

**INFORMATION MANAGEMENT AND EFFECTIVE DECISION MAKING
IN THE REGULATION, MANAGEMENT AND ADMINISTRATION OF
UGANDA'S PHARMACEUTICAL SECTOR**

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LIST OF ABBREVIATIONS

ACT	Artemisinin- based combination Therapy
ARVs	Antiretroviral drugs
AIDS	Acquired Immune Deficiency Syndrome
BC	Before Christ
BMI	Business Monitor International
CEO	Chief Executive Officer
CFOs	Chief Financial Officers
DNA	Deoxyribonucleic Acid
DOTS	Direct-Observed-Treatment-Short courses
EAR	Electronically Activated Recorder
FBOs	Faith based Organizations
GDP	Gross Domestic Product
GMP	Good Manufacturing Practices
HIV	Human Immune Virus
IFC	International Financial Corporation
IT	Information Technology
MAO	Monoamine Oxidase
MoFPED	Ministry of Finance Planning and Economic Development
NDA	National Drug Authority
NDP/A	National Drug Policy Act
NGO	Non-Governmental Organization
NHP	National Health Policy

NMS	National Medical Stores
NPSSA	National Pharmaceutical Sector Strategic Plan
NTLP	National Tuberculosis and Leprosy control Program
OS	Operating Systems
PAP	Policy Action Plan
PPVC	Performance Planning Value Chain
QCIL	Quality Control Industries Limited
TB	Tuberculosis
UIA	Uganda Investment Authority
UN	United Nations
UNBoS	Uganda National Bureau of Statistics
UNIDO	United Nations Industrial Development Organization
UPMA	Uganda Pharmaceutical Manufacturing Association
USD	United States dollar
UTAMU	Uganda Technology and Management University
VM	Value for Medicine
WDR	World Development Report
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This study intends to examine how better application of the information management process can account for effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector. The pharmaceutical sector develops, produces, and markets medicines, medical equipment, drugs, cosmetics and dietary supplements, for both human and veterinary use (Spitz and Wickham, 2012). The sector thus requires accurate, reliable and robust decision making as it touches on all the lives of individuals in any society. Effective decision making in this sector requires accurate and timely information. Today, there is a lot of public outcry about the inefficiencies in Uganda's pharmaceutical services sector. Susan, Light, & Lexchin, (2012) reported how Ugandans complain of the high cost of medicines, inadequate supply of drugs, lack of enough choice of effective medicines and related pharmaceutical services, which has led to increased death rates. The World Health Organization (2010) indicates the existence of so many unlicensed pharmacy traders on the market, with fake and adulterated drugs being sold in most of the pharmacies and clinics, while unqualified personnel have been found to be involved in the illegal dispensation of pharmaceutical services. Chaudhur (2005) emphasizes the very high prices of pharmaceutical products in Uganda, compared to other neighboring countries in the region, thereby creating a situation of smuggling in drugs from neighboring countries.

Managers in the pharmaceutical industry, today complain of "drowning in information" while thirsting for the "relevant information" (Anifalaje, 2008:18) necessary to make effective

decisions. Potgieter et al. (2013:6) suggest that pharmaceutical businesses currently analyze less than 7 per cent of the information that they collect, while Ittner and Pate's (2010:88-95) survey indicates that, despite collecting lots of information, organizations do not undertake the expected level of analysis on it. This undoubtedly affects the quality of decision making within the sector. Whereas pharmaceutical organizations generate information at a much faster rate, the utilization of such information in decision making remains a matter of concern. This dilemma has generated a new and exciting interest in the Information management field, more particularly in Africa (Nkomo, 2013:10).

The pharmaceutical sector today, on which this study is anchored, has access to unlimited amounts of information relating to drug reactions, scientific discoveries, innovations, inventions, economic trends, competitive data, consumer behavior, efficiency measures, and corresponding financial implications (Darrouch & Miles 2011:7). However, decision makers in this sector, at times "feel lost and perplexed" amidst the influx of volumes of information they receive. Hall and Walton (2004:104), for example, found that mountains of information existed in organizations, but managers were incapable of using this information to make effective decisions. In view of the above mentioned observations, it becomes a point of interest, to find out whether there is any relationship between current quality of pharmaceutical services with information management and effective decision making practices in Uganda's pharmaceutical sector.

This study therefore, is being undertaken in this context, to examine how information management and effective decision making in Uganda's pharmaceutical sector are related. The introductory section of this chapter covers: the background, problem statement, objectives,

research questions, purpose of the study, conceptual framework, significance, justification, scope of the study and operational definitions.

