and economy. There was also moderate interest in data and information concerning public administration, local administration, industrialisation, and commerce. Interest in politics and legal information was insignificant.

There was a general observation that the information needs by the sectors was not uniform and the needs were largely task and activity oriented, The broader the responsibility of the sector (eg MFPED or Local Government) the diversified the information needs [see also chapter six]. More sectoral information needs were observed in the Health (MOH) and education sectors.

7.3.3 General Evaluation of Information Management

Objective three of the study, again as noted in the previous chapter, aimed at examining and evaluating the rationale for MIS in public administration. Guided by the above

objective, the study, in chapter seven, sought to establish the quality of data management system in public administration in Uganda. The idea was to establish the degree to which the information system in public administration conforms to the MIS philosophy. The respondents were asked to describe the type of data management system operating in their departments, the form in which data is communicated for management purpose, the degree to which such data processing satisfies the information needs in management, and, lastly; their own assessment of the quality of data management.

7.3.3.1 Data Management System

Question one regarding the evaluation of data management systems, asked the respondents to indicate whether the data management system around them is manual, semi-automated or fully-automated. Automated information systems are viewed as more efficient and more effective in addressing the information needs of management.

Most of the respondents from both MOH and MFPED described the departmental management system as partly manual and partly automated. The researcher noted that the two ministries are well supplied with computers at their headquarters. The study established that the computer resources are being used to produce departmental reports, and access the internet and email services. In a limited way, the computer resources are also being used by some departments to establish sectoral mini-databases. The Malaria Control Department, for example, has put in place an in-house database on malaria control. On the other hand, the study established that the records and archive management system, as well as the documentation centre at both MOH and MFPED are still manual.

As for local governments, the study revealed that local administration in Uganda operates without a formal library, or documentation centre. In other words, the data management system under the local governments is limited to records and archives management. It was established that the local governments maintain both a central registry and a departmental registry. It was also established that departmental registries are largely a

mere collection of box-files and folders and are simply piled up one on top of another, or stacked in an open cupboard positioned somewhere in a corner.

7.3.3.2 Data Communication

Question two, regarding the evaluation of the data management system, sought to examine the form in which data for management purposes is made available to decision makers. The respondents from MOH and MFPED reported receiving data for managerial purposes both in printed and electronic forms. Data concerning new government policies and programmes were reported to come out largely in printed form. These include reports via the Government Gazette. Data on current issues is received through printed newspapers, radio and television services. The study established that data flow between and within the various government bodies was largely in the form of memoranda and printed reports. Public administrators, such as local chiefs were also identified as another effective medium of communication available to public administrators.

7.3.3.3 Data Processing

Question three, under the evaluation of data management systems, looked into the issue of data processing. The study sought to examine the degree to which data is processed by the established information centres. The study established that other than traditional cataloguing, there is hardly any meaningful data processing taking place in the documentation centres. There is hardly any specialised information processing, such as indexing, abstracting, information analysis and consolidation, or information repackaging, taking place. In other words, the two specialised information centres operate more like general libraries. The study revealed that in the absence of specialised information processing, some departments at MFPED have taken it upon themselves to repackage the data received for use within the department. Some go further to exchange the processed data with other departments and organisations. According to one Wanyara, the Macroeconomic Department has become accustomed to using its internal resources, such as the staff members familiar with econometrics to repackage data for use for decision-making by the department. One Tukey of the Budgetary Department also

revealed that his department relies on its junior officers, rather than the library to abstract, consolidate and repackage data needed by the department for decision-making purposes.

7.3.3.4 Computer Utilisation

Question four, again regarding the evaluation of the data management systems, sought to examine the use of computer resources by public administrators. With MIS, computer resources may be used for data storage, mining and analysis. The study revealed that the general feeling was that IT was being put to its maximum use by all the departments at MOH. On the other hand, some of the respondents argued that while IT appeared to be in constant use, it was being used mainly for report writing, rather than data mining, or analysis. One Twatwa of MOH was of the view that IT was being used for operations geared towards report writing, rather than data storage, retrieval and analysis. This is because under ROM, departments are required to produce regular reports for accountability purposes.

The study noted that very few MOH personnel are in the habit of using IT resources for specialised data management. None of those at the top level claimed to be using IT resources for what can be defined as the executive information system (EIS). Similarly, none of those at the upper middle level management claimed to be using IT resources for generating decision models. Failure to optimally exploit IT was attributed to limited computer literacy, and lack of computer networking.

The study established that the library and documentation center at the MOH has a total of six computers at its disposal. Two of these computers are for the use of the library personnel, while the rest are for the use of the library patrons. It was also established that the documentation centre at MOH has yet to set up in-house databases, due to limited database management skills. During the period in which this study was conducted, the librarian in charge of the documentation at MOH was pursuing a first degree in Library and Information Science. Similarly, the lady in charge of the Registry Unit was pursuing a second degree in Records and Archives Management. In summary, the two computers allotted to the documentation center were yet to be put to effective use.

The study also established that the other four computers available to the documentation centre were mainly used by the medical students of Makerere University's Medical School, rather than the MOH staff. The students from the Medical School and who form the bulk of the system's users, regularly visit the documentation centre in order to analyse personal data using the computer resources at the centre. The Medical Students also use the same computer resources to access the internet, email service and some online data bases.

Adjacent to the documentation center, is a computer laboratory with almost twenty computer workstations. It was established that the computer laboratory is the backbone of the Health Management Information System (HMIS) of the Ministry. The study revealed that HMIS, including the computer laboratory, operate independent of the library. There is, however, a plan to merge the Documentation Centre and the computer laboratory in order to create what may become the MOH Resource Centre. The researcher established that without a LAN system at headquarters, the computer laboratory is mainly utilized by the medical students rather than the public administrators at MOH, to access HMIS.

As for MFPED, the study revealed a general feeling that computer resources were not being put to optimal use by public administrators, and that, this was due to limited knowledge in data analysing techniques. Some administrators also confessed to failing to adjust from traditional methods in which problem-solving is based on the experience of one self or somebody in the neighbourhood. To a good number of the respondents from MFPED, *turning to a website or online database for data comes as an afterthought.*

Just like the MOH, the two computers available to the documentation centre at MFPED are yet to be used for the development of in-house databases. They are instead being used by the library personnel for word-processing, internet surfing, and email services, mainly *for personal satisfaction, rather than as a service to readers.*

The study also established that computer utilisation by local governments is almost exclusively limited to word-processing, spreadsheet and the management of accounts. Except for the Finance Department, which has more than one computer, each department at the Kampala City Council is supplied with one computer. These computers are used

for processing correspondences, and for email service. Bushenyi District is one district that showed more commitment to IT through local initiatives. It also demonstrates a much more diversified use of IT when compared to other districts

7.3.3.5 Evaluation of Organisational Data Management System

The last question, regarding the evaluation of the data management system sought to establish the level of satisfaction derived by the public administrators from the quality of information service around them. MIS is about supplying management with data that is reliable, adequate, timely, and well processed for easy retrieval and use.

7.3.3.5.1 Ministry of Health

Nearly all the respondents at MOH expressed general satisfaction with the library and documentation service at the headquarter. Credit was especially given to the library personnel for keeping the library neat and well organised, thus providing a conducive reading environment. Satisfaction with the library service at MOH, however, only went as far as the conducive reading environment. The study established that the library lacks many publications such as departmental reports mainly because the library personnel leave it to the individual departments to deliver their publications to the library. Many of the respondents reported that they depend on other initiatives to access such publications. Some departments as well as individuals maintain mini libraries and registries for storing important documents which the library fails to provide. The Head of the School Health Department has made it a habit to visit selected institutions regularly to solicit some literature for his department. In view of the limited supply of topical literature for decision makers, the library is used mainly by the medical students, rather than the personnel at MOH.

The library and documentation centre at MOH was criticised for failure to generate value-added information from its collections. It was established that other than simple bibliographic description, the library personnel renders hardly any specialised service such as abstracting, literature review, or information analysis and consolidation. Collections such as newspapers are maintained without an index. In other words, data and information are made available to end-users in its primary form. The system was also

criticised for the inadequate supply of reference tools. It was the view of some respondents that the library should be able to supply, both printed and electronic form, directories on local, regional and international web-sites, and databases concerning the health sector. The library service was also criticised for failing to provide online access to local databases that are unique to the health sector.

It was reported by one Nzabanita that MOH was in the process of strengthening its MIS programme at the headquarters. One member of the staff was already abroad being trained in web page management. The same official reported that plans are underway to attach the services of an epidemiologist, and a statistician to the information unit in order to assist the information resource personnel with specialised information processing and repackaging.

The library personnel, on their part, reported that plans to automate the library were at an advanced stage, with a library software already identified from the Internet. The researcher was, however, unable to establish the main features of the said software.

Despite the numerous developments taking place regarding information management at MOH, top administration was accused of harboring a negative attitude towards information service. This is manifested in the practice to use the information unit, in particular the registry, as a correction unit for errant behaviors at the headquarters. It was learnt that it is not uncommon to post for a limited period to the registry culprits from other departments, as a disciplinary measure.

7.3.3.5.2 Ministry of Finance Planning and Economic Development

The majority of those interviewed at MFPED expressed dissatisfaction with the library and documentation services at the Ministry. It was pointed out that despite the close relationship MFPED has with institutions such as the Bank of Uganda, Uganda Investment Authority, and Uganda Bureau of Statistics, there has been no arrangement made by the library to promote the exchange of literature between MFPED and these

institutions. Instead, the individual departments at MFPED have been acting on their own to collaborate with various institutions to access their publications.

One Zigiti, a lower level public servant, claimed to have found the library collection more useful to her needs during her time as a post-graduate student, as compared to today when working as a member of the staff. She pointed out that the library literature, in its present form, is more useful for research than management. She observes that for public administration, the library collection is narrow in scope, and suffers from inadequate processing. Due to inadequate access points, it is not easy for one to retrieve any piece of data easily. She further observes that in her position as a desk officer, she regularly comes across publications from many organisations that could form part of a useful library collection. In her view there is a need for a close working relationship between desk officers and information managers in various ministries and departments, for the purpose of gaining easy access to good literature from those institutions.

Most of the respondents at MFPED claim that they depend more on informal sources for their information needs than the library. Many complain that the library lacks organisation. They criticise the library for being over-congested most of the time, a problem they attribute to the large number of students from tertiary institutions, who frequent the library for its topical literature on economic issues. Due to limited confidence in the library service, some individuals at the Ministry maintain mini-private libraries in which they store copies of important documents for reference purposes. One Kyewalabye points out that his mini-library is an important reference point in his dealings with top executive.

The library personnel at MFPED are blamed for failing to put two personal computers allotted to the library to effective use. The researcher established that the library is yet to construct even one in-house database. Many of the respondents claim that they access data regularly from websites of local and international institutions. Among those visited regularly by the Ministry are the websites of the Bank of Uganda and the Uganda Bureau of Statistics (UBOS). It is, however, pointed out that many local websites do not upload

easily, citing UBOS as one example of those which are difficult to upload. Other problems identified with the local websites include limited coverage and failure to update regularly. To most of the respondents the formal information systems at MFPED operate at below 40 percent of its potential. They point out that informal relations account for 60 percent of the data used by decision makers at the Ministry. Many of the personnel at MFPED attribute the poor library service at the Ministry to inadequate management skills on the part of the information personnel.

With the absence of LAN at MFPED, bulk data transfer remains a major problem. The study notes that, while most computers at the Ministry are provided with a CD-ROM drive, data transfer still take place in printed form, or by way of diskettes. It is argued by the respondents at MFPED that specialised use of ICT by the public sector needs to be enhanced through increased cooperation and resource sharing within and outside public administration. The researcher notes that through cooperation, MFPED is able to access teleconferencing facilities at the Uganda Management Institute (UMI) which belongs to the Ministry of Public Service. The study established that there is no time frame in place at MFPED for introducing specialised MIS operations such as Group Decision Support Systems or even expert systems. In fact some of the respondents are of the view that public administration as a social phenomenon is often content with decisions based on bounded rationality.

The information personnel at MFPED express the view that the information unit appears to be discriminated against by its immediate supervisors under the Economic Policy and Research Department. They are critical of the restricted airtime made available to library services, which, in turn, restricts their ability to look for data and information for the Ministry. Complaints are also raised about bureaucracy, where the library personnel has to go through top management for any dealings with other organizations, including the exchange of information. They argue that this makes it difficult for them to collect good literature for the documentation centre from outside the Ministry.

According to several respondents, the Registry, just like the documentation centre, does not contribute much to decision making at the Ministry. The system suffers from poor data security, a poor retrieval system, and lack of storage space. The registry is also faced with the problem of delayed release of petty cash, leading to delayed postage of official letters. Furthermore, the Registry at MFPED has been a victim of the continuous restructuring of government ministries, where, for example, today you have the Ministry of Finance, and the next day, the Ministry of Finance and Planning, then later, the Ministry of Finance Planning and Economic Development, and so on.

7.3.3.5.3 Local Governments

The local governments report that the Registry is simply made up of a collection of box files and folders stacked in a cupboard and placed in a corner. To many, the system lacks adequate file management and the security of content. It is reported that KCC collects primary data regularly while dealing with management problems. The data collected is archived in its raw form in book files, and recently, in diskettes. There is no system of updating collected data, and it is rarely put to further use by the organisation.

To most of the respondents, automation under local administration in Uganda ranges between 10 to 20 percent, with Bushenyi District being ahead of the other four districts in computer stock and utilisation. One respondent from the Bushenyi District Administration attributes this to local initiatives and foresightedness of top administration at the District. Arua District, on the other hand is said be the least successful, with the entire local administration having only two computers.

The study reveals that local administrations in the country generally lack awareness of MIS. The majority of public administrators are yet to be exposed to the workings of a modern information system. According to one ICT specialist at KCC, most departments under local administration utilise computers for word processing, spreadsheets and internet surfing, pointing out that ICT is rarely utilised for decision making. Nevertheless, the local administrations of KCC, Bushenyi District, and Masaka District claimed to be working seriously towards adopting an ICT policy for public administration. Local

administration in general, however, decries the absence of a superior body in the country to co-ordinate their activities. They also decried the lack of co-ordination in the Government effort towards the digitisation of public administration. They advised that there be increased cooperation with Uganda Computer Service, the National Council of Science and Technology, the Ministry of Local Government, and the rest of the public sector.

KCC has identified the need for greater computer literacy as the first step in that direction. The study also established a general plan by KCC to popularise internet use amongst the local administrators. It revealed a plan to extend internet access to those in decision making positions. It also revealed a plan to promote the exchange of data between and amongst departments and divisions. On the other hand, the study established that local administration in general is faced with maintenance problems. Several ICT related accessories were reportedly lying idle due to minor mechanical faults or lack of consumables.

Table 8 below presents a quantification of the satisfaction derived by the end-users from the various information services available to them. The top row represents the total number of respondents interviewed by the researcher from each sector. The rest of the rows indicate the level of satisfaction expressed, both in absolute and percentage terms. The table suggests that a greater satisfaction is derived by personnel at MOH, compared to their counterparts at MFPED and the Local Governments. The table also suggests a high dependence on informal sources in the three organisations.

	MOH (10)	MFPED(10)	Local Govt. (33)
Library	4(40%)	2(16%)	1(4%)
Documentation	3(31%)	2(22%)	1(4%)
Records Mgt	2(17%)	2(21%)	8(23%)
Local Dbse	3(33%)	3(32%)	1(3%)
External Dbase	4(40%)	4(40%)	3(10%)
Internet	6(56%)	4(40%)	7(26%)
Informal	3(32%)	5(45%)	21(66%)

Table 8: Evaluation of Library and Information Service.

7.3.3.6 Evaluation of Specific MIS Programs

The study reveals that a number of MIS programs already going on in public administration. Below is a report of the user evaluation of some of the MIS programs.

7.3.3.6.1 Health Management Information System

While examining the user assessment of the data management system at MOH, the researcher took time to evaluate their own assessment of the Health Management Information System. The effort to introduce MIS at MOH in 1995 gave rise to what came to be known as the Health Management Information System (HMIS). The study revealed that HMIS was known by almost everybody at MOH. The study established that HMIS reports extensively on a wide range of activities in the health sector in the country, including, staffing positions, equipment, demography, finance, and health services. The study also established that HMIS in its present state was designed for the strategic planning of the health sector, rather than for providing data and information meant for supporting the day-to-day decision making. The researcher established that the system was designed by the Statistical Department of Ministry of Planning, mainly to support the national planning of the health sector. It was also established that when the Statistical Department became an autonomous organization in the name of Uganda Central Bureau of Statistics (UBOS), HMIS reverted to MOH, but without anybody to give it direction. According to one official, HMIS continues to supply useful data on service delivery in the health sector. The same official contends that HMIS needs to undergo major general restructuring in order to become a management tool at MOH.

One senior official rated HMIS at 30 percent in its ability to address the information needs of his department, while another rated it at 60 per cent. The Head of the Human Resource Department, with over 3,000 health workers under his supervision, rated HMIS adequacy at less than 10 percent. Thus, the productivity of HMIS as a decision support system varies according to department. It can also be argued that in most departments, HMIS productivity is less than 30 percent.

The study established that there is a need to engage the services of experts in information management to assist HMIS in realising its objectives. One officer pointed out the need to train data entry clerks in the medical short-hand in order to ease the data capturing process. The officer also advised that there be a periodic evaluation and restructuring of HMIS for the purposes of realigning HMIS with changes in user needs.

The lack of a LAN system was established as a major source of discontent in data management at MOH. It makes HMIS only accessible to those able to find time to visit the computer laboratory. As a result, HMIS is being used largely by medical students as opposed to MOH personnel.

The study revealed that a large number of sectoral information systems is being maintained by various projects under MOH, including data collected by the Surveillance Department, and Malaria Control Program (MCP). In the absence of a LAN at MOH, these information systems operate independently of HMIS. The Head, Malaria Control Program pointed out that, without a LAN system, data under MCP is available to the end-user in printed form via booklets. Another official from MOH pointed out that health data in the country is highly fragmented; and that HMIS is yet to network with other information systems in the sector.

The Head of the School Health Department at MOH criticised the lack of coordination in the management of information systems within the medical sector, and the lack of that same coordination in the management of information systems between the medical sector and the rest of the country. One senior officer identified the inadequate treatment of data relating to school health, pointing out that the Education Management Information System (EMIS) under the Ministry of Education ignores many of the health related data, including data on school absenteeism due to health reasons, and mortality in schools.

One statistician at MOH pointed out that an effort is being made to establish a Local Area Network (LAN) system, a development that will bring an end to the fragmentation of health data at MOH. He indicated that plans to acquire a Server have gone beyond policy

formulation, and are only awaiting implementation pending the availability of funds. The study established that while MOH boasts of a web-page, the web-page in question has remained without being updated for a very long time, as the Webmaster was abroad still undergoing training.

7.3.3.6.2 Integrated Financial Management System

As reported under 3.7.3, the Uganda Government has been in the process of setting up an Integrated Financial Management Information System (IFMS) to help in harmonising financial management in the entire body of public administration in the country, including local authorities. The study revealed that most of the respondents at MFPED were indeed familiar with the attempt to introduce an Integrated Financial Management System (IFMS).

7.3.3.6.3 Information Sharing Network

The guided interview established that the attempt to introduce an information sharing network (ISN) at MFPED headquarters was already at an advanced stage. ISN finally became operational in January 2004. While many respondents were indeed looking forward to the launching of ISN, not much evaluation of IFS could be done. Nevertheless, the researcher was able to conduct a lengthy discussion with those responsible for its implementation, and made several findings which are presented below.

The study revealed that the implementation of IFS by MFPED involved a participatory approach with departments being encouraged to appoint contact persons, whose task was to ensure that the information needs of the department are well taken care of. The exercise was championed by a team of experts that included communication specialists, ICT specialists, and subject matter experts drawn from the Ministry itself, and the information managers at the Ministry. The program involved putting in place an intranet where all activity reporting was to take place. The ISN program was to include a website consisting of value-added information such as 'budget at glance', 'background to the budget', and 'economic surveys'. According to the Communication Consultant Specialist,

ISN aims to address the information needs of all public officers at MFPED, and would become a medium for sharing data and information at the Ministry. The ISN, according to the Communication Consultant, was to provide custody to public documents which would be accessible online to decision makers at MFPED. Individuals as well as departments at MFPED were to be encouraged to post data and information to the network for general consumption. It was further revealed by the communication specialist that ISN was destined to replace the Registry Unit, a section which to most people, lacked data security.

At the time of conducting the study, the Communication Consultant, had successfully introduced specialised methods of processing primary information, and several publications of repackaged data were already on display. These included, Citizens Guide to the Budget, Budget Pull-out, Budget at a Glance, and the Budget Performance Annual Reports. Others included the monthly release of economic related information to the press, training manuals in budget making techniques for Local Government, circulation of the minutes of the various committee meetings, production of documents dealing with poverty eradication; and production of the Ministry's quarterly newsletter on www.finance.go.ug. It was reported by the Communication Specialist that information repackaging at MFPED was being executed with the direct involvement and cooperation of the subject experts; and that the repackaged data was to form the backbone of the Ministry's website.

7.3.3.6.4 Local Government Information and Communication System

The study revealed that the MIS program at the local government level is addressed under what is known as the Local Government Information and Communication System (LOGICS). The study established that LOGICS operates at three levels, namely, the District Database, the Ministry of Local Government Inspection Database, and the One-Stop Information Resource Centre. It is reported that the district database provides data on facilities such as schools, health units, and the like. It also provides data on services, such as the agricultural extension service, road maintenance, among others. The Ministry of Local Government Inspection Database provides data on the results of the Ministry's

inspection of local governments and municipalities. Lastly, the one-stop information resource centre compiles information from all the districts database and make it available to the Ministry of Local Governments and other stake holders. It was reported that although LOGICS does not tell us the name of every student, it does tell us how many they are. Similarly, although it does not tell us every financial transaction, it does tell us how much was spent on a particular item.

At the time of conducting this study, LOGICS was still operating as a pilot project in five districts, with none of them being one of those that formed the focus of the study. Thus ITC developments in all the five districts were independent of LOGICS. ICT specialists at KCC reported that for many years, ICT developments at KCC were ad-hoc, based on what was described as "a quick solution systems approach". It was reported that the new approach has identified payroll management and revenue management as priority areas, and thus, KCC has been working towards the establishment of a Payroll Management System, Rate Management System, and Revenue Management System. KCC was also reported to be among those originally selected by MFPED for piloting the Integrated Financial Management System (IFMS).

The study established that KCC has put in place a small network involving a few workstations. Under the same programme, KCC had succeeded in creating its own domain www.kcc.go.ug, and was working towards the establishment of a metropolitan network to link the five divisions that make up the Kampala District. The respondents, however, argued that the effort to extend networking to cover all heads of departments and other ICT programs were being stalled by lack of funds. It revealed that much of the funding towards automation of the information system at KCC has so far come from international donors such as The World Bank, and the French and Swedish Governments, rather than the Uganda Government.

7.3.4 MIS Infrastructure

Objective Four of the study sought to examine the infrastructure needed to ensure effective working of MIS. In chapter seven, the researcher sought to examine the user assessment of the MIS infrastructure. The study examined the volume of computer stock and distribution, computer utilisation, computer literacy and information proficiency amongst public administrators.

7.3.4.1 Computer stock

The first question concerning MIS infrastructure sought to examine the computer stock and distribution. It is argued by some scholars that although MIS can be manual, IT is a critical enabler. It is, however, the assertion of this study that IT is indispensable for effective MIS initiatives. The respondents from MOH described computer distribution at MOH as uneven, with some departments having a one-to-one distribution, and others operate without a single computer. This was attributed to a management system that is project-driven, where some projects attract donor funding more easily. The computer system at MOH was described as a "stand alone system". A complaint was raised from some quarters about the quality of computers at MOH, and it was pointed out that most computers in use are old and unable to execute some operations. The respondents were especially critical of top management's tendency to retain the new and best for their offices, whilst passing on old computers to lower management levels. MFPED, reports a one-to-one supply of computer workstations for all staff in managerial positions. In other words, the supply of personal computers at MFPED is almost as good as that of any country in the world.

As for the local governments, the study established that the computer supply is far from satisfactory, with computer availability being described as very poor by most of the respondents. The few computers available to the local governments were acquired through donations by international agencies. Only the Bushenyi District Administration could boast of some form of local initiative in acquiring personal computers. The Kampala City Council (KCC), was found to be the most capacitated local administration in terms of computer stock. KCC was reported to have one computer per department, the

exception being the Finance Department which has 4 computers. The Bushenyi District Local Administration (BDLA) also proved to be well capacitated, possessing 10 computers in total. It was reported that all computers at BOLA were acquired through local initiatives, credit to its enlightened leadership. The Masaka District Local Administration (MASDLA) and Mbale District Local Administration (MBADLA) were said to be having about 7 computers each. The Arua District Local Administration (ARUDLA) also reported to be having 2 computers which were acquired through a UNICEF programme.

Item	Arua	Bushenyi	KCC	Masaka	Mbale
Personal Computers	2	10	17	7	7
Printers	1	3	5	2	1
Scanners	-	1	2	1	-
Facsimile	-	1	2	1	1
Magnetic Tapes	-	-	2	-	-
Server	-	1	1	-	-

Table 9: Distribution of Computer Stock at Local Government.

The above table presents KCC as the local government with the most diversified in IT resources. Unlike the other four local governments that formed the focus of the study, KCC is privileged with the powers to negotiate directly with the international donor community for donor funding towards development projects. The other local governments can only do it through the line ministry. Nevertheless, the supply of computers at KCC remains poor, limited to an average of one computer per department, with the Finance Department having four computers and this being the exception.

7.3.4.2 Computer Accessories

Question two regarding the evaluation of the MIS infrastructure inquired into the supply of computer accessories in public administration. A computer as a data processing tool, is incompetent without the various accessories needed to assist it in data capture, storage, and dissemination. MOH reported that the supply of accessories is decentralised while the management of consumables is centralised. This is because most accessories come along with computers which are donor funded. On the other hand, the Ministry is

required to supply the consumables. Many of the respondents at MOH were critical of the excessive bureaucracy exercised on the procurement of consumables from the stores.

As for MFPED, computer accessories were found to be reasonably adequate. It was reported that in addition to donor funding, the Ministry has been acquiring additional accessories on its own. The consumables were also reported as reasonably adequate. It was observed that with the ongoing effort to establish a computer network at MFPED, most problems associated with accessories or consumables will cease completely, due to increased resource sharing.

As for the local governments, the accessibility of computer accessories, as shown in Table 10 is very poor. One problem faced by local governments with regard to computers is the issue of maintenance. Technicians have to travel from the national capital of Kampala to Arua District, a distance of over 400 kilometers, to fix any problem involving computers. Masaka and Mbale Districts, each reported to have printers which are out of use due to minor faults, but which cannot be fixed due to lack of technical personnel.

7.3.4.3 Computer Networking

Question three regarding the MIS infrastructure examined the IT structure, in particular the networking of the computer system. Similarly, the computer system at MFPED was also found to be a “stand-alone” system, although plans were already at an advanced stage to establish an information sharing network project. The disparity in developments in IT between MOH and MFPED, was attributed to a political leadership at the former which was described as less enthusiastic about information related issues.

The use of the internet as a means of communication was said to be still at its infancy stage. The study established that the computer system in place at both MOH and MFPED is still a stand-alone system. In the absence of a local area network (LAN), the various computers are unable to transfer data within and between departments online. Instead, transfers take place by way of printed copies. On a limited scale, data transfer also takes

place via the internet and through diskettes. The study also established that CD-ROM technology as a means of data storage, is yet to come into extensive use in both ministries. The respondents expressed limited knowledge about CD-ROM technology, pointing out that CD-ROM writers were still in limited supply. Only one office at MOH claimed to have the capacity to produce data on a CD ROM. For this reason, the study established that archiving large data files is done on a hard disk rather than on CD-ROM.

7.3.4.4 Appreciation of IT Benefits

Question five regarding the MIS infrastructure sought to examine the appreciation of IT benefits by public administrators. The majority of the respondents at MOH demonstrated a good appreciation of IT, its ability to store a lot of data, process and provide enough security for data, and communicate data effectively and efficiently. Similarly, MFPED and the personnel under local administration expressed satisfaction with IT as an efficient and effective way of managing data in an organisation. While the appreciation of IT by MOH and MFPED could be a result of practical experience that of local administrators may be a result of awareness and sensitisation created through workshops and invisible colleges, as many had not really worked with a computer before.

7.3.4.5 Perceived Hindrances to Automation

Question six regarding the evaluation of the MIS Infrastructure sought to examine the hindrances to the automation of information systems in public administration. The aim was again to establish how prepared public administration in Uganda is to embark on MIS. Lack of government funding of MIS was identified by the majority of the respondents as *one major problem*. *Limited computer skills, and limited awareness of what is possible with a computer*, were identified as problems two and three respectively. Limited data security was also expressed by a few. In other words, most of the public administrators interviewed, including top management, were enthusiastic about the idea of creating an automated information system.

The study also observed that IT is capital intensive in terms of hardware and software; it is a fast changing industry with new technologies replacing old ones within short intervals, and is faced with the problem of retraining staff. Success of MIS in public administration thus requires a lot of commitment on the part of the top decision makers. This should be expressed in the form of adequate funding to ensure continuous maintenance and upgrading of the system.

7.3.4.6 Computer Literacy

Question four regarding the MIS infrastructure examined the issue of computer literacy. The computer can be described as a powerful, general purpose machine that can enable an organisation to achieve a lot in terms of data management. Optimal application of MIS by organisations, including public administration, is heavily dependant on the ability of the end-user to exploit the computer resource, including such operations as expert systems and decision models. As already reported under 7.3.2.6, computer literacy was found to be 100 per cent under the central government. Of the six respondents interviewed at Arua District Administration, only one had worked with a computer. As for the other four districts, out of the six respondents in each district, computer literacy was as follows: Bushenyi District, 2; Kampala District, 4; Masaka District, 1; and Mbale District, 1. Regarding advanced computer use, this was found to be lacking even under the Central Government. The inability to apply IT in decision modeling, and the inability to exploit IT in artificial intelligence was partly attributed to limited computer literacy. Some of the respondents were, however, of the view that advanced IT skills in the name of decision models as well as artificial intelligence were not really important in public administration as most decisions are chosen on the basis of their being just satisfactory. To these respondents, the advance IT skills are more relevant to profit making bodies whose sole objective is to maximize profit.

7.3.4.7 Information Proficiency

Question seven focused on examining the levels of information proficiency. Information has become a key resource in management. The sustainability of MIS in public administration in Uganda will depend heavily on the decision maker's ability to

comprehend the importance of the information resource. It is observed by some of the respondents under the local administration that during resource allocation, policy makers tend to pay more attention to projects whose returns are quantifiable. At the KCC, activities relating to engineering and health attract more attention from the decision makers in terms of resource allocation, while departments whose output is hard to quantify (such as physical planning; and welfare and community services) are placed at the lower end of the scale.

Information, unfortunately, is one of those resources whose impact can be very difficult to establish in a production process. Due to limited information proficiency amongst decision makers, nearly all issues relating to the modernisation of the information sector within the public sector are funded by the international donors, rather than the Government. Indeed, a situation in which a strategic resource such as information is wholly in the hands of international donors, is unacceptable. For the successful working of MIS in the public sector, all public administrators should be able to articulate their information needs. They should also have a fair understanding of the potential and limits of the information system.

7.4 Significance of the Chapter

This chapter was important because it helped to provide a qualitative understanding to many of the observations made under the quantitative survey research method. In addition to answering what happens, it helped to explain why it happens. This chapter enabled the respondents to express in their own words what they feel about NPM, the information system and MIS. In other words, chapter seven helped the researcher to get the inner feelings of the respondents on several issues regarding MIS.

7.5 Summary of the findings from Guided Interview

The findings from the guided interviews reveal a good understanding, appreciation and application of decentralisation in the country. On the other hand, other forms of NPM carry limited meaning and acceptance. Regarding the evaluation of data management by

the respondents, the study reveals satisfaction with the library service at MOH. A critical examination of this reveals that this could be attributed to the provision of a quiet, clean and spacious reading environment; and possibly the good public relations between the information personnel and their patrons. The study reveals that many of the features that characterise MIS are lacking in the information service of both MOH and MFPED. Also lacking at MOH is the networking of computer systems, and the networking of the numerous sectoral databases. The management of records and archives is still manual, thus presenting data that cannot be easily subjected to further analysis. Also noted were the inadequate supply and processing of pertinent literature, including literature by public, private and non-governmental organisations within and outside the country. The study also reveals that the established information systems are being dominated by external users, such as students from tertiary institutions and colleges.

The study noted the systematic approach being used to introduce an information sharing network (ISN) at MFPED. This approach needs to be emulated by MOH and the rest of the public sector. The study again noted the non-existence of library service under the local governments, and records and archives service that are poorly managed. Library and documentation service is the foundation of MIS, as it constitutes the knowledge base.

The treatment of LOGICS required further consideration as none of the five districts that are constituting the study were among the districts selected for the LOGICS's pilot project.

Objective four of the study aimed at examining and evaluating the MIS infrastructure in place. MOH was found to be well provided with computer workstations, enjoying a one to two man-computer ratio. Computer literacy is wide-spread, especially in basic operations. Among the major problems were the lack of a LAN system, excessive dependence on foreign funding, poor maintenance of accessories, and inadequate utilisation of ICT. Regarding the MIS infrastructure at MFPED, the study revealed a computer system that is adequate in workstations, accessories and consumables. It also revealed an MIS program in an advanced stage including the establishment of a LAN.

Basic computer literacy is found to be widespread under the central government, but specialised computer literacy is found to be in limited supply. It can also be argued that ICT is yet to percolate down to the local governments.

It can be argued that the MIS program is short of the necessary push to be able to prosper on its own in the long run. The top management, in particular, has a guarded interest in promoting both participatory decision making and result-oriented management. They also have a limited understanding and appreciation of the role of information in management. While the MIS program hinges heavily on ICT, the Uganda Government is yet to demonstrate adequate commitment to ICT in the public administration. The contribution by a donor community towards automation of public administration is project-driven, leading to a disparity in the distribution of ICT resources between and within ministries. The situation where some activities are automated, while others remain manual can only work against MIS. There is need to enhance the level of information proficiency amongst public administrators, both for the purposes of ensuring adequate allocation of resources to the information units, and to provide administrators with some degree of competence when evaluating the information systems and services around them. There is also a need for information managers to sharpen their understanding of the information resource, including the gathering, processing, and production of value-added information. Involving subject experts in specialised information processing should be seen as a stop-gap measure. A more lasting solution would be to encourage double training for those who want to assume management of the MIS programs in public administration. Lastly, MOH and the local governments need to emulate MFPED in its *new approach towards MIS*.

CHAPTER EIGHT

DISCUSSION OF THE RESEARCH FINDINGS

8.1 Introduction

The objectives of this study as stated in chapter one were to: identify and describe the nature and scope of public administration in Uganda; to explore the information needs of public administration in Uganda; to examine and evaluate the rationale for MIS in public administration, to examine the infrastructure needed for the effective working of MIS in Uganda; and finally, to develop a conceptual MIS model for public administration in Uganda. This chapter presents a discussion and evaluation of the findings made from the questionnaire survey, guided interview and literature review. The chapter also presents the proposed MIS model for public administration in Uganda.

It is argued that the analysis of research data and information does not in itself provide answers to the research problem, objectives of the study and research questions. Thus, it is essential to interpret and discuss the data and information from its analysis to ensure that research questions have been responded to. It is also necessary to interpret the data to establish whether the objectives of the study have been achieved or not and also whether the research questions have been answered or not. The aim of this chapter, therefore, is to discuss and interpret the analysis made from data collected on the MIS program and public administration in Uganda. The discussion of the research findings is guided by the four specific objectives as already mentioned above, namely: to examine the nature and scope of public administration in Uganda; to examine the information needs in public administration; to evaluate the data management system in the way it conforms to MIS; to examine the MIS infrastructure prevailing in public administration; and, lastly, to develop an MIS model as may be suitable for public administration in Uganda.

8.2 Nature and Scope of Public Administration in Uganda

Objective number one of the study was to examine the structure of public administration in Uganda. The research question here was ‘what is the form of public administration in Uganda today?’

8.2.1 New Public Management

The review of literature concerning public administration in Uganda reveals that Uganda has, since 1995, adopted what is referred to as new approach to public administration. We learn from the discussion under 4.4 that NPM is a global phenomenon characterized by such features as decentralization, downsizing, result oriented management, performance appraisal, managerialism, devolution of decision making, strategic planning and management, and participatory decision making.

Public administration in Uganda has embraced NPM through the adoption of a number of theories that bear on NPM. The most prominent of these in Uganda’s case is the decentralization of public administration. As already noted, this referred to the sharing of strategic planning between the central and local governments. Findings under 7.3.1.2 reveal that the country operates fully under a decentralised system. The study also reveals that decentralisation is well understood and appreciated by many people. Another NPM programme already implemented by the Government is the downsizing of public administration. Downsizing, or right sizing of public administration in Uganda led to the reduction of Government Ministries from 35 to 17, and the size of public service from 350,000 persons to 170,000 persons. In principle, the Government has also adopted participatory decision making, devolution of decision making, performance appraisal, and result oriented management. However, the implementation of these programs, vary from one government department to another. KCC was noted to be holding long and regular meetings as one way of implementing participatory decision making. At MOH, strategic planning as reported under 7.3.1.1 was said to be operational in that planning begins with health units at sub-county level, then rising through the organizational structure up to top level management at the headquarters.

The introduction of ROM as already noted formed one of the catalysts for MIS in public administration in Uganda (see 4.5.2). The Ministry of Public Service, in its 2004/05 financial year report predicted that by the year 2003/04, all ministries, districts and some urban authorities would have developed results framework to be used to inform and improve the strategic planning, budgeting and performance monitoring. The findings from the guided interview, however, reveal that most of the departments are yet to come to a full understanding of ROM. The study also reveals some degree of skepticism about the relevance of ROM in some areas of public administration such as the health sector. They argue that total quality management (TQM) would probably be a better option for the health sector than ROM.

The guided interview also reveals performance appraisal as still at the preparatory stage, with appraisal forms still being designed. About the appreciation of NPM as a whole, most of the respondents under the guided interview were actually doubtful of the relevance and sustainability of most NPM theories, with decentralisation as the exception.

8.2.2 Significance of NPM to MIS

As reported in 3.6 the implementation of NPM formed the basis for the introduction of MIS to public administration in Uganda. The introduction of ROM as well as the introduction of a new approach to performance appraisal called for the empowering of all public administrators with quality data and information. The government responded to this demand through the introduction of modern information systems to public administration, beginning with selected ministries and local governments. The information systems introduced included the Personnel and Payroll information System, Budgeting and Financial Management Information System, Pensions Information System, and Physical Assets Management Information System (see 3.6.1). Decentralisation of public administration called for the development of modern information systems for local governments, that came to be known as the Local Government Information and Communication System (LOGICS).

Downsizing of public service led to the widening of the span of those who survived the retrenchment exercise. This meant that individuals were now taking up additional responsibilities, covering even areas where they had less competence. In many countries, the widening span of control led to increased application of artificial intelligence such as expert systems fuzzy logic, intelligent agents and artificial neural networks (see 2.3.1:34). For public administration in Uganda, there has been attempts to introduce tele-medicine in the health sector to enable medical personnel who were stationed upcountry to handle some of the complex problems that otherwise would require the services of a specialist. It is however, also important to note that the application of artificial intelligence in health service remains an ethical issue. The study revealed no examples of artificial intelligence at MFPED as a result of the downsizing of the establishment. Downsizing, also led to the increase in demand for office automation, as well as automation of both transaction processing (TPS) and process control systems (PCS).

The study reveals increased trafficking of top and upper middle level management to upcountry stations to conduct monitoring, supervisory and advisory work, prompted by the decentralization system. This takes place at a heavy cost to the tax payer in terms of per diem, fuel, and vehicle maintenance. According to Izama (2006) Uganda Government spends above Shs56billion (US\$28 million), on fuel and maintenance of its 11,000 car fleet. According to Izama, MOH claims 26% of this fleet, that is 2,933 cars. It is also argued that due to poor roads, most Ministries opt for 4-wheeled with over 3500 cc engine capacity (Izama, 2006). It is possible that with MIS, Government may be able to reduce the above expenditure significantly, without compromising efficiency and effectiveness.

As reported in 7.3.3.6.4, at the time of conducting this study, LOGICS for local governments was still on trial in selected districts that included Rakai, Rukungiri, Iganga, Mpigi and Mukono. This means, none of the districts that formed the focus of this study had any experience with LOGICS. Nevertheless, it should be stated that the establishment of LOGICS in Uganda took place in an environment that has no knowledge of working with a meaningful information system for decision making purposes. Under the

traditional approach to management, local authorities were mere extensions of the Ministries at the centre and were dependant on the mother ministry for their information needs. The study established that a task force was put in place at the headquarters of the Ministry of Local Government, to construct databases which were to constitute the information system in the name LOGICS.

With NPM, public administrators, at least in theory, need not follow the agreed processes and procedures imposed by top management. Instead, they are encouraged to be innovative and adventurous to ensure the attainment of tangible results. They are also encouraged to apply the SWOT approach to problem solving, that is consult widely while looking for the strength, weaknesses, threats as well as opportunities. Similarly, the new performance appraisal being proposed under NPM demands that individuals be supplied with the necessary tools including easy access to quality data and information. Furthermore NPM is about participatory decision making, Effective participation of individuals in decision making calls for adequate accessibility to quality data by all. In other words, NPM demands the establishment of modern information systems that include online databases accessible to all through computer networking. The alternative is the increased supply of quick reference tools. However, the traditional quick reference tools, as already noted under 2.2.4 suffer from numerous shortcomings to be able to guarantee quality data to managers.

8.3 Information Needs in Public Administration

8.3.1 Introduction

Objective two of the study was to examine the information needs in public administration in Uganda. MIS is about ensuring that the information needs in an organization are adequately met. MIS is built on the principle that 'information is for use' and that 'every user, his or her information'. The study thus sought to establish the actual information needs in public administration in Uganda.

Information needs in an organization as already pointed out can take several forms including data scope, data presentation, and information retrieval skills. Both the survey questionnaire and the guided interview treated the issue of information needs in terms of

data scope, and data presentation. The survey questionnaire provided the respondents with open ended questions. The respondents were required to identify their information needs in terms of subject scope with minimum guidance from the researcher. On the other hand, the guided interview took the respondents through a range of topics to which they were asked to assign a value tag in terms of very, very important, or important, or just important or not important.

8.3.2 Survey Questionnaire

Scrutiny of the information needs as spelt out by the respondents through survey questionnaire suggests that public administration as a whole is highly concerned with data relating to financial management, government policy, donor funding, economic indicators, capacity building, and HIV/AIDS. The demand for data regarding financial administration, government policy, donor funding, HIV/AIDS and capacity building which seem to cut across the entire body of public administration need special consideration.

The study established that this has a direct relation to the introduction of NPM in Uganda. Under NPM, issues relating to project management and accountability gained prominence, yet these are new to most administrators in Uganda. As noted in 4.5.5 many jobs under public administration today are executed under programme performance budgeting. The task forces often put in place are in great need of data concerning financial management and accountability.

It is also important to note that most government projects under NPM are still donor funded, where again accountability takes center stage. The need for more guidance on accountability explains the high demand for data on financial management. As for the high demand for data on government policy, NPM, under decentralization, makes local governments participants in policy formulation (see 4.5.1). Policy formulation by local governments must, however, remain within the confines of the broader national policy laid down by the Central Government. This means that time and again, local governments must refer to the national policy before they set their own in their deliberations regarding

policy. Furthermore, with the adoption of participatory decision-making, policy formulation is no longer a privilege of top level management, but all levels of management. These developments should enable us to understand the high demand for data regarding government policy.

Uganda is yet to recover from a twenty year period of political and economic instability. The country is unable to meet 90 percent of its development expenditure (Larok, 2006). Most government bodies look up to the donor community for the implementation of their developmental programs; thus the high demand for data on donor funding. Public administrators need data regarding the donor community such as the term and conditions of obtaining foreign funding.

As for capacity building, NPM instituted retrenchment and the retiring of many public servants within a short period, thus leading to the loss of intellectual property by many institutions. Furthermore, NPM introduced new challenges that included enlarged span of control, project management, regular accountability, and decentralized public administration. Some of these developments called for new competencies; thus the need for capacity building. .

On the other hand, other issues of concern to public administration vary according to sector. For example, MOH is reported to be concerned with data regarding health inspection, research advances, environment, disease burden, health education and school health (See 6.3.1.1). MFPEd is more concerned with public debt, taxation; household survey, national budget, and the like (see 6.3.1.2). As for LGs, issues of concern include taxation, health, law and order, agriculture, physical planning and appropriate technology (see 6.3.1.3). It may be remembered that under NPM, local governments are responsible for most of the service delivery.

8.3.3 Guided Interview

The guided interview reveals that while the information needs of MOH and MFPEd are more focused, those for LGs are fairly widespread. Administrators under LGs need adequate access to data concerning public administration, the economy, local administration, education, health issues, politics, law and order, agriculture,

industrialization, trade and commerce. MOH, on the other hand, is concerned mainly with health related data, and to a lesser extent, economy and education related data. As for MFPED, the concerns are a little bit more diversified than those of MOH (see Table 13). Besides, data on economy, MFPED is concerned about data regarding industrialization, commerce, local administration, agriculture, education, politics, law and order. MFPED is very central in assisting the government in the formulation of macroeconomic policies and programmes. It is also responsible for the budget allocation and the implementation. These responsibilities put MFPED at the center stage in monitoring the performance of most government bodies.

The guided interview also reveals that despite the improved attitude towards informal sources advocated by NPM, most administrators in Uganda still believe in formal literature as the most reliable source for data regarding decision making. In fact, the study suggests that informal sources, though widely in use, are officially frowned at by most people. The study also suggests that while customer tailored data is on high demand, only 7% of the data in use is in this form. As pointed out by KCC, time and again, studies are commissioned by public administration where data is published in a customer tailored format; but due to the poor data storage systems in use, this data which costs so much to produce is rarely put to further use beyond the immediate objective of the study.

Gray literature, according to the study is also on high demand but not easily accessible. This may be attributed to the poor documentation work and service prevailing in information management. Similarly, electronic data is on high demand but not easily accessible.

8.4 Evaluation of the Data Management Systems

Objective three of the study was to evaluate the data management system in the public sector. This was done to establish the degree to which the prevailing information system conforms to MIS. Under the survey questionnaire research method, the study examined the level of automation attained in information management, the data communication systems in use, the level of data processing, computer usage, and the level of satisfaction in the information system by public administrators.

8.4.1 Automation of the Information Systems

MIS as described under 2.3 is a computer-based system. Under what is described as information explosion, one of the pre-conditions for MIS is the establishment of an automated information system. The data management system in public administration as reported under 6.4.1 is predominantly manual. A similar observation is made under guided interview where it is reported that the information system is partly manual and partly automated for both MOH and MFPED; and completely manual for local governments.

The study notes that nearly all the departments at MOH and MFPED are supplied with computers. Such departments are able to access data from the Internet; including accessing data from websites of various organizations, such as the Bank of Uganda and the Uganda Bureau of Statistics. Some departments have gone a step further to set up in-house databases.

The study notes that information in the form of governmental and institutional report is presented to decision makers in its original form. The problems of a manual information system, as alluded to in 2.2.4, include limited: indexing, content analysis, access points, ability to manipulate data, and communication capabilities. The study notes that with constraints such as those listed above, it becomes almost impossible for workers to put the available data to full use. In other words, manual information systems often represent what may be referred to as being “data rich but information poor”.

8.4.2 Data Communication

Findings on data communication as reported in Figure 10 reveal that data communication largely takes place in printed form, followed by verbal, radio and online databases. The discussion on data communication under the literature review as reported in 3.2, reveal that data communication takes place via institutional reports, memos, letters, newsletters and newspapers. The study establishes that newspapers are an important source of data for public administrators in Uganda, as they are topical, easy to read, affordable, and generally reliable. As it can be noted in section 3.2.4, newspapers are available in both English and vernacular languages; and with the road transport system prevailing in the

country today, newspapers are able to reach nearly all district headquarters in the country on the same day of publishing. The issue of newspaper management is critical as with a publishing industry is far from developed, newspapers are almost the only dependable source available for data for research and managerial work. In most organisations, newspaper collections are stored for a limited period, after which they are sold out for use in the wrapping of foodstuffs and lighting of charcoal stove.

Ugandan newspapers are published without an index, thus making information retrieval extremely daunting, especially when it is a retrospective search. The newspaper industry is also well known for using cheap paper material which is difficult to store. Only a few institutions in the country are able to store newspapers for long term use. Legal deposit centres such as the Makerere University Library, the National Documentation Centre at the Uganda Management Institute, and the National Library, and other well established information centres in the country, acquire newspapers for archival storage and use. The Makerere University Library, for example, is equipped with specially designed room facilities for lifelong storage of legal deposit materials.

As of now, newspaper processing is limited to elementary processing that include simple recording, and binding of the newspaper collection into quarterly or yearly volumes bound with hard covers. Without an index, and without a modern archiving system, Ugandan newspapers fall far short of a dependable tool in management. The MIS programme need to recognise the critical role newsprint can play in promoting the MIS philosophy, first through full indexing of the newspaper literature. Secondly, through modern archiving systems where back issues remain accessible both online and offline.

The finding on the data communication systems in place again reveal that oral communication is widely in use, especially in the form of meetings, and informal consultations. Long meetings are said to be taking place regularly at KCC and MFPED as one way of promoting participatory decision making. Most people, however, argue that all embracing meetings are unproductive as they remain dominated by a few individuals. As a matter of urgency, public administration need to explore the effective way of effecting participatory decision making through group decision support systems (see 2.3.3).

The study notes that communication of information for administrative purposes through the radio stations is very strong in Uganda (see 6.4.2). In the absence of a well developed telecommunication infrastructure in the country, radio stations provide the cheapest avenue to mass communication. Much as many government programs and policies are being aired through radio stations, the system is weak from the management's point of view as it has no memory to store data and information that can be retrieved by an administrator as and when it is convenient. The television stations suffer more-or-less the same problem as radio stations of operating without a memory. It is only through computer related technologies that Government will be able to solve the problem of readily accessible data for all its personnel stationed in the field.

The study notes that the Internet is becoming a very efficient and effective source of data for public administrators in Uganda. Several government institutions have established websites which one can visit at his or her convenience for data and information. Government websites are a popular source for data concerning government policy and programmes. Both MOH and MFPED are provided with websites; that of MOH being found at <http://www.health.co.ug>. Similarly, local governments under Local Government Information and Communication System (LOGICS) are provided with a website. At the time of conducting this study, LOGICS was still confined to the pilot districts none of which were the five districts that formed the focus of this study. However, as reported in 7.3.2.6.1, most government websites suffer from poor management. They are limited in scope, rarely up-to-date and operate on limited bandwidth resulting in failure to open most of the time. The newspaper industry is effectively utilizing the internet facility. The two leading local newspapers in Uganda, *The New Vision* and *The Daily Monitor* are now accessible on the internet (see (<http://www.newvision.co.ug>; for *New Vision*; and <http://www.monitor.co.ug>, for the *Daily Monitor*). The two represent full text electronic publication of the national, regional or local news; letters and opinions, business and finance and sports. Other areas covered include discussion forums, topical issues such as women and men, inside politics, life, chat rooms, discussion and debates on selected radio stations, among many other issues. Two things, however, remain to be done to enhance the productivity of the above effort, for the good of promoting MIS in public administration. First, there is a need to archive electronic newsprint on compact discs for

both long term and wider use of the product. Second, there is need for full indexing of electronic newsprint, including the linkage of related discussions taking place over a period of time.

Figure 7 in 6.4.2 identifies online databases as one mode of communication widely in use by public administration. This, however, contradicts the observations made under the literature review and the guided interview reported in 7.3.2.4. Most local data bases at MOH are reported to be operating on stand alone, or limited network systems, suggesting that data dissemination takes place in printed form, or diskettes. As it is pointed out under 6.4.2 CD-ROM technology in public administration in Uganda remains undeveloped.

Liberalisation of the telecommunication sector has yielded dividends. As already noted 3.9.4, three international telecommunication firms have helped in opening up the country with optical underground cables as well as satellite technologies. Soon, it will be possible to access the internet even from the remotest parts of the country. This means that public administrators almost all the country will be able to access web-based information with ease.

8.4.3 Information Processing

The discussion under 1.3 suggests that public administrators generally prefer data that is well processed. It is possible for researcher and other academicians to make good use of the printed, quick reference tools that include dictionaries, directories, handbooks, encyclopedia, manuals, yearbooks, almanacs, indexes, abstracts, bibliographies, digests, and statistical bulletins. Their information needs are fairly stable. This is not true with managers and administrators who have to switch from one problem to another at the same time. As reported under 2.2.4, the problems of quick reference tools for management purpose are numerous. The only way to treat the information needs of public administration in Uganda is through construction of digital databases which may be accessible both online, and offline.

The importance attached to quality data by public administrators needs to be seen in the light of the effort being made by individual departments at MFPED to maintain mini-information resource centres to address the local information needs. As reported in

7.3.2.3, this effort in some departments includes negotiating with other departments within and outside the Ministry for cooperation and resource sharing in the production of value added information products. Quality specialized information processing involving specialized fields such as law, health, foreign relations, cannot be left to general librarians. It demands specialized training in both information management, and the subject area. As reported in 7.3.2.5.2, MFPED has addressed the problem by co-opting subject area experts from within the ministry to assist in the production of quality value added information products. This approach, however, does not address the information in the diverse of fields. Further more, with each ministry being left to grapple with the problem on its own, it can easily lead to wastage of resources through unnecessary duplication of effort.

Decentralised specialized data processing can be both productive and wasteful. Centralised processing leads to economies of scale, but renders treatment of the nitty-gritty extremely difficult. On the other hand, decentralized processing provides room for customer tailored service. As pointed out under 2.3, MIS is largely about customer tailored information service. Sectoral decentralization of specialized information as once proposed under decentralized bibliographic control could provide the key for the future success of MIS for public administration in Uganda. It amounts to setting up sectoral information analysis centres (IAC) to handle the issue of specialized information processing in the country. As alluded to under 3.3.4, IAC are specialized information systems that provide services such as indexing, abstracting, information analysis and consolidation, information repackaging on a sectoral basis. Other services IAC can provide include translation service, management of homepages, management of online databases, and the networking of the various sectoral information sub-systems and services.

8.4.4 Computer Usage

As reported in 2.3 MIS is a computer based system. The computer is needed for efficient and effective data storage and retrieval, and for specialized data analysis and presentation. MIS sub-units such as information reporting system (IRS), decision support systems (DSS) and executive information system (EIS) are all computer based systems.

The finding made on computer usage as reported under 6.4.4 suggests that computers are being used by public administrators for word-processing, followed by spreadsheet work, rather than management of databases, data analysis, data communication and information repackaging. The guided interview, as reported under 7.3.2.4, confirms this by showing that while computer resources at MOH are under constant use, they are being used to produce project reports. The study, thus suggests that even for the government departments that took part in the MIS pilot study, MIS is still at its infancy. UMWHC (2002) reports that although the level of penetration of computers within public administration is reasonably high, the level of utilization of computers to support organizational activities and operations is still very low. In most cases computers are being used for basic tasks like word-processing. In other words, not many of organizations are using the computer to enhance the value of the data stock available to public administrators.

The study reveals that the success of MIS is dependant on the creation of a collection of data bases, including especially and *factual databases*. It is also about establishing online or offline access to databases of different organisations, including commercial firms, regional and international agencies. Chapter seven reveals is that what is in place are fragmented databases of limited scope and operating independent of each other. The information resource personnel need to find a way of bringing these together into an integrated system. They can do this through compilation of directories of types of websites and databases of importance to their user groups.

The study further reveals that direct data mining by public administrators is still minimal. Top administrators in particular, prefer to rely on informal sources such as experience of ones self and that of those in the neighborhood. Any form of data retrieval is done through a third party who in this particular instance is the database manager, or a stenographer. Tactical decision making involves modeling which is interactive, and therefore does not augur well with indirect access to data. A one-to-one interaction between the computer and the end user is of paramount importance. Extensive use of MIS by public administration is partly being hampered by the limited training of public administrators in data mining and analysis.

8.4.5 Management Information System

In chapter two, 2.3 it is reported that MIS is constituted of information systems such as information reporting systems (IRS), decision support systems (DSS); executive information systems (EIS), group decision support systems, and a collection of information systems under a collective name, artificial intelligence. Chapter 2, on page 32, we learn of what an effective MIS need to be. The study reveals the MIS program for public administration in Uganda is still faced with a lot of challenges.

Information reporting systems largely refers to adoption of computer power to create databases of structured data in the form of indexes, abstracts, digests, statistical bulletins, directories, manuals, and handbooks. Databases are superior to the traditional quick reference tools in that they offer increased data storage, easy ways to modify data, online access, flexible retrieval system, more access points, more room for content analysis, and increased room for data analysis. With these features, data becomes very easy to use for management purposes. Unfortunately, the information systems at MOH, MFPED and local governments is yet to exploit computer power to generate in-house databases that are able to yield a successful IRS. The data bases in the form of websites which are in place are limited in scope, and updating takes place infrequently.

Similarly, exploitation of external databases by public administrators in Uganda is still limited. International databases have their focus elsewhere and are thus limited in scope from Uganda's point of view. Furthermore, due to limited exposure the information personnel are not fully equipped with the technology of search engines. Thus, while for a field like health, there are hundreds of databases located under the different search engines, the information personnel have not taken the trouble to identify and establish the the potential of each database. Ordinarily, the information personnel are expected to be at the forefront of all developments concerning information management in their respective areas of influence and guide their clients accordingly. This is one way of determining the difference between professional information workers and those simply passing as information workers.

The application of Decision Support Systems (DSS) by the public sector in Uganda is very limited indeed. This is attributed to limited experience with working with decision models. However, as reported in 2.3.2, the problem regarding DSS is actually a global one problem. Collan and Shuhua, (2003) report that most managers find it difficult to work with DSS support tools. The two report that DSS's use requires intensive intervention, direct involvement and manipulation of the process from the user. Observations made by Collan and Shuhua (2003) are echoed by Raggad (1997) and Eom (1999). Eom asserts that due to the above factors, global interest is shifting from DSS to new areas such as, group decision support systems (GDSS), model management, user-interface/individual differences, and implementation.

Executive Information Systems (EIS) refers to production of value added information products for use by top level management. The study reveals no extensive use of the computer resources by the information personnel for the development of an executive information system. As reported in 7.3.2.3, failure by the information systems to generate value added information products has forced some departments to operate mini information systems that produce such information products for the department. Rather than remaining passive, the onus is on the information personnel to demonstrate their worth to the organization by being proactive when dealing with the information needs of their clients.

On the other hand, the issue of EIS, as reported in 2.4.3.2 presents new challenges. According to Zairi, Oakland, and Chang (1998) EIS alone is not enough to guarantee organizational effectiveness at top level, since executives' information requirements are difficult to define as their information needs are continuously changing. The same scholars argue that EIS cannot afford to leave out middle management when defining its user group as it is middle management that is responsible for interpreting computer paper reports for the executives. Zairi, Oakland, and Chang (1998) point out that the emerging view is that EIS need to spread horizontally across and vertically down to other organizational managers to become what may be referred to as "every-ones information system" (EIS). Zairi, Oakland and Chang argue that the current trend is to view EIS as technology for information delivery for all business end users.

The computer system in public administration, as reported in 6.5.3 is said to be a stand-alone system. Without a LAN system, it becomes almost impossible for public administrators to implement group decision support systems (GDSS). As pointed out under 8.4.2:228, most organizations have resorted to long, all-embracing meetings. It is also noted that such meetings are never as productive as they should be, as they rarely give equal opportunity to all to be heard. Besides, they consume a lot of time, stationery, and even transport for some who may have to travel.

GDSS in the form of decision rooms, decision networks, and teleconferencing stand to become one of the leading torches in the practice of MIS. As described in 2.5.1, it makes organizational meetings more productive; provides a criticism-free idea generation environment; allows for objective evaluation of contributions and it also allows preservation of organizational memory. GDSS stands to help public administration save millions of shillings, currently spent on per diem, travel, and hotel bills, through teleconferencing. Every effort needs to be made by public administration to exploit this innovation in the best way possible.

The spirit of cooperation and resource sharing as demonstrated here is highly commendable. MIS is capital intensive in terms of hardware, and software requirements, maintenance, and expertise. Public bodies need to come together and work out ways and methods of cooperating in sharing the limited resources around them.

Neither the questionnaire survey nor the guided interview revealed extensive application of expert systems by public administration. Extensive application of telemedicine by the health sector is yet to take off, but the introduction of decentralization offers ample room for expert systems between the Centre and local governments. On the other hand Smith, Nuget, and McLean (2002), as reported under 2.5.2.4 caution that intelligent agents, including expert systems have not been very successful in health care services even in other places. One main barrier is identified as lack of criteria for evaluation, leading to poor confidence in the system by clinicians and health care managers. Smith, Nuget, and McLean also point out that the use of intelligent DSS in health care fields evokes ethical issues of using systems whose inner workings cannot be explained as their processes are not transparent.

While public administration in Uganda may be constrained in its attempt to implement the various MIS programs, Selim in Collier and Dixon (1995) point out that ‘information reporting’ and ‘data collection’ are actually the most important elements of MIS. It could therefore be argued that while it remains difficult to find enough resources to lift the *entire MIS programme off the ground*, it may be advisable, for the time being, to concentrate the available resource on improving the data collection and information reporting.

8.4.6 User Satisfaction

The study reveals a contradiction in the satisfaction derived by public administrators in the service given by the information centres as per the two research methods. As per Table 8 under 6.4.5, the information system is satisfactory in its delivery of current data, reliable data, timely data, data that is easy to retrieve, adequate data, data sharing, and protecting data from loss. In other words, the information system under public administration is good.

Findings from the guided interview paint a different picture. Respondents from MFPED, as reported under 7.3.2.5.2, place user satisfaction at less than 30 percent. The Library and Information Center at MFPED is blamed for failing to collect even the publications produced by the institutions around the Ministry, and with whom, MFPED. Among those mentioned were the Bank of Uganda and the Uganda Bureau of Statistics. The Library and Information Center is also blamed for inadequate data processing, such as producing value added information products. It is further blamed for failing to make effective use the computer resources at its disposal through the construction of in-house data bases. Further more, it is blamed for turning the documentation centre into an information centre for the general public by allowing external users indiscriminately. It is also important to note that many evaluations of the information system in public administration have drawn the same conclusions (see Bamuhoro, 2002; Najjuko, 2001; Kalule, 2002; and Candiru, 2001; Matovu, 1994).

As reported in 7.3.2.5.1 respondents from MOH were less critical of the service rendered by the documentation unit. Their satisfaction is, however, derived from having a more

conducive reading environment being provided by a new, modern and spacious library, rather than the supply of quality data to decision makers. MOH headquarters is a new ultra-modern structure constructed with funding obtained from the international donors. The small library is furnished with modern furniture. It is however, spacious due to the limited stock of information resources available. The library is however, being used by the medical students from the neighboring medical school rather than the personnel at MOH.

The researcher noted that the habit of individuals and departments maintaining a mini *information centre* is also being practiced at MOH. In fact going by the quality of information personnel at MOH, it may take a little longer for MOH to put in place an effective documentation centre. The information resource manager needs to go for further *training in documentation work and service*.

The disparity in the assessment given of the information system by the two research methods is partially due to the fact that under the guided interview, the respondents had the opportunity to seek clarification on issues relating to information management. As for the survey the questionnaire most questions were treated simply on face value.

Local authorities had very little to say about the information system supporting them in day-to-day decision making. They do not have a modern library, or a documentation centre, let alone having a registry or an archival unit. What they have as a registry is a cupboard where folders are stored. The Kampala City Council which has more paper work has its registry in box files which are piled on top of each other somewhere on a table.

In view of the poor information system, it can be argued that decision making in public administration is based on the experience of the decision maker himself or herself, and the experience of those around him or her who may be consulted informally. Information managers in public administration should see it as their responsibility to identify the information systems relevant to the sector and bring these to the attention of their user groups through awareness creation and establishment of online or offline systems. The information system at MOH, for example, tries to link the health sector with such systems

as 'Avega' (see <http://www.avega.com/web/avega.rsf>). Avega through its Alliance Decision Support is able to integrate financial, clinical, and administrative information from various systems to support decision making throughout the health sector.

8.4.7 Evaluation of Specific MIS Programs

The guided interview offered the researcher an opportunity to focus on specific information systems during the field work. The findings here are reported in section 7.3.2.6. Hereunder is further discussion of those findings.

Under 3.6, the study notes several attempts by the Government to establish modern information systems for public administration in the country. This resulted in several MIS related systems which include the Personnel and Payroll Management System, Assets Information Management System, and Pensions Management Systems, all under MFPEd. Others included Education Information Management System, Judiciary Information Management System. The study notes that this effort was motivated by the need to have a modern information system for control or planning purposes, rather than giving support to day-to-day decision making. The study also notes that the exercise was being championed by the Ministry of Planning, and that the main focus was on monitoring transaction processes, or service delivery. The study again notes that under civil service reform and reorganization, the Ministry of Economic Planning was merged with the Ministry of Finance, with some of its activities like the statistics department being carved out to become a parastatal body. The study also notes that in the course of these changes, the sectoral MIS programs reverted to the line ministries where many continue to operate without much guidance and supervision.

It is further noted that the initial MIS programs were developed independent of each other. Lack of coordination resulted in the development of systems that are full of gaps and duplications. For example, it was established that both HMIS and EMIS are unable to provide data on school health. It was also established that HMIS does not cover data on human resource and no effort has been made by the information personnel to establish whether human resource data as demanded by MOH can be obtained elsewhere.

Stefanou and Revanoglou (2006) argue that healthcare institutions are complex, multi-functional, information intensive organizations that require sophisticated integrated clinical and business management information systems. The two identify several subsystems for a complete healthcare management information system. These include: order entry system; patient flow systems; patient records systems; administrative information system; pharmacy and materials management information systems; human resources management information system; personnel presence card system; financial and cost accounting information systems; patient relationship management system; picture archiving and communication system (PACS); laboratory information system (LIS); operation theatre systems; e-procurement system of medical supplies; telemedicine system; e-learning system; and web-based SCM information systems.

Bearing in mind the omissions under HMIS, most of the respondents, as reported in 7.3.2.6.1, rate at less than 30 percent in its productivity. One, however, needs to point out that the issue is not really for HMIS to supply each and every piece of a demand at MOH directly. Rather, HMIS, through a network system, should help the personnel at MOH access that data easily.

MIS programs need to recognize that three categories of information needs may be placed. The first is the umbra category representing the data that the information system should be expected to supply directly to its clients. The second is the penumbral category representing the data which it must organize to access from other information centres through cooperation and resource sharing. Thirdly, it is the alien category, representing any other type of information which may be satisfied through referral service. To avoid disappointing their clients, the information personnel need to have a clear understanding of what should be in each of the three categories, and how to deal with it when the need arises.

MIS in public administration needs the services of an information specialist specially trained in documentation work and service on the one hand, and having a fair knowledge of the subject area on the other. Data in public administration is needed for use in making decisions of strategic importance to the country as a whole. It must be data of high quality, that is reliable, adequate, timely and easy to use. With MIS, the long held view of

the need for double training for information workers has become even more critical. MIS management demand the services of information specialists who are at the same time social scientists, or pure scientists, or any other discipline. It is with double training that one can guarantee production of high quality value added information products.

It is reported under 7.3.2.6.1 that MFPED opted for team work involving the documentalists as information resource specialist, subject area specialists, IT specialists and a communication specialist. MIS is first and foremost, about content management. It is therefore the submission of this thesis that while the MIS program demands a wide range of skills, the information resource specialists, rather than the IT specialist or subject area specialist should assume the leadership role of the programme. MIS is about data collection, information repackaging, information analysis and consolidation, and training information needs and information seeking behavior. This means that, ICT and subject area expertise are important, but only to the extent of giving support to what is expected of the information resource specialist in service delivery.

Data for planning purposes may be textual or statistical. Management of statistical data requires specialised training in areas such as econometrics, and macroeconomics. The Macroeconomic Department at MFPED has contributed immensely to the repackaging of statistical data for the Ministry through the application of econometrics. Management of statistical data, however, cuts across the entire spectrum of management and administration. It could thus be more economic for the Uganda Bureau of Statistics to make it part of their duty to produce value added statistical information products, on top of the raw data produced by them.

8.5 Evaluation of the MIS Infrastructure

Objective four of the study was aimed at examining the adequacy of the MIS infrastructure in Public Administration in Uganda.

In this new age of information explosion, the possibility of successful MIS that is manual is almost incomprehensible. Computer power through its numerous capabilities has led to

the rejuvenation of decision support systems in management through high data storage capacity, multiple access points, expanded data analysis capabilities, efficient data communication, file sharing, real time processing, among others. This helps to explain the strong view held by many that while MIS can be manual it is computer power that makes MIS truly effective. Computer power enables information personnel to create online databases. It is with the help of computer power that we can talk of customer tailored service. It is also with the help of computer power that we can effectively talk of executive information systems, decision support systems, and information reporting system, group decision support systems and artificial intelligence. While treating MIS infrastructure, the study examined MIS infrastructure in terms of computer stock and accessories, office automation, networking, the quality of information management personnel, information proficiency amongst public administrators, and IT literacy, among others.

8.5.1 The National Information and Communication Technology Policy

It is argued that telecommunications systems are of paramount importance in the sectors of health, international trade, defense, disaster warning systems, education, business, rural development, and that efforts are underway to integrate ICT even more strongly into the poverty Eradication Action Plan (see Ministry of Trade develops ICT policy, 2006). As already noted in chapter three, one of the most important developments taking place in the country today regarding MIS and public administration is the enactment of national information and communication technology policy framework (NICTPF). The Information Policy, or more specifically, the Access to Information Statute, 2004, and the ICT Policy, have been replaced by NICTPF. Among the most important features of NICTPF is the declaration of the national understanding of the strategic role of information and ICT. This declaration is very central to the notion of national development, the guarantee of the right to access to information, the attempt to put in place structures and mechanisms through which government is able to make information easily accessible, and the commitment of government to e-government.

The government, in its NICTPF is also bent on establishing ICT centres of Excellence to spearhead ICT related research, contribute to skills development in the ICT sector, and

establish coordinated sectoral policies that encourage and promote access to and affordable use of infrastructure. The study notes that NICTPF activity areas include: promotion of use of digital networks, establishment of a National Internet Protocol backbone network, establishment of connectivity to the Global Information Infrastructure (GII), provision of Internet Points of Presence (PoP) to all district headquarters, establishment of a National Internet Exchange Point, establishment of information and communication access points at all districts and sub-counties in Uganda, establishment of a *National Information Portal* to promote dissemination and access to information in the public and private sector, establishment of infrastructure that addresses ICT needs of crosscutting sectors like health, education, agriculture, local administration, and the like, establishment of *Internet-ready Industrial Parks* to engage in data capture and data processing export work, and development of incentive schemes to encourage investors to extend services to rural areas. The study notes that these are important features of the progress towards MIS by public administration in Uganda.

The study, however, notes the replacement of the *Ministry of Information* with a *Department of Information* at the President's Office. It also notes the replacement of the *ICT Coordinating Agency* with a *National Information and Communication Policy Framework (NICTF)*; and the placement of NICTF under the *Ministry of Works Housing and Communication (MWTC)*. This was made to happen because NICTF was meant to spearhead the government's efforts towards e-government, and most people in the government look at e-government more as a communication issue rather than a strategy to exploit the information resource for quality decision making.

As reported in 3.8, politicians look at information more as a political weapon which can be used against one's political opponents efficiently and effectively. Rather than promoting access to information, information is being subjected to distortion on the one hand, and censorship on the other, to serve political interests in both cases.

For MIS to prosper in the management of public administration in the country, it is necessary to place the issues concerning content management under the *Ministry of Public Service*. Alternatively, information management could become a full government ministry in the name of the *Ministry of Information Management and Communication*

Technology (MIMCT). In a country where gender, youth, and sports are treated at ministerial level, elevating the information resource to the same level of treatment is far from overstretching, to say the least.

8.5.2 Computer Stock and Accessories

Accessibility of personal computers (PCs) has been recognized as an effective indicator of the extent of ICT in society. Presently, computer penetration in Uganda is estimated to be less than 1 PC per 1,000 of the population (UMWHC, 2002:5). The study under 6.5.1 reveals that computer penetration in the public sector is heavily in the favor of the of the Central Government as opposed to the local governments, with both MFPED and MOH enjoying a one-to-one, and one-to-two computer-staff-ratio respectively. This compares compatibly with the one-to-ten computer-man ratio reported by the Kampala City Council (*see 7.3.3.1*).

The regulations regarding international donor assistance favor KCC as compared to other local governments. KCC being the capital city is permitted to lobby donors directly for assistance in development funding. On the other hand, other districts can only do so through their parent ministry, the Ministry of Local Government. The study notes that despite such a privilege enjoyed by KCC, Bushenyi District Administration compares very well with KCC in computer stock, a situation attributed to the personal interest Bushenyi District has had in establishing an efficient and effective data management system.

The study reveals that secondary storage devices such as magnetic disks, optic disks and magnetic tapes are very important in any MIS program. They provide the means for data storage and transfer in machine-readable form. Data generated by public administration influence decision-making in many organisations within and outside public administration. This calls for efficient and effective means of data transfer within and between public bodies. In the absence of a local area network (LAN), magnetic disks as well as magnetic tapes provide the best alternative. The study, however, revealed a limited use of both computer networking and CD-ROM technology. The CD-ROM facility is grossly under-utilised partly because the issue of CD-ROM writer is still a

mystery to most public administrators in Uganda. With the coming into being of digital radios and television, this attitude is changing very fast, as CD-ROMs are now becoming house-hold items. Nevertheless, so long as the data transfer mechanism remains in printed form, development and growth of MIS in public administration will remain extremely hampered. Printed data is static and is thus less amenable to further analysis. The study reveals that while most computer accessories are readily accessible at MFPED, the situation is not so good at MOH. The maintenance system at MOH also has to grapple with the traditional red tape.

8.5.3 Office Automation

The study reveals a situation of poor office automation in the public sector, resulting in a manual or semi-automated data management system. As reported in 2.6.2, a study of MIS infrastructure include the transaction processing system(s) in place and the success of the MIS program depends a lot on the MIS infrastructure. Crude methods of data capture, such as, use of data entry clerks, are not only error prone but slows down the system completely, leading to delays in data availability. As a result, important decisions may be deferred or decision-makers are forced to resort to informal sources such as experience, or guesswork. Automation of transaction processing through transaction processing systems (TPS) provides efficient and effective methods of capturing data for the MIS activities. For Uganda, even for MOH and MFPED which claim to be semi automated, the transaction processing system is still manual, thus undermining what would be there for MIS to offer. In the absence of LAN systems, public bodies including MOH and MFPED are characterised by crude methods of data capture, poor retrieval systems, and poor dissemination systems. As noted in 7.3.2.6.1 HMIS is ineffective because there is no easy way of accessing its data even by the staff at the headquarters. Data can only be accessed via printouts, or by downloading it on diskettes and CD-ROMs, a process that is fairly cumbersome. We learn from the presentation at 7.3.2.6.1 that the system is benefiting mainly external users such as the medical students from the neighbouring medical school. MIS needs the support of adequate office automation in the name of personal computers and computer accessories, as well as modern communication systems.

8.5.4 The Internet

According to Thapisa and Birabwa (1998) the biggest infrastructural problem found in the Least Developing Countries is the lack of telecommunications networks that can support distributed applications. They argue that this constitutes the biggest obstacle to the incorporation of data interchange (EDI), which has advantages such as the reduction of error and increased speed of transactions. With the liberalization of the communication industry in Uganda, the country is on the verge of overcoming the telecommunication problem. What remains for stakeholders is the exploitation of the new telecommunication system in place that includes the Internet. The internet is a key feature in the establishment of MIS in public administration. Public administration is a global phenomenon, and public administrators across the globe need to interact freely through exchange of data and experience. The internet provided us with one wide area network that supersedes all other networks. Public bodies, through the internet are able to establish online databases, and home pages which become accessible to all information seekers within and outside public administration. The internet has become the easiest and cheapest way of exchanging data with the outside world largely through home pages. However, as noted in 7.3.2.5.2, most homepages in Uganda do not open easily due to the limited bandwidth available to most organisations. Sarwar (2005), a university student in England, laments that he could not access the Mulago Hospital where he was contemplating to undertake a placement. In another article "the East African Sub Marine Cable System The Monitor 23/04/2004", it is reported that Uganda is still connected to the international gateway via satellite, an expensive technology whose transmission capacity is also limited. It is further reported that under the project "the East African Sub Marine Cable System" due for completion in 2007, the country will be hooked onto the international digital highway via optic cable whose transmission capacity is much larger. Biryabarema (2005) argues that the Uganda Government needs to partner with the private sector to roll out the Internet access Infrastructure as one way of boosting the internet access in the country.

Exploitation of the Internet by public administration also needs to be done with caution. The Commissioner of Police in Uganda reports that Internet crime is on the increase. The

Commissioner observes that as a result of the Internet financial fraud, drug trafficking, and pornography are on the increase (*see Internet crimes worries police The Daily Monitor*, January 9 2006). The Commissioner also observes that unfortunately, most police officers in Uganda are still computer illiterate, and thus, do not know how to prevent Internet crimes. Internet sustainability by public administration in Uganda is another issue of great concern. The Government in Uganda is known to be the greatest defaulter, as it is always in arrears nearly in all its commitments. Tusubira (2006) alludes to the challenge public administration stand to face in its Internet aspirations. Focusing on Makerere University, Tusubira warns on the crisis faced by the University in sustaining the bandwidth contracted by the University from its two Internet Service Providers (ISPs), namely MTN and Uganda Telecom (UTL). According to Tusubira, the recovery transfers for the last two years average at USD\$3000, (about Ushs 30/- million).Tusuubira further reports that the cost of Internet bandwidth alone outside all backbone maintenance costs is Shs70/- million per month, and that the accumulated arrears by March 2005 stood at US\$289,000/-. Tusubira reports that Makerere University has been notified of the likelihood to terminate service by its ISPs, unless the University pays up the arrears. According to Tusubira, the long term solution available to Makerere University is scaling down the bandwidth from the present 21 Mbps to about 6 Mbps. This proposal, however, needs to be seen against the negative effect it stands to have on the efficiency and effectiveness of the system.

8.5.5 Government Funding

The study reveals that the majority of the ICT projects which are ongoing in the country are donor funded. Among those identified are, the ACACIA project for pilot Tele-Centres at Nakaseke, Buwama and Nabweeru, the DANIDA Local Government Project in Rakai District, the Infodev Information Infrastructure Agenda at the Institute of Computer Science at Makerere University, the Inter-Ministerial Mapping and Geographic Information System (GIS), the Academic Research Network Project; the initiative to Create an ICT Resource Centre and Internet Café, the Local Area Network and Internet Connectivity Project for the Parliament of Uganda; and The Campus Network Project for

Makerere University. Similarly, nearly all MIS programs visited during the course of the study were donor funded. Among these were the Health Management Information System (HMIS), the Education Management Information System (EMIS), and LOGICS. It was also established that the Kampala City Council had submitted an application to France to be assisted in funding the automation of the information system at KCC. In other words, the Uganda Government is yet to show its full commitment to MIS in public administration. Lack of indigenous funding is responsible for the imbalance in ICT development between central and local governments; as well as amongst the various Government departments. Information under MIS assumes a strategic status in an organisation. The long term sustainability of MIS in public administration lies on the Government being ready to provide direct funding towards the program. As reported in 2.7. Qureshi (1998) pegs the problem of incompatible systems found in developing to excessive dependence on foreign donor funding. The MIS program for public administration in Uganda stands to suffer the same fate as many other Government programs, of crumbling immediately after international support is put to an end.

8.5.6 Computer Literacy

The study in 7.3.3.6 observes that computer literacy stands at 100 percent at both MOH and MFPED. It is argued that downsizing of the size of public administration as reported in 4.3.6 deprived public bodies of support staff that included stenographers, thereby forcing public administrators to master word processing and spreadsheet skills as they had to process their work by themselves. Similarly, the application of Result Oriented Management (ROM) put departments under continuous pressure to submit progress reports. It is also important to note that the Civil Service Reform Program (CSRP) of the early 1900s helped public administration with a new stock of public administrators made up of young men and women, who were fresh from institutions of higher learning and were eager to work with ICT. Many of the young and energetic public officers got a chance of being sponsored for advanced degree programmes, specially designed to match the challenges of working in an information society. It is also important to note that the introduction of the Integrated Financial Management System (IFMS) across the entire body of public service made it mandatory for all public administrators to become well

acquainted with working with computers. These developments combined helped to raise the level of computer literacy especially with regard to the central government.

However, the study also reveals that only a few are familiar with the technology of search engines; and fewer again are familiar with decision models and expert systems. ICT in the two ministries' Basic computer literacy at MFPED is placed at 100 percent while specialised literacy is much less. ICT utilisation is predominantly used for basic operations. One respondent put computer utilisation at 65 percent for basic operations and 35 percent for specialised operations.

On the other hand, the study, in 7.3.3.6 reveals that computer literacy under the local government is less than 20 percent. The study establishes that while some personnel under local administration have had some elementary training in the use of computers, and that this knowledge soon fades for most people due to lack of practice. KCC, under the Local Government Capacity Development Program, has identified increased investment in computer literacy as the key to modernising the quality of administration.

Specialised computer literacy involving such areas as working with models is very important for the prosperity of the MIS programme. Due to poor remuneration by public the service, the sector is unable to attract well-trained and experienced personnel. As for the local governments, the situation is made worse by social factors such as reserving all the employment for the natives, a problem that often leads to recruitment of second rate civil servants.

To most of the respondents, limited computer literacy is the cause for under-utilisation of the computer resource. One senior official claimed that computer utilisation could be better if people had more training; pointing out that most people have only general training in computer usage, and that they just train on the job, especially for specialised computer application. Many argued for continuous upgrading in IT competence to be able to cope with the changes relating to hardware and software, with most of the respondents arguing for short courses rather than self-training.

Indeed, the importance of continuous training can not be overemphasized. Computer literacy is being undermined by the continuous changes in the hardware and software resources. Constant revision is almost common to all computer applications. The one time re-knowned disk operating system (DOS) has since been replaced by Window Operating System (WIN), which is also being revised at short intervals. Orientation of the end-users to such changes is a big challenge to organisations that want to pursue MIS seriously. Organising regular short courses for a gigantic body as public administration can prove very costly to the tax payer. Self-training through the use of manuals and informal consultations is the cheapest remedy available. The Government could be advised to adapt to changes in the computer industry through self training as one way of *executing performance appraisal*

In view of the dynamic nature of the ICT industry, there is need for specialised training of different forms for those aspiring to assume administrative positions in public service. Training in IT can be pre-service, in-service and on-the-job training. The finding on IT literacy by the questionnaire research reveals that *IT training by public administrators* has, to a greater extent, been on-the job than pre-service, or in-service. This may be seen as good as well as bad. A modern curriculum today must have reasonable treatment of IT coverage. Secondly, bearing in mind the nature of the IT industry, employers must be ready to spend on their upgrading of IT skills for their staff from time to time. More important however, workers must be ready for self-training through the use of manuals and invisible colleges. It is therefore encouraging that public servants already realize the importance of self training. Nevertheless, according to the interview guide, most public administrators would prefer short courses as opposed to the on job training. ICT is a very fast changing industry that it is only through self-training that an organization can effectively cope with the changes. In case of Uganda, the two, self-training and in-service training can reinforce each other very well. Regular upgrading of one's computer skills through self-training is vital for MIS prosperity. Public service may be advised to opt for contractual rather than permanent employment so that those unable to cope with the new working environment that involve self-training to upgrade one's skills can easily create room for others. Failure to put computer power to optimal use by the information resource personnel is also largely due to inadequate training in ICT.

8.5.7 Appreciation of IT Benefits

Both the questionnaire survey and the guided interview established a high level of appreciation of attributes such as increased data storage capacity, timeliness, currency, accuracy, sharing capability, communication capability, manipulation capability and data security by public administrators. This is derived from the results to the question on appreciation of IT benefits as presented in figure 18 in 6.5.4, as well as the response to the same question given in 7.3.3.4. To those in the local government, appreciation of IT has little to do with practical experience since the majority of them have not really worked with IT. Rather, it may be a result of the aggressive sensitisation and awareness campaigns carried out by the Government assisted by the donor community through workshops, at the time of introducing both NPM and MIS during the mid 1990s.

It is, however, important to note that despite the high appreciation of computer power, many public administrators from both MOH and MFPED are dependent on the printed text rather than on the online system. Many of them are yet to adjust fully to working with online systems. The study noted that it is not uncommon for top management to ask for a print-out from a subordinate even though the data could easily be obtained from the online system.

8.5.8 System Security

Most of the respondents appreciate IT's ability to provide improved data security. However, Belsis and Kokolakis (2005:189-191) assert that there is need to have in place an IS security management system to minimize risks that information systems face in their operation. Belsis and Kokolakis (2005:189-191) note that most security policies are faulty since these are static documents that reflect the technical and organizational context at the time of their creation. According to Belsis and Kokolakis successful security management demand the involvement of users and other stakeholders in security analysis, design, and implementation, as well as in actively defending the IS. This should involve effective communication of vision, rules, and guidelines to employees and other stakeholders. Furthermore, it should also involve eliciting and processing feedback significant for the activities of monitoring, reviewing, and improving the IS security

management system. The authors also argue that IT security requires specialized expertise.

8.5.9 Training of the Information Resource Personnel

Information resource managers need to become proactive in their exploitation of ICT. Unfortunately, most curriculums offer inadequate training in ICT. As a result, many easily get overwhelmed, leading to loss of confidence in their ability to exploit IT. This partly explains why computer resources at MOH and MFPED remain under-exploited.

The curriculum at the East African School of Library and Information Science (EASLIS), the leading training institution of information resource managers in the country, still emphasizes the practices of traditional library management. It is training that emphasizes the physical description of the information embodiment, as opposed to management of content. It is also training that is more concerned with library security apparatus, as opposed to optimal exploitation of its content. The issue that should take center stage is the minimization of library losses through theft and pilferage. Rugambwa (2000) argues that the curricula at EASLIS are excessively biased towards library scientists as opposed to information scientists; it is biased towards generalists as opposed to specialists, and has limited IT content. Kigongo-Bukenya (2001:79) also observes that the curriculum at EASLIS is biased towards librarianship. The three year Bachelor of Library and Information Science, for example, has its core subjects as management, information science, organisation of knowledge, that is, classification and cataloguing, bibliographic control and collection development. Similar observations have been made nearly by all the stakeholders including the Uganda Library Association, the university libraries, and the student body. According to many scholars, the information industry of the 21st century will require information professionals with a broad range of skills, such as knowledge of information and communication technologies, understanding of information economy and marketing, ability to combine and summarise complex information. Matovu also identifies a long list of new information profiles that will be on demand that include systems development, systems maintenance, systems analyst, programmers, computer operators, database administrators, communication supervisors, multimedia developers, multimedia editors, legal experts, digital media experts, digital

archivists, multimedia librarians, Web master, Screen designers, among others. The EASLIS Strategic Plan 2001/2005, recommends the introduction of wide range of new courses bearing on electronic documents, MIS, multimedia, software engineering, and database management systems (Kingongo-Bukenya, 2001). However, many of these recommendations are yet to be implemented. Thus most of the information resource personnel in the country still lack the necessary skills to put computer power to optimal use. As the campaign regarding MIS in public administration continues, the issue of curriculum review becomes very critical.

It is important to note that training in information management in some countries takes place after attaining graduate level training in a specialised discipline such as law, public administration and sociology, among others. In Uganda, the Bachelor of Library and Information Science offered by EASLIS takes place without formal training in any other discipline. Thereafter, BLIS graduates are admitted to a Master's Degree in Information Science. In the end, the country is supplied with a stock of highly trained information personnel, but who cannot apply their knowledge to any discipline competently. It is a group of information specialists who cannot generate value added information products in any specialised area.

In trying to get around the problem of inadequate training, MFPED in its new project named the Information Sharing Network, opted for an MIS management team constituted of the information personnel, ICT specialists, and economists as subject area experts (see 7.3.2.6.3). The approach involving a team with diverse skills, should, however, be seen only as a stopgap as it makes the MIS program more complex and expensive. For the long run, MIS management requires the services of just one specialist who is well grounded in the subject knowledge, information processing, and ICT. EASLIS should be aiming at producing individuals with a collection of those three skills at its basic level of professional training.

As already noted in 8.4.3 the study reveals that information service in public administration is not really up to user expectations. This was evident at both MOH and MFPED, with the information system being criticised for inadequate information processing. Information is given to end users in its primary form, with processing being

limited to simple gathering and indexing. Information centres should aim at documentation work and service. Documentation service places a lot of weight on the importance of gray literature, for being more current than formal literature. It places its emphasis on content management as opposed to mere identification of the information embodiments. It is also about creating adequate access points. The aim is to make any data available to the organization as productive as possible. Effective management of the information resource at MOH and MFPED also calls for the maintenance of directory on search engines, websites and online databases considered resourceful to the parent body. In other words, the future success of MIS is dependent heavily on the success made in the establishment of a knowledge base dwelling on document collection, content analysis, and compilation of electronic directories

8.5.10 Information Proficiency Amongst Public Administrators

Information proficiency amongst public administrators is important for the sustainable growth of MIS. Information proficiency means that administrators acquiring enough knowledge about the information resource are able to make a good assessment of its impact. This knowledge is important during resource allocation. The returns of information are difficult to quantify given its fluidity. The demand for information is many a time contextual. No amount of self training can provide a complete understanding of the information resource. Put differently, formal training is sought after by those *aspiring for administrative positions in the public sector, analogous to the training offered to those aspiring for managerial positions in the business sector.*

Public administrators in particular, need to be sensitised about issues concerning information policy, information repackaging, information analysis and consolidation, referral service, document delivery, among others. Tertiary colleges need to consult curricula such as the National Association of Public Affairs and Administration (NASPAA) by public administration schools in the United States for the purpose of introducing curricula that cover information management by public administration.

Emphasis on information proficiency is important. As Northrop (1990:505) points out, the payoffs from computer use are also power payoffs which include shifts in the relative

resources or influence of different groups, such as having technical experts gaining increased influence over elected officials from their enhanced ability to access and use information. Fear for the erosion of one's influence on top management over some managerial groups under him can easily undermine the drive towards MIS in some government departments. One way to avoid this is to increase information proficiency in public administration as a whole.

The discussion in 2.7 regarding MIS challenges suggests that workers in many organisations tend to be apprehensive about ICT because of the fear of rendering them redundant. Others, it is also mentioned, fear losing their influence of decision-making to IT managers in control of the organization's data. Even if these fears are genuine, in Uganda's case, this was not detected. However, one of the major factors undermining the optimal utilisation of IT resources in public administration is that of demonstration effect. More often than not, newly acquired computers, as is the case at MOH, are retained by top management, since they pass the old or less effective computers to the lower levels (see, 7.3.3.1). This is done without consideration of data management activities required of the different offices. Indeed some levels of management are more data intensive than others. Upper middle level management preoccupied with resource allocation need a powerful computer to be able to scan the environment as well as work with decision models. Inability to open some homepages as reported by some individuals at MFPED is partially due to having a poor computer. Application of decision models as well as expert systems as commonly associated with upper middle level management involve intensive use of the computer in the decision making process, thus the need for a good machine. Transaction processing at the lower levels of management also often calls for a good computer, with good memory, speed, and storage capacity. Unfortunately, top management, may choose to use powerful computers for stenographic work.

8.5.11 Help Desk

Marcella and Middleton (1996: 5-8) point out the importance of the help desk in the strategic management of information systems. They define a help desk as an accessible

service point providing on demand advice, information or action to aid the user in carrying out an IT-related task. They point out that the help desk is a relatively new phenomenon. Hayward (1995) describes the help desk as the approachable, public face of IT within the organization and a probing and highly critical tool. Pancucci (1995) argues that the help desk may take on the broader role of acting as the front line for IT with a move toward a more expert service acting as advisors in decision making. According to Marcella and Middleton, the help desk may be a centralized or a multiple help desk, manned by staff working exclusively to assist users accordingly. It should be manned by experts or staff with basic knowledge of the working of the MIS system.

8.5.12 Electrification

Among the challenges likely to face the development of MIS in public administration in Uganda is the inadequate power supply. It is reported in the Daily Monitor newspaper that electrification access for the whole country covers only 9 percent, while rural electrification is a meager 3 percent (see *Lightening up rural Uganda and enhancing development*, 2005:24). While the demand for power is on the increase, power generation itself is on the decline. Presently, the Government is considering closing one of the two hydroelectric power stations in the country due to lower water level of Lake Victoria due to the ongoing drought (see *Kiira hydro stations to be shut down.....*, 2006). According to Wakabi (2006), the MTN, one of the three telecom service providers in Uganda, is presently grappling with the high cost of running the diesel generators at the bulk of its 300-plus base stations, which either lack a connection to grid power or have unreliable supply.

Nevertheless, under the Electricity Government Act 1999, the government is up in arms with the development of a coordinated rural electrification strategy and plan that include the establishment of a rural electrification fund. Under the Rural Electricity Agency, (REA), plans are under way to launch the construction of a US\$14 million hydroelectric power station at Nyangak of Arua District, which will generate 3,5 megawatts of electricity (see *West Nile Power Project to start January, 2005*). Other activities under the

rural electrification fund include lowering the financial threshold for the private sector and the local communities' investment in rural electrification projects. The new government policy regarding electrification is to switch from capital intensive generation hydropower, to mini and micro hydropower plants, as well as thermal power (see *Power generation steadily increasing, 2003*). According to The Chief Executive Officer of Electricity Regulation, thermal power initially slumped for its prohibitive costs, is the only alternative that can stave off a destructive power crunch (see *Thermal plants offer temporary solution to electricity shortage, 2005*). With the telecommunication infrastructure already taken care of by the private sector, improvement on rural electrification will go a long way in boosting the MIS program at the local government level.

8.5.13 Work Ethics

The computer industry is heavily stressed with the problem of computer ethics. As reported under 2.5 cyber crime is on the increase. Information is an economic resource that costs money to produce. It is also a resource in that it leads to improved managerial decisions. Information is vulnerable to abuse or misuse. MIS is for openness, thus limited control over access to information. MIS for public administration calls for a very high degree of self control and self discipline on the part of the administrators.

As Kouzmin (1999) points out, public organizations have a tendency towards high absenteeism and low turn over rates, issues that do not augur well with an electronic working environment. Corruption, nepotism, and laxity at the work place have contributed immensely to the grounding of many public institutions and services in most countries. Due to the limited understanding of the working of the information industry on the part of the decision makers, less qualified personnel are often appointed to man key positions relating to information management. Most personnel manning documentation centres in public service presently lack the necessary training expected of such persons. At the time field work for this study was conducted, the highly specialized library and documentation center at MOH was being manned by staff without even the minimum qualifications to man a general library. (see 7.3.3.5.1). MIS demands the services of individuals who are self motivated, and ready for self training. Nepotism and other forms

of corrupt practices in employee recruitment, unless checked, stand to make the MIS initiative fail.

8.5.14 Sectoral Information Analysis Centres

Content management is a key factor in the success of MIS. MIS is all about delivery of quality content to decision makers. As pointed out under 1.4.1 and 7.3.2, support for information service in public service is limited due to the limited impact information service makes on the end-users. Content management in most information centres under public service is poor due to the inadequate methods being used in data collection, processing, and dissemination. The Health Management Information System (HMIS) like the other information system that existed before is unable to provide end-users with data which is current and adequate. Most primary data in Uganda are still made available in printed form. Effective management of printed literature for decision making purposes calls for a wide range of specialised processing activities that include document gathering, indexing, abstracting, information analysis and consolidation, and information repackaging. Under the MIS environment, this calls for the construction and maintenance of a wide range of bibliographic, factual, full text, statistical and image databases. Shin Ming Yu, and Sun Sheng Han (2001) introduces us to a number of databases Tanjong Pagar Town Council, in Singapore has put in place under the MIS programme (see 2.7.2, p.58). Specialized information processing (SIP), a key feature in content management is a rigorous exercise that requires good understanding of the subject scope, computer literacy, besides being well grounded in information processing skills. While Uganda can claim a large pool of trained information workers, majority of these are trained in general library management, rather than specialised information processing (see 8.5.13).

According to Zhang et al (2003), content managers, under the network information resource management (NIRM) have the responsibility to: a) collect, mark, organise and release network information resources, as well as investigate the resources recommended by common users; b) establish new subjects and lay out the subject structures to organise the collected network information resources in the field of the subject; c) mark and exhibit network resources with the metadata; and d) examine the resources recommended

by users, and finally, release the valuable resources onto the network. Zhang et al (2003) argue that with their academic backgrounds and the help of the information organisation and communication tools, content managers apply their intelligence and knowledge to information services in specialised fields. Their work influences, or even decides, the quality and depth of collecting, organising and evaluating static and external information resources.

Zhang et al (2003) observe that in addition to these tasks, content managers also provide online answers to the users' questions based on their platform, which makes their expertise available to users in real time. Zhang et al (2003) further observe that the information resources are so numerous that content managers alone cannot accurately and comprehensively collect resources from the professional Web. Zou et al in Zhang (2003) identify five steps involving knowledge mining, namely, a) comprehending the field of corresponding problems; b) preparing a subset of related data; c) discovering patterns (knowledge mining); d) processing data and creating a result set; and e) applying the result sets. Zhang et al again observe that the integration of the auto-fetch and artificial filter to the information resource management is necessary to get much more valuable information more efficiently.

Zhang et al (2003) observe that managing a knowledge mining process in the network information resource management system (NIRMS) involves the creation of a wide range of processes and products that include: Creation of a keyword list Searching the information on the WWW as a meta search engine, evaluation of the searched results according to the content of sample materials by their similarity; and browsing result sets. According to Zhang et al (2003) knowledge mining of NIRMS is a complementary blend of computers and human intelligence.

The MIS management team as adopted by MFPED that involve ICT specialist, subject scope experts, and the information resource personnel is commendable (see 7.3.2.6.3). This is the best way of dealing with the issue of content management This, however, should be seen as a stop-gap arrangement that can be let to operate until a more ideal

system is put in place. For a large and complex institution as public administration, it is uneconomic to replicate micro MIS management teams throughout public service. Economies of scale favours centralisation of some of the information processing activities in the country. On the other hand, for such a complex institution as public administration, full centralisation is unproductive as it may lead to the overshadowing of some activities and downgrading the interests by others. Besides information processing, the task involves continuous assessment of user needs, and continuous monitoring of the changes in the information industry, construction of different types of databases, the management of web-based information, creation of offline systems as a fall back position, among others activities. . The middle road, therefore, lies in the establishment of zonal informational analysis and consolidation centres to handle the MIS tasks on a sectoral basis. Sectoral approach has the advantage of reaping the economies of scale, at the same time giving due attention to personalized service.

The proposal for a sectoral information analysis centre is not new in Uganda. As one attempt to strengthen national bibliographic control, the Uganda Government, under what was to become the new national information system (NIS) policy once alluded to the possibility of decentralising the legal deposit system in the country during the late 1980s. The Government proposal was to establish sectoral legal deposit centres to complement the work of Makerere University Library legal deposit service, and that of the National Documentation and Legal Deposit Centre. The additional legal deposit centres were to include: the Kawanda Research Library for agricultural literature; the High Court Library for judicial literature; the Medical School Library for health literature; and Institute of Public Administration Library, for public administration literature. The new legal deposit centres were to assume the joint responsibility of publishing the national bibliography.

Under the MIS programme for public administration in Uganda, the need for government supported sectoral information analysis centres has become even more important than before (see Figure 18). Armed with legal deposit rights, the IACs should assume the

responsibility of collecting and processing all printed and non-printed literature produced by the government and non-government institutions in the country with a view to post the processed results onto the national website. The proposed IAC should be manned by a team of personnel well trained in ICT, communication skills, specialized information processing skills, and graduate qualifications in the desirable subject fields. Among other things, the IAC should be expected to take the lead in the provision of the following services:

- Construction and management of sectoral websites
- Construction and management of other online sectoral databases
- management of the web-based information, including search engines, and portals
- construction and management of various offline databases
- electronic archiving
- indexing and abstracting service,
- information analysis and consolidation,
- information repackaging,
- production of printed quick reference tools
- legal deposit service, and compilation of bibliographies, indexes and abstracts
- referral, clearing house, and document delivery services
- translation service
- monitoring changes in information needs and information seeking behavior
- organising workshops, conferences and symposiums on specialized information management
- organising training programmes on ICT and information proficiency for administrators, and information personnel
- championing the networking the information resource centres
- championing research on information management
- extending technical advice

The proposed SIACs will need the support and effective cooperation of the organisational MIS programme in the name of, the Organisational Management

Information Systems (OMIS). The principal task of OMIS should be to link the organisation to the sectoral information analysis centres, as well as other national, regional and international information analysis centres (See Figure 18).

8.5.15 Integrated Management Information System for Public Administration

One feature that is very critical under computer based MIS is networking of the computer system. It permits resource sharing and facilitates online access through networking of databases. It thus provides for a one-stop-centre work environment. It is observed under 6.5.1 that the computer-man ration in the two ministries, MOH and MFPED compares very well with that of the USA and Japan; the only difference being that of Uganda. In Uganda the computer system is largely a stand alone system, while in US and Japan, nearly all computers are networked. This means computers in the case of Uganda are unable to share data online, nor share the computer accessories. This problem has a far reaching effect on the working of MIS.

Lack of integration has led to numerous gaps and duplications in data collection, storage, and processing. MIS at MOH is also being undermined by data fragmentation as most departmental databases operate on stand-alone systems. The transfer of data, therefore, can only be done via CD-ROMs. This explains why its dominant users are medical students, rather than MOH personnel. Similarly, the traditional information systems at MOH that include libraries, documentation centres, registries and archives operate independently of each other. MFPED with such programs as Personnel and Payroll Information System, Pensions Information System, Budgeting and Financial Management System and Physical Asset Management System, among others as reported under 3.6.1, has amassed numerous data concerning public administration. Due to the lack of an integrated system, this data is not readily accessible to the rest of the public service. Similarly, MFPED is unable to access data from other sectors for decision making. In other words, until the problem of networking of public administration in the country is effectively addressed, talks about MIS will remain a theoretical proposition.

Poor networking makes the establishment of a one-stop-centre impossible to achieve. One-stop-centre facilitates ease of use, and is thus a key feature of MIS. Effective working of the MIS program calls for the integration of the organisational with other sectoral, national, regional and international information systems and services, (See Figure 18). The integration of local administration information system under the Local Government Information Systems (LOGICS) is thus a step in the right direction. However, the working of LOGICS as MIS could not be evaluated as the scheme was still at a pilot stage in some five districts, none of which was the focus of the study.

MIS integration should begin at the firm level, and rise through sectoral, national regional and international levels. As can be illustrated in Figure 18, a public administrator operating from a given workstation on the network should be able to access as much data as possible online. In other words, the MIS programme should aim at the establishment of a one-stop centre for public administrators on issues regarding data for decision making purposes. It is also important that the informal sources are integrated into the MIS programme through a system that captures that constitutes grapevine related data. In other words, the effort towards MIS for public administration should aim at the establishment of an integrated system.

Zhang et al (2003) argue that users' demand for networked information is increasing and that users need authoritative navigation and evaluation of information resources, active and individual-oriented information presentation services, and cross-platform linking based on information content. On the other hand, Zhang et al (2003) caution that with the rapid developments of information networks and globalisation, obtaining information through networks is increasingly difficult because of the different network platforms and information carrier structures, as well as non-structural and dynamic database structures, as well as non-structural and dynamic database structures. Zhang et al observe that to solve conflicts between search and retrieval tools and the users' requirements, information service providers must take the responsibility to re-organise their own network information. They point out that reorganisation of network information resources consists of collection, organisation, management and distribution of

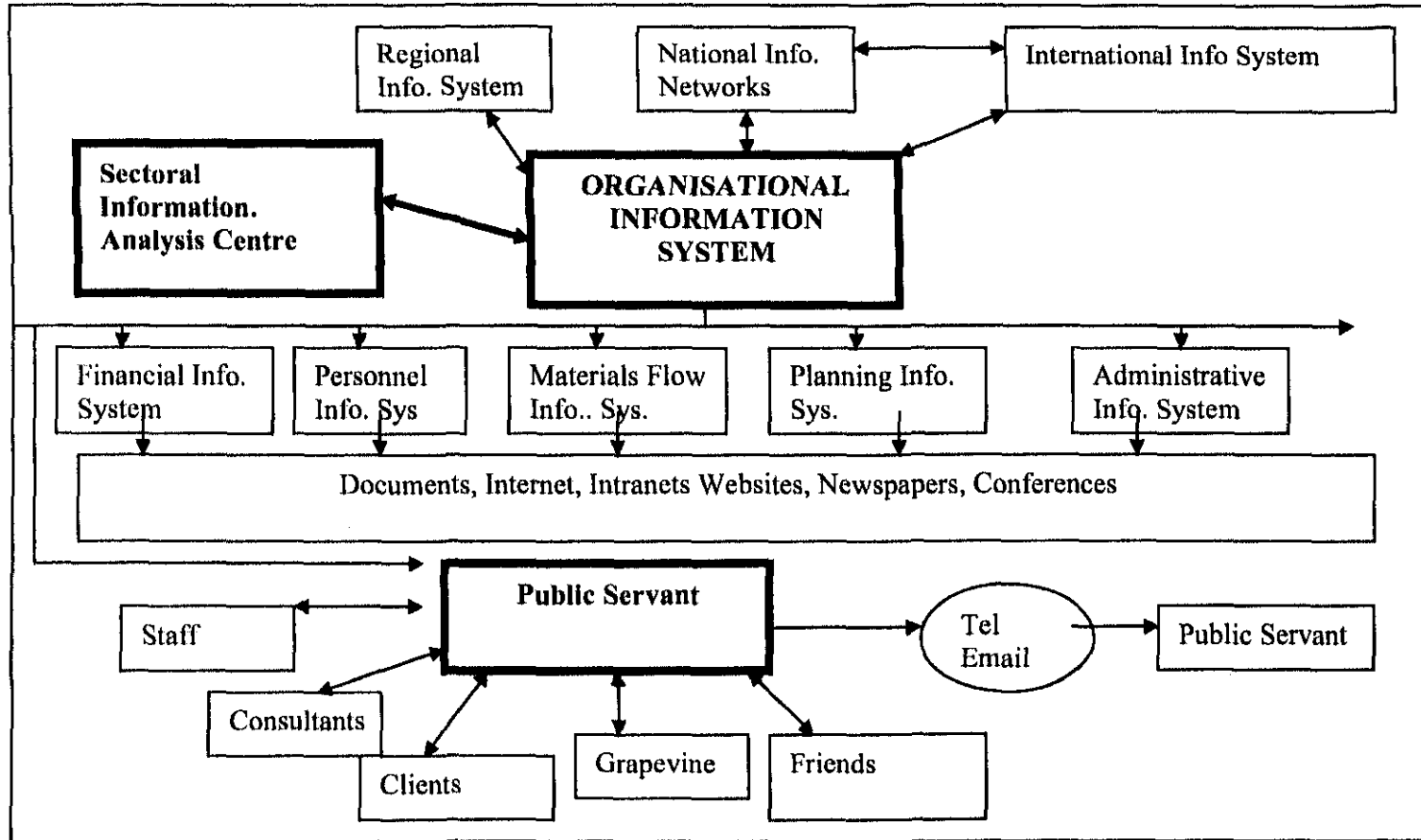
information resources and their contents, implemented by personnel or computer software according to certain index modes. They argue that content managers who play a core role in the distributed content management mechanism, must not only design, lay out and build professional resource databases, but must provide for an easy way of *locating and identifying the network resources*.

8.6 Summary to Chapter Eight

Chapter Eight reveals that Uganda. Like the rest of the world, has switched to a new approach to public administration characterized by decentralization of public service, result oriented management, performance appraisal, and participatory decision making. It also reveals that an attempt is being made to introduce MIS to public service as one of the requisites in adopting NPM. The study reveals that the information needs in public administration are heavily weighed in favour of the impact of NPM to public administration. Administrations, presently are more concerned about data relating to financial, administration, capacity building, and donor support. The study reveals that while the effort to introduce MIS is in the offing, the traditional approach to information management still dominate. Computer usage is concentrated to production of institutional reports, rather than data management. The study reveals computer use in data storage, processing, retrieval, and dissemination is still dismal.

The study reveals that the MIS infrastructure is less than adequate, especially for local governments. While a comprehensive National Information and Communication Technology Policy Framework is in place, government commitment in monetary terms is still lacking. The study reveals that the MIS programme is largely donor funded, and that while some ministries can attract donor funded projects easily, it is not so easy for many others. This explains the imbalance in computer distribution between central and local government; and well as within the various organs of Central Government. The study reveals that *immediate demands of the MIS programme, include the establishment of sectoral information analysis centres to address the issue of content management, and the networking of public administration from firm level up to the global level.*

Figure 18: Integrated MIS Model for Public Administration



Adapted from Neelameghan, 1992.

CHAPTER NINE

SUMMARY, RECOMMENDATIONS AND CONCLUSION

9.1 Introduction

The aim of this chapter is to present a summary of the pertinent issues raised in the various chapters of this report and recommendations being made by the researcher regarding progress towards MIS in public service in Uganda as well as areas which according to the researcher, call for further research.

9.2 Summary

Since the mid-1990s the Uganda Government has been working towards the establishment of MIS in public administration. This came as part of the Civil Service Reform Program which among other things included downsizing the volume of public service, introduction of decentralization of public administration, participatory decision making, result oriented management, and performance appraisal. Five ministries under the Central Government as well as five districts under the local government were identified for the pilot study. With the Ministry of Finance Planning and Economic Development (MFPED), taking the lead in MIS efforts, the initial MIS was meant to give support to planning at the national level through the provision of quality data to economic planners.

In 1998, the Government decreed to adopt MIS by the entire public sector. However, the MIS program as launched in 1995 proved faulty for a number of reasons. The MIS program had its primary objective to support planning rather than day-to-day decision making of public administrators. It focused mainly on quantitative rather than qualitative data. It also proved to be limited in scope. Government departments negotiated independent of each other with the international funding agencies for the funding of MIS programmes. This lack of coordination on the part of the Government departments resulted in incompatible systems. It also resulted in MIS programmes that were full of gaps and duplications at the same time.

Since 2002, the Government has been trying to correct the mistakes underlying MIS. Among the steps taken was the adoption of a National Information and Communication Technology Policy (NICTP), launched in 2002. This was set up to address issues concerning the national information policy and the national information technology and communication policy. The Government has identified the Ministry of Works, Housing and Communication to champion the MIS programme through public administration in the country. This decision had much to do with looking at MIS as a communication system, rather than a resource in decision making. MFPED continues to take the lead in the progress towards MIS. In its latest programs regarding MIS, MFPED has co-opted specialists in ICTs and subject area experts from within and outside the ministry to work along with the information personnel at the Ministry in the establishment of an information sharing network. IFS is an information reporting system accessible to all those who are in decision making positions. IFS satisfies the new trend in MIS that looks at information reporting as the most important activity under MIS; and that instead of having executive information systems for top management, strategic planning related to MIS needs to be accessed by all, regardless of the management level.

While there has been some notable progress towards MIS in the public sector, a lot still remains to be done to make MIS sustainable. The outstanding issues include: inadequate government commitment in the funding of MIS, inadequate supply of specialized information processing experts, failure to network public administration, poor ICT infrastructure resulting in premature breakdowns, low computer literacy amongst public administrators; corruption, nepotism, and the low level of ethics in the country; lack of openness and transparency in the public sector, inadequate training in documentation work and service by the information personnel, inadequate training in information needs and information seeking behavior by the information personnel. Others include inadequate information proficiency amongst public administrators, and inadequate training in online systems by the public administrators, among others.

A broad-based MIS management that includes ICT specialists, information managers and subject area experts is needed. ICT specialists are needed to manage the intricacies of ICT in data capture, storage, processing and communication. Information managers are

needed to spearhead general data processing, cooperation in data management, correct diagnosis of information needs and information seeking behavior, among others. Subject area specialists, on the other hand, are needed to assist in information management, in particular, the production of quality information products, as well as reference tools of a specialised nature.

9.3 Recommendations

Hereunder are recommendations regarding the favorable condition that needs to be put in place to ensure the successful establishment and sustainability of MIS in public administration in Uganda.

1. The study reveals that there is a close relation between NPM and MIS. The study recommends re-orientation of the MIS programme to give special treatment to programmes such as decentralization, and participatory decision making that have found a fertile ground in Ugandas' case.
2. The success of the MIS programmes depends on the complete coverage of the information needs in terms of the scope of the data. It is therefore recommended that the MIS programme ensures complete coverage of: a) all data concerning the immediate preoccupations of a given department in an organization; b) all data concerning government policies; c) all data concerning government institutions, their activities, and programs; d) all data concerning the external environment under which policy formulation takes place; e) and all data concerning the external environment under which the implementation of government policies takes place.
3. The success of an MIS programme depends on the integration of a number of information systems within and outside the country. There is therefore need for the networking of all the sectoral and other information systems within and outside the country to afford administrators effective and efficient access from these institutions (see Figure 18).

4. The MIS programme should aim at providing public administrators with data that is factual, tabular, or graphic, or a combination of all the three, as one way of enhancing delivery of information.
5. While MIS can take various forms, the study recommends that data collection and information reporting systems (IRS) be adopted as the main focus of the MIS programme for public administration.
6. In view of the strategic as well as economic importance of participatory decision making under NPM, it is recommended that group decision support systems in the form of bulletin boards be given priority status in the MIS program.
7. The study notes that in view of participatory decision making, there is a demand for executive information to be extended to cover all areas and levels of management. It is thus recommended that the traditional executive information system be replaced with everyone's information system.
8. Bearing in mind the high level of training required to realize quality specialized information processing, and the need to tap the economies of scales embedded in centralized information processing, the study recommends centralization of specialized information processing at sectoral level through the establishment of sectoral information analysis centres.
9. In view of the high demand for highly skilled information resource personnel required for the day-to-day management of the information resource centres, there is need for:
 - a) the strengthening and continuous review of the curricular in all fields at tertiary level to include introduction of the trainees to new skills regarding latest developments in ICT.
 - B) review of the curricular regarding information resource management to give additional emphasis to specialized information processing, including, documentation work and service, information needs and information

seeking behavior, indexing, abstracting, information analysis and consolidation, and *information repackaging*, and giving equal weight to both theory and practice; and c) reviewing of the curricular to accommodate adequate imparting of skills such as webpage management, database management, systems development, computer operation, programming, systems analyses, systems administration, digital archiving, multimedia librarianship, multimedia editing, laws and legislations concerning digital media, and communication skills.

10. Having noted the excessive dependence of the MIS programme on external donor funding, and the resultant lack of integration in the MIS programme; and having noted that MIS is capital intensive in terms of computer hardware and software resources, the study recommends a separate budget line in the national budget to address specifically issues of finance relating to MIS for public administration.
11. The success of MIS depends highly on the ability to supply data in real time. The study, therefore recommends that as a matter of urgency, the Government should consider the networking of government bodies through an electronic network as a priority issue to ensure online flow of data.
12. Bearing in mind the fact that ICT is a critical enabler of the MIS programme, having noted that the ICT industry is extremely versatile, and having noted the need to ensure quality service through the use of state-of-the-art technologies, the study recommends a parallel approach where private MIS initiatives in terms of 'user pay system', are required to operate side by side with the government funded MIS programme so as to guard against the possibility of total system breakdown.
13. MIS is against the withholding of data and as such concerns itself with openness and transparency. The study recommends the introduction of a legal deposit system that covers all *documentation relating to the transactions of Government business*.

14. MIS is about putting organizational data at the disposal of everybody. MIS thus calls for self control, and self discipline. It also calls for high levels of ethical standards. Thus, the study recommends the introduction of the teaching of ethics and morality at tertiary level so as to ensure some degree of transformation of the Ugandan society.
15. The study recommends increased information proficiency amongst public administrators through the review of the curricula, with all tertiary institutions imparting to their trainees competency to evaluate the working of an information system, as well as render advice.
16. The MIS work environment calls for individuals who can adjust easily to the changing working conditions in terms of technology know-how, and at a minimum cost to the organization. It also requires individuals who are proactive, innovative, and who are ready for self training. Therefore the study recommends replacement of permanent employment with contractual employment so as to allow continuous performance appraisal, and thus attain easy labor mobility.
17. While the national information policy is well articulated under what is known as the National Information and Communication Technology Framework, 2002. (see 3.8.2); the study recommends that the national information policy should begin to treat a wide range of issues including, copyright, patent, ethics, intellectual property, authenticity, cyber-crimes, fraud, and individual privacy.

9.4 Recommendations for Further Research

This study had a limited focus as it was mainly designed for the award of a PhD degree certificate. It was also limited in scope in that it focused on only two ministries under the central government and five local governments. The information needs of the different ministries differ in many ways. The MIS's challenges in each of the districts in Uganda also differ greatly. For establishing MIS for any of the government bodies, another study that is more focused will be necessary.

The working of the information systems established under the MIS phenomenon also calls for further investigation. The study took place when the Information Sharing

Network by MFPED was still in the formative stage. The satisfaction of users and the utilization of the system with specific reference to the process of decision-making need investigation. Furthermore, plans are being made to review the working of HMIS under MOH. The new HMIS, once put in place will need immediate evaluation. LOGICS for the local governments, has become operational in a few districts. None of the districts covered by the study, however, featured among those selected for piloting LOGICS. The working and adequacy of LOGICS, thus, need a critical review.

To date, almost all the MIS initiatives in public administration in the country remain donor funded. The sustainability of MIS without or with minimum donor funding also needs investigation. Lastly, issues concerning morality, computer ethics, openness, transparency, cyber crimes, corruption, nepotism and laxity at the work place, are critical factors which are bound to undermine the effectiveness of MIS. The country's readiness to deal with these issues needs investigation.

9.5 Conclusion

Uganda has since 1995 adopted a new approach to public administration commonly referred to as NPM. This is an approach characterised by decentralisation of decision-making from the central government to the local authorities, devolution of decision-making within public bodies leading to bottom-up decision making; emphasis on result-oriented management among others. With participatory decision making, all public administrators need easy access to all data gathered by the organization. With the bottom-up approach to decision-making, as well as result-oriented management, all those in managerial positions need adequate access to well processed data. Similarly, with the decentralisation of public administration, district administration ceased to be mere implementers of decisions made by the Central Government but became power houses for making strategic decisions. District Administration, therefore, just like the rest of the public service in the country, needs the support of modern information systems that are able to deal with various databases within and outside country.

MIS is about repackaging data and information in a manner that makes it adequate, relevant, timely, and reliable and user friendly for every decision maker. MIS requires the

direct support of ICT technology for the above conditions to be fulfilled. It also requires the direct involvement of ICT specialists, information specialists, communication specialists, and the subject matter specialists.

As a result of the new approach to public administration, the traditional MIS has undergone changes giving rise to additional systems such as group decision support systems, expert systems, and artificial intelligence. A complete system, however, also demands a modern data management system at the operational level, thus the need for the transaction processing system, process control system, and office information system.

Uganda, like the rest of the world, belongs to what is called an information society; and forging towards MIS is inescapable. A critical assessment of the working of MIS in public administration in Uganda still reveals a lot of challenges. Information needs are inadequately addressed. Coordination of MIS activities of the different government bodies is still lacking. The MIS program is still donor driven; Training of information workers in specialised information management skills is still inadequate; training of public administrators on information management as well as IT still leaves a lot to be desired. Above all, the culture of permanent employment needs to be reviewed with the intent to replace it with contractual employment so as to ease labour mobility within the public service.

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APPENDIX 1

INFERENTIAL STATISTICS

1.1 SUMMARY

Descriptive statistics has been used in this study to present a report on the need and state of MIS in public administration in Uganda under both Central and Local Governments. For Central Government, the study used Ministry of Health and Ministry of Finance Planning and Economic Development as the case study; and for local governments, the used the Districts of Arua, Bushenyi, Kampala, Mbale and Masaka. Using inferential statistics the study has made an attempt to examine the deviation from mean between and within the two ministries, as well as the deviation from mean between and within the five districts. This was based on the understanding that variation would be seen to be at significant level if its reading is less than 0.05. The results of inferential statistics as presented under Tables F.1 to F. 7 can be summarised as below:

1. With regard to different modes of communication used by MOH and MFPED. Table F.1 reveals a significant variation in the use of printed data and use of radios. between MOH and MFPED; otherwise, there is no significant variation in the way data is made available to potential users in the two ministries.
2. With regard to application use of the various IT technologies by the MOH and MFPED, Table F3 reveals no significant variation between the two ministries in the application of IT related technologies except for desk-top publishing and modeling.
3. With regard to the information system evaluation by public administrators at MOH and MFPED. Table F.2 reveals no significant variation in the quality of

data management system except in the ability to supply adequate data (.006) and the ability to store all required data (.017) between MOH and MFPED.

4. With regard to variation in the accessibility to computer accessories between at MOH and MFPED, table F.3 revealed no significant variation in the accessibility of computer accessories. For example the average distribution of printers at MFPED is 3.30 while that of MOH
5. With regard to evaluation of hindrances to application of IT at both MOH and MFPED, the study, under Table F.5 reveals no significant evaluation of IT hindrances between and within the two ministries.

Turning to district administration

6. With regard to evaluation of the data management systems between and with each district, the study through Table F.6 reveals no significant variation in the evaluation of the data management system between and within districts, except in their ability to update easily and ability to supply reliable data.
7. With regard to variation in the mode of data communication system in use between and within districts, the study through Table F.7 reveal no significant variation in the mode of data communication between and within districts except for the television system. The study revealed that Arua District is yet to become part of the national television network.

1.2 TABLES

APPENDIX 1.2.1

Variation from Mean in Data Communication Systems at MOH and MFPED

Communication forms	Central Government	Sum of Squares	Df	Mean Square	F	Sig.
Printed forms	Between Ministries	3.620	1	3.620	5.453	.024
	Within Ministries	29.870	45	.664		
	Total	33.489	46			
Meetings	Between Ministries	.199	1	.199	.283	.598
	Within Ministries	31.040	44	.705		
	Total	31.239	45			
Website	Between Ministries	8.351E-02	1	8.351E-02	.058	.810
	Within Ministries	62.873	44	1.429		
	Total	62.957	45			
Radio	Between Ministries	6.098	1	6.098	4.570	.038
	Within Ministries	58.706	44	1.334		
	Total	64.804	45			
Television	Between Ministries	4.092	1	4.092	2.716	.106
	Within Ministries	66.278	44	1.506		
	Total	70.370	45			
CD-ROM	Between Ministries	5.590E-02	1	5.590E-02	.054	.818
	Within Ministries	45.857	44	1.042		
	Total	45.913	45			
Bulletin Boards	Between Ministries	2.916	1	2.916	1.825	.184
	Within Ministries	70.302	44	1.598		
	Total	73.217	45			
Online databases	Between Ministries	.236	1	.236	.420	.520
	Within Ministries	24.742	44	.562		
	Total	24.978	45			
Email	Between Ministries	.155	1	.155	.109	.743
	Within Ministries	62.714	44	1.425		
	Total	62.870	45			
Ordinary telephone	Between Ministries	.133	1	.133	.098	.756
	Within Ministries	58.667	43	1.364		
	Total	58.800	44			

APPENDIX 1.2.2

Variation from Mean in Evaluation of Data Management System Between and Within Ministries

Evaluation of Data Management System	Central Government	Sum of Squares	df	Mean Square	F	Sig.
Ability to update data easily		Sum of Squares	df	Mean Square	F	Sig.
	Between Ministries	2.205	1	2.205	3.124	.083
	Within Ministries	33.875	48	.706		
	Total	36.080	49			
Ability to supply reliable data	Between Ministries	5.556E-02	1	5.556E-02	.130	.720
	Within Ministries	20.444	48	.426		
	Total	20.500	49			
Ability to supply timely data	Between Ministries	3.595E-02	1	3.595E-02	.082	.776
	Within Ministries	21.611	49	.441		
	Total	21.647	50			
Ability to supply data easy to retrieve	Between Ministries	.157	1	.157	.261	.612
	Within Ministries	29.490	49	.602		
	Total	29.647	50			
Ability to supply adequate data	Between Ministries	4.067	1	4.067	8.114	.006
	Within Ministries	24.561	49	.501		
	Total	28.627	50			
Ability to supply current data	Between Ministries	.131	1	.131	.337	.564
	Within Ministries	19.045	49	.389		
	Total	19.176	50			
Ability to protect data from loss	Between Ministries	1.217	1	1.217	1.162	.286
	Within Ministries	51.293	49	1.047		
	Total	52.510	50			
Ability to share data	Between Ministries	.835	1	.835	1.028	.316
	Within Ministries	39.793	49	.812		
	Total	40.627	50			
Ability to protect data from unauthorised use	Between Ministries	2.674E-03	1	2.674E-03	.002	.961
	Within Ministries	55.409	49	1.131		
	Total	55.412	50			
Ability to protect data fro falsefication	Between Ministries	.452	1	.452	.372	.545
	Within Ministries	59.470	49	1.214		
	Total	59.922	50			
Ability to store all required data	Between Ministries	6.783	1	6.783	6.144	.017
	Within Ministries	52.997	48	1.104		
	Total	59.780	49			
Ability to provide data that is easy to use	Between Ministries	1.250	1	1.250	1.659	.204
	Within Ministries	34.667	46	.754		
	Total	35.917	47			

At 0.05 level of significance, it was observed that there is a significant variation between in mean between the two ministries in the ability to supply adequate data and to store all the required data. However, no significant variance in the other abilities.

APPENDIX 1.2.3

Variation from Mean in Accessibility of Computer Accessories

Computer Accessories	Central Government	Sum of Squares	Df	Mean Square	F	Sig.
Printer	Between Ministries	.713	1	.713	1.755	.191
	Within Ministries	19.914	49	.406		
	Total	20.627	50			
Scanner	Between Ministries	1.647	1	1.647	2.201	.145
	Within Ministries	33.672	45	.748		
	Total	35.319	46			
Facsimile	Between Ministries	.274	1	.274	.237	.628
	Within Ministries	51.939	45	1.154		
	Total	52.213	46			
UPS	Between Ministries	4.520	1	4.520	2.609	.113
	Within Ministries	77.948	45	1.732		
	Total	82.468	46			
CD-ROMs	Between Ministries	1.456	1	1.456	.818	.370
	Within Ministries	87.172	49	1.779		
	Total	88.627	50			
Diskettes	Between Ministries	1.250	1	1.250	3.080	.086
	Within Ministries	18.667	46	.406		
	Total	19.917	47			
Magnetic Tapes	Between Ministries	1.005	1	1.005	.830	.367
	Within Ministries	54.485	45	1.211		
	Total	55.489	46			
Server	Between Ministries	1.630E-02	1	1.630E-02	.013	.911
	Within Ministries	57.686	45	1.282		
	Total	57.702	46			

At 0.05 level of significance, it was observed that there is a significant variation between in mean between the two ministries in the ability to supply adequate data and to store all the required data. However, no significant variance in the other abilities.

APPENDIX 1.2.4

Variation from Mean in Computer Utilisation by Ministries

Q25 ANOVA

Computer Usage	Central Government	Sum of Squares	df	Mean Square	F	Sig.
Word processing	Between Ministries	.330	1	.330	1.255	.268
	Within Ministries	12.364	47	.263		
	Total	12.694	48			
Email	Between Ministries	2.378	1	2.378	1.777	.189
	Within Ministries	62.887	47	1.338		
	Total	65.265	48			
Internet surfing	Between Ministries	5.471	1	5.471	3.961	.053
	Within Ministries	63.529	46	1.381		
	Total	69.000	47			
Database management	Between Ministries	.125	1	.125	.072	.790
	Within Ministries	83.875	48	1.747		
	Total	84.000	49			
Spreadsheet	Between Ministries	.676	1	.676	.490	.487
	Within Ministries	64.875	47	1.380		
	Total	65.551	48			
Graphic design	Between Ministries	3.652	1	3.652	2.932	.093
	Within Ministries	58.552	47	1.246		
	Total	62.204	48			
Desktop publishing	Between Ministries	4.740	1	4.740	6.005	.018
	Within Ministries	37.097	47	.789		
	Total	41.837	48			
Modeling	Between Ministries	3.675	1	3.675	6.644	.013
	Within Ministries	25.998	47	.553		
	Total	29.673	48			
LAN	Between Ministries	1.391	1	1.391	1.251	.269
	Within Ministries	52.242	47	1.112		
	Total	53.633	48			
WAN	Between Ministries	.107	1	.107	.203	.654
	Within Ministries	24.710	47	.526		
	Total	24.816	48			
Teleconferencing	Between Ministries	1.225	1	1.225	1.876	.177
	Within Ministries	30.694	47	.653		
	Total	31.918	48			
Real Time Processing	Between Ministries	5.563E-02	1	5.563E-02	.198	.658
	Within Ministries	13.210	47	.281		
	Total	13.265	48			
Voice mail	Between Ministries	1.159	1	1.159	3.941	.053
	Within Ministries	13.821	47	.294		
	Total	14.980	48			
Telecommuting	Between Ministries	.562	1	.562	2.016	.162
	Within Ministries	13.111	47	.279		
	Total	13.673	48			

At 0.05 level of significance, it was observed that there is a significant variation between in mean between the two ministries in computer usage for modeling and desk-top publishing; otherwise no significant variance in the other forms of computer usage.

APPENDIX 1.2.5

Variation from Mean in Evaluation of IT Hindrances

IT Hindrances	Central Government	Sum of Squares	df	Mean Square	F	Sig.
Initial capital prohibitive	Between Ministries	2.268	1	2.268	2.324	.134
	Within Ministries	45.855	47	.976		
	Total	48.122	48			
Maintenance cost prohibitive	Between Ministries	.948	1	.948	.989	.325
	Within Ministries	45.052	47	.959		
	Total	46.000	48			
High recurring expenditure	Between Ministries	9.513E-02	1	9.513E-02	.067	.796
	Within Ministries	66.435	47	1.414		
	Total	66.531	48			
Lack of enough skilled personnel	Between Ministries	3.183	1	3.183	1.460	.233
	Within Ministries	102.450	47	2.180		
	Total	105.633	48			
Hostility from top management	Between Ministries	3.200	1	3.200	2.860	.098
	Within Ministries	51.467	46	1.119		
	Total	54.667	47			
Poor communication infrastructure	Between Ministries	1.008	1	1.008	1.021	.317
	Within Ministries	46.380	47	.987		
	Total	47.388	48			
Competition with other priorities	Between Ministries	8.229E-03	1	8.229E-03	.006	.937
	Within Ministries	61.339	47	1.305		
	Total	61.347	48			
Inadequate awareness	Between Ministries	2.328	1	2.328	1.686	.201
Inadequate data confidentiality	Between Ministries	1.901	1	1.901	1.365	.249
	Within Ministries	64.078	46	1.393		
	Total	65.979	47			

At 0.05 level of significance, it was observed that there is a significant variation between in mean between the two ministries in the evaluation of hindrances to application of IT.

APPENDIX 1.2.6

Variation from Mean in Evaluation of Data Management System by Districts

Evaluation of Data Management System	Local Administration	Sum of Squares	df	Mean Square	F	Sig.
Ability to update data easily	Between Districts	5.496	4	1.374	2.520	.043
	Within Districts	103.045	189	.545		
	Total	108.541	193			
Ability to supply reliable data	Between Districts	4.435	4	1.109	2.104	.082
	Within Districts	99.088	188	.527		
	Total	103.523	192			
Ability to supply timely data	Between Districts	6.761	4	1.690	2.575	.039
	Within Districts	123.425	188	.657		
	Total	130.187	192			
Ability to supply data easy to retrieve	Between Districts	2.868	4	.717	.868	.485
	Within Districts	155.381	188	.826		
	Total	158.249	192			
Ability to supply adequate data	Between Districts	5.180	4	1.295	1.792	.132
	Within Districts	132.958	184	.723		
	Total	138.138	188			
Ability to supply current data	Between Districts	2.597	4	.649	.915	.456
	Within Districts Groups	132.715	187	.710		
	Total	135.313	191			
Ability to protect data from loss	Between Districts	3.473	4	.868	1.052	.382
	Within Districts	156.017	189	.825		
	Total	159.490	193			
Ability to share data	Between Districts	3.067	4	.767	.958	.432
	Within Districts Groups	149.761	187	.801		
	Total	152.828	191			
Ability to protect data from unauthorised use	Between Districts	10.631	4	2.658	2.286	.062
	Within Districts Groups	217.364	187	1.162		
	Total	227.995	191			
Ability to protect data fro falsefication	Between Districts	5.999	4	1.500	1.245	.294
	Within Districts	222.953	185	1.205		
	Total	228.953	189			
Ability to store all required data	Between Districts	7.595	4	1.899	2.363	.055
	Within Districts	147.065	183	.804		
	Total	154.660	187			
Ability to provide data that is easy to use	Between Districts	2.687	4	.672	.866	.486
	Within Districts	140.436	181	.776		
	Total	143.124	185			

At 0.05 level of significance, it was observed that there is a significant variation in mean between the five districts in the evaluation of the data communication systems ability to supply adequate data and to store all the required data. However, no significant variance in the other abilities.

APPENDIX 1.2.7

Variation from Men in Modes of Data Communication at District Level

Data Communication System	Local Administration	Sum of Squares	df	Mean Square	F	Sig.
Printed form	Between Districts	1.561	4	.390	.476	.753
	Within Districts	154.995	189	.820		
	Total	156.557	193			
Meetings	Between Districts	2.569	4	.642	.687	.602
	Within Districts	173.871	186	.935		
	Total	176.440	190			
Website	Between Districts	1.757	4	.439	1.224	.302
	Within Districts	64.589	180	.359		
	Total	66.346	184			
Radio	Between Districts	1.311	4	.328	.328	.859
	Within Districts	181.609	182	.998		
	Total	182.920	186			
Television	Between Districts	11.023	4	2.756	4.317	.002
	Within Districts	115.557	181	.638		
	Total	126.581	185			
CD-ROM	Between Districts	2.983	4	.746	1.133	.343
	Within Districts	115.879	176	.658		
	Total	118.862	180			
Bulletin Boards	Between Districts	1.853	4	.463	.367	.832
	Within Districts	228.238	181	1.261		
	Total	230.091	185			
Online Database	Between Districts	.180	4	4.499E-02	.084	.987
	Within Districts	95.241	178	.535		
	Total	95.421	182			
Email	Between Districts	1.475	4	.369	.668	.615
	Within Districts	98.764	179	.552		
	Total	100.239	183			
Ordinary Telephone	Between Districts	6.397	4	1.599	1.321	.264
	Within Districts	215.537	178	1.211		
	Total	221.934	182			

At 0.05 level of significance, it was observed that there is a significant variation in mean between districts in the use of the television. Otherwise, there is no significant variation in the application of the other modes of data communication.

APPENDIX 3

SURVEY QUESTIONNAIRE

The purpose of this study is to examine the application of Management Information System (MIS) by public administration in Uganda. The study is being conducted for the fulfilment of the award of a PhD degree in Library and Information Science of the University of Zululand in South Africa. Kindly, spare some 20 minutes to complete this questionnaire the best way you can. Please, be assured that the information provided here will be treated with utmost confidentiality, and will not be used for only this purpose alone.

1. Name of the Organisation
2. Department
3. Name of respondent (optional)
4. Position held
5. Gender: M/F
6. Age group: 21-30; 31-40; 41-50-above 50
7. Job Title:
8. Managerial level: Top level; Upper Middle Level; Lower Middle Level; Lower Level
9. Total Number of Departmental Staff
10. Mention any three functions by the department

Information Needs

11. Identify any three externally sourced data considered most desirable for attaining effective management of the physical resources under your control.
12. Identify any three externally sourced data considered most desirable for the effective for attaining effective management of the service under your control.
13. Identify any three externally sourced data considered most desirable for attaining effective management of the financial resources under your control
14. What transaction data are generated by your department?
15. What management data are generated by your department?

Information Management Systems

16. What kind of data management systems is the department having in place (underline):
 - a) Manual;
 - b) Computerised System;
 - c) Semi-computerised system;
 - d) I do not know?
17. How is data generated from your department made available to end-users (Enter in bracket 4 for strongly used, 3 for used' 2 for occasionally used; 1 for not used; 0 for I do not know.
 - a) Printed form
 - b) Meetings
 - c) Website
 - d) Radio

- e) Television
- f) CD-ROM
- g) Bulletin Boards
- h) Online databases
- i) Email
- j) Ordinary Telephone
- k) Any other, please mention

18. Indicate the degree to which computer technology is used by your department in the following operations (Enter in bracket 4 for strongly used, 3 for used, 2 for occasionally used; 1 for not used; 0 for I do not know).

- a) Word processing
- b) Email
- c) Internet surfing
- d) Database management
- e) Spreadsheet
- f) Graphic designs
- g) Desk-top publishing
- h) Modelling
- i) Local area networking
- j) Wide area networking
- k) Real-time processing
- l) Teleconferencing
- m) Voice mail

19. What level of processing is data generally made available to staff for decision making purposes (Mark with X where applicable)

- a) Raw form
- b) Semi-processed form
- c) Customer tailored
- d) I do not know.

20. How good is the department's data management system in the following areas (enter in bracket: 4 for excellent; 3 for good, 2 for poor, 1 for very poor, and 0 for I do not know).

- a) Ability to update data easily;
- b) Ability to supply reliable data;
- c) Ability to supply timely data;
- d) Ability to retrieve data easily;
- e) Ability to supply adequate data;
- f) Ability to supply current data;
- g) Ability to protect data from loss;
- h) Ability to share data;
- i) Ability to protect data from unauthorised use;
- j) Ability to protect data from falsification;
- k) Ability to store all required data; and
- l) Ability to provide data that is easy to use.

21. How many computer workstations are in your department? (mark with X where appropriate)

- a) None at all
- b) 1 to 10
- c) 11- 20
- d) 21- 30
- e) Above 30.

22. How easily accessible to the department are the following computer accessories?

(Enter 4 for easily accessible; 3 for accessible; 2 for not easily accessible; 1 for not available; and 0 for I do not know.

23. What type of IT structure does your department have in place? (Mark with X where appropriate)

- a) Stand-alone PCs
- b) PC networked to a PC Server
- c) Terminal connected to a minicomputer
- d) Terminals connected to a mainframe
- e) Any other, please, specify.
- f) I do not know.

24. The following are some of the perceived benefits of automated data management systems. Express your personal feeling about each, using the scale provided below: (Enter in the bracket: 4 for strongly used; 3 for used; 2 for occasionally used; 1 for not used; and 0 for I do not know).

- a) Word-processing
- b) Email
- c) Internet surfing
- d) Database management
- e) Spreadsheet
- f) Desktop publishing
- g) Modelling
- h) Local area networking
- i) Wide are networking
- j) Real-time processing
- k) Teleconferencing
- l) Voice mail.

25. Optimal utilisation of IT in organisations in hindered by a number of factors. In your view, to what extent is IT utilisation in your department being affected by these factors: (Enter 4 strongly agree; 3 for agree; 2 for uncertain; 1 for disagree; and 0 for I do not know.

- a) Initial capital prohibitive
- b) Maintenance cost prohibitive
- c) Lack of skilled personnel
- d) Hostility from top management
- e) Poor communications infrastructure
- f) Stiff competition from other priorities
- g) Lack of adequate awareness about IT

- h) Inadequate data security
- i) Inadequate data confidentiality.

26. How good is the personnel in your department in the following computer-related operations? (Enter in the bracket 4 for excellent; 3 for good; 2 for average; 1 for poor; and 0 for I do not know)

- a) Word-processing
- b) Spreadsheet
- c) Internet surfing
- d) Email use
- e) Web-page
- f) Graphic design
- g) Modelling

27. What kind of training in Information technology is available to offered to your departmental staff (Mark with an X where appropriate)

- a) Pre-service
- b) In-service
- c) On-the-job training
- d) No training
- e) I do not know

28. If any training is offered, in what specific areas is the training?

- a) Word-processing
- b) Spreadsheet
- c) Database management
- d) Modelling
- e) Information retrieval
- f) Programming
- g) Operating system
- h) Any other, please, specify.

29. What kind of training in information management is available to your departmental staff (Mark with an X where appropriate)

- a) Pre-service
- b) In-service
- c) On-the-job training
- d) No training
- e) I do not know

30. If any training is offered is offered, in what specific areas is the training?

- a) Data/information utilisation
- b) Data/information gathering
- c) Information processing

- d) Information storage
- e) Information dissemination
- f) Information retrieval
- g) Any other, please specify.

INTERVIEW GUIDE

1. Name of Organisation
2. Name of respondent
3. Department
4. Position held
5. Level of management, i.e. Top. Upper Middle. Lower Middle. and Lower
6. How do you understand the concept “new approach to public administration”
7. The information needs in public administration range from policy issues to social, political and economic issues, among others. Identify your information needs at the work place, grading it as: very important, important, just important, or not important.
8. Evaluate the information system at the work place in its ability to supply quality data for decision making purposes.
9. Evaluate the quality and utilisation of ICT resources at the work place with regard to effective decision making by the administrators.
10. Evaluate the MIS initiatives, if any, being undertaken at the work place.

**APPENDIX FOUR
RESEARCH REGISTRATION AND CLEARANCE**



Uganda National Council For Science and Technology

(Established by Act of Parliament of the Republic of Uganda)

Your Ref:.....

IS 01

Our Ref:.....

17 - Dec - 02

Date:.....

The Resident District Commissioner
Bushenyi District
BUSHENYI

Dear Sir/Madam,

RE: RESEARCH CLEARANCE

We wish to introduce you to **Mr. Matovu. James** who would like to carry out a research project entitled, "**Towards a management information system in public administration a comparative study of Uganda and South Africa,**" between December 17th, 2002 and December 17th, 2003 in your district. The Uganda National Council for Science and Technology has approved the research project.

This letter is to request you to give the researcher the necessary assistance to facilitate the accomplishment of the research project.

Your cooperation in this regard is highly appreciated.

Yours Faithfully,

Julius Beuru

For: Executive Secretary

UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY.

Cc: Mr. Matovu. James
EASLIS
P.O.Box 7062
KAMPALA

LOCATION/CORRESPONDENCE

PLOT 18, KAMPALA ROAD
UGANDA HOUSE, 11TH FLOOR
P. O. BOX 6884
KAMPALA, UGANDA.

COMMUNICATION

TEL: (256) 41-250499
FAX: (256) 41-234579
E-MAIL: uncst@starcom.co.ug
WEBSITE: <http://www.uncst.or.ug>



Uganda National Council For Science and Technology
(Established by Act of Parliament of the Republic of Uganda)

Your Ref:.....
IS 01

17 - Dec - 02

Our Ref:.....

Date:.....

The Resident District Commissioner
Lira District
LIRA

Dear Sir/Madam,

RE: RESEARCH CLEARANCE

We wish to introduce you to **Mr. Matovu. James** who would like to carry out a research project entitled, " **Towards a management information system in public administration a comparative study of Uganda and South Africa,**" between December 17th, 2002 and December 17th, 2003' in your district. The Uganda National Council for Science and Technology has approved the research project.

This letter is to request you to give the researcher the necessary assistance to facilitate the accomplishment of the research project.

Your cooperation in this regard is highly appreciated.

Yours Faithfully,

Julius Eodru

For: Executive Secretary

UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY.

Cc: Mr. Matovu. James
EASLIS
P.O.Box 7062
KAMPALA

LOCATION/CORRESPONDENCE

PLOT 18, KAMPALA ROAD
UGANDA HOUSE, 11TH FLOOR
P. O. BOX 6884
KAMPALA, UGANDA.

COMMUNICATION

TEL: (256) 41-250499
FAX: (256) 41-234579
E-MAIL: uncst@starcom.co.ug
WEBSITE: www.uncst.org



Uganda National Council For Science and Technology

(Established by Act of Parliament of the Republic of Uganda)

Your Ref:.....

IS 01

Our Ref:.....

17 - Dec - 02

Date

The Resident District Commissioner
Masaka District
MASAKA

Dear Sir/Madam,

RE: RESEARCH CLEARANCE

We wish to introduce you to **Mr. Matovu, James** who would like to carry out a research project entitled, "Towards a management information system in public administration a comparative study of Uganda and South Africa," between December 17th, 2002 and December 17th, 2003 in your district. The Uganda National Council for Science and Technology has approved the research project.

This letter is to request you to give the researcher the necessary assistance to facilitate the accomplishment of the research project.

Your cooperation in this regard is highly appreciated.

Yours Faithfully,

Julius Ecuru

For: Executive Secretary

UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Cc: Mr. Matovu, James
EASLIS
P.O.Box 7062
KAMPALA



Uganda National Council For Science and Technology

(Established by Act of Parliament of the Republic of Uganda)

Your Ref:

IS 01

17 - Dec - 02

Our Ref:

Date

The Resident District Commissioner
Mbale District
MBALE

Dear Sir/Madam,


RE: RESEARCH CLEARANCE

We wish to introduce you to **Mr. Matovu. James** who would like to carry out a research project entitled, "Towards a management information system in public administration a comparative study of Uganda and South Africa," between December 17th, 2002 and December 17th, 2003 in your district. The Uganda National Council for Science and Technology has approved the research project.

This letter is to request you to give the researcher the necessary assistance to facilitate the accomplishment of the research project.

Your cooperation in this regard is highly appreciated.

Yours Faithfully,


Julius Ecuru

For: Executive Secretary

UGANDA NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Cc. Mr. Matovu. James
EASLIS
P.O. Box 1962
KAMPALA

APPENDIX FIVE
LETTERS OF INTRODUCTION

Telephone: General Lines: 340874 / 231563/9
Permanent Secretary's Office: 256 - 41 - 340872
Fax: 256 - 41 - 231584



Ministry of Health
P.O. Box 7272
Kampala
Uganda

IN ANY CORRESPONDENCE ON
THIS SUBJECT PLEASE QUOTE No: **ADM.130/313/05**

THE REPUBLIC OF UGANDA

9th December, 2003

All Members of Staff
Ministry of Health Headquarters
KAMPALA

RESEARCH UNDERTAKING BY MR. JAMES MATOVU – RESEARCHER

The Director of the East African School of Library and Information Science of Makerere University has informed me that the bearer of this introduction, James Matovu, a Lecturer at the School who is undertaking PhD studies in South Africa wishes to conduct some of his Research in Management Information Systems (MIS) at the Ministry of Health Headquarters in Kampala.

This is normal practice, which is why I request you to accord Mr. Matovu necessary cooperation, including allowing him to interview you and/or completing questionnaires relevant to his area of study.

Your cooperation will be appreciated.

A handwritten signature in black ink, appearing to read 'Mohammed S. Kezaala'.

Mohammed S. Kezaala
PERMANENT SECRETARY

- cc: The Director General of health Services
Ministry of Health, Kampala.
- cc: The Director
East African School of Library and
Information Science
Makerere University, Kampala

December 8, 2003.

The Permanent Secretary
Ministry of Health,
Uganda.

Dear Sir,

RE: INTRODUCING JAMES MATOVU: A RESEARCHER

The bearer is Mr. James Matovu, a Lecturer and Researcher from Makerere University. Mr. Matovu is involved in a research exercise, investigating the application of Management Information System (MIS) in the new approach to Public Administration in Uganda. Mr. Matovu would like to conduct a number of face to face interviews on the above subject with some of the top cadres in your ministry.

Kindly assist him accordingly.

Yours truly,



Assoc. Prof. I.M.N. Kigongo-Bukenya (DIP.LIB, MLS, MLIB, DPA, Ph.D).
DIRECTOR.

Training.

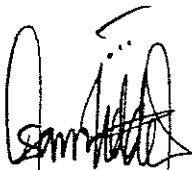
LOOSE MINUTE

All Heads of Departments

Re: **RESEARCH UNDERTAKING BY MR JAMES MATOVU –
RESEARCHER**

This is to introduce to you Mr. James Matovu, Lecturer in Makerere University – East African School of Library and Information Science. He is undertaking a research in Management Information Systems as part of his PHD requirements. He would like to hold interviews with you and some selected members of staff regarding the management of information and public administration within this Ministry.

I wish therefore to request you to accord him audience and all necessary assistance in his research undertaking.



S.S.K

For: **US/F&A**

18th December 2003

- c.c. PS/ST
- c.c. DST
- c.c. Accountant General
- c.c. All Directors