1.2 Background to the study

1.2.1. Historical background

Historically, decision making has been used as the process of guessing the future consequences of impending choices. In earlier times, societies consulted their elders for alternatives about the probability of success in making decisions (Paul, Rubin and Monic 2011). At some point in time, this advisory function shifted to soothsayers, astrologers, and religious figures - the management consultants of the day. For instance, Alexander the Great regularly consulted oracles and fortune tellers on the eve of great battles. The divine intervention perspective was later replaced by rationalism championed by the Ancient Greek philosophers whose ideas formed the basis for empiricist and positivist thinking in later years. To understand today's challenges of decision making thus requires an appropriate historical context.

As far as the pharmaceutical sector is concerned, Mits (2013:1), using information from Hadzovic notebook (1997: 49), reports how the earliest drugstores that date to the Middle Ages handled decision making. Mits (2013) reveals how the Chinese, while equally fascinated by divination, were searching for ways to integrate prophecy with the process of decision making. They discovered the first decision making tool called, 1 Ching, in 3,000 BC. The 1 Ching decision making tool, integrated Chinese world views about the ancient forces of Chinese gods, cycles of the calendar, the interaction of the elements of water, earth and fire. 1 Ching, as a decision making tool at that time, offered the following valuable lessons: proceed slowly, consider the alternatives, identify risks, and build contingency plans before choosing a course of

action. This focus on careful research, data collection, and data analysis before making a decision, is consistent with modern decision making practices.

According to Ozaki, Lo, Kinoshita and Tzeng (2012:93), the decision making process in the earliest periods was simple because the number of people involved in the pharmaceutical industry at that time was small. However as the industry grew to accommodate the growing population, decision making became complicated (Glockner & Betsch, 2011:3). Information from different fields became a necessity for decision makers. The result was an information boom that called for improved technologies to manage it. Banker and Kauffman (2004), however, observed that much of ancient decision making was haphazard, largely focused on guessing or sensing the outcome of a given choice, rather than generating creative choices and then systematically evaluating them.

Throughout the Middle Ages (5th - 15th century), the Roman Catholic establishment discouraged the practice of prophecy as well as research into many scientific areas. The official reason was that, since all decisions would ultimately be affected by God's will, human decision making was trivial and/or irrelevant (Mits, 2013). Mits further noted that during the second half of the 16th century, England was the home of two of the most brilliant contributors to the study of decision making: Francis Bacon and William Shakespeare (1590). Bacon's contribution was to attempt the development of the scientific method, while Shakespeare's efforts included many tragedies on the consequence of decisions. The most profound was *Hamlet* which reflects on the agony and terrible consequences of psychological indecision. Benjamin Franklin (1706) turned his analytic mind to decision making (Mits, 2013); stressing the "balance sheet" approach, which gives a simple, workable way of structuring information for evaluation. Franklin recommended making a two-column list of the pros and cons of each alternative and then calculating a "middle

line” value. His evaluation technique may seem naive by present-day standards, but his information documentation process is hard to fault (Bazerman, 2005).

Gladwell (2005) further observed how Herbert A. Simon (1994) built the General Problem solver, an algorithm, capable of solving problems, including those of a decision making nature. For many, the decade of the fifties was the golden age of decision making .Social and cognitive psychologists established baseline data on how individuals made decisions and solved problems, scientists set to work studying how executives and management teams worked, and began building theories and models based on that data (Hussy,1997). With the development of more sophisticated statistical analysis techniques, an opportunity arose to overcome the decision maker’s prime obstacle: “too much disparate data to handle at one time” (Hsee et al., 2003:257-272). Approaches therefore began to focus on the process of data collection and analysis to in order to support, and possibly replace human decision making.

According to Friedman (2004:110-128), brainstorming was one of the most important outcomes of a US federally-funded project regarding the development of group activities intended to stimulate social interactions and thinking. Brainstorming is a technique in which a group facilitator asks participants to offer a stream of alternative solutions for a given problem or issue. The rules of the process are that all participants must make a contribution, which the facilitator records verbatim. The other participants must then encourage and build on these suggestions without resorting to negativity. The objective is that at the end of the brainstorming session, a lot of creative data will have been generated and recorded (Eisenhardat, 1989:543-576). Hasselbring (2000:32-38) noted that when the technique was published in the influential journal *Developing Human Resources*, a number of facilitators were stymied about what to do with the accumulated

data, because brainstorming continued to be a tool that generated and collected large pools of potentially useful data.

Based on the work done at the US federally-funded project, Kepner and Tregoe (1999) developed a practical methodology for problem solving and decision making. This was the first complete problem-solving and decision-making process. The definition of the decision making process included: defining the problem; formulating a decision objective; generating criteria and alternatives; rating how well each of the criteria are met for each alternative; comparing the scores for each of the alternatives; and, finally, choosing the most appropriate alternative with the best score. However, for a number of reasons, the Kepner-Tregoe process has not become the universal business methodology for decision making. The finely-constructed case studies that respond so well to the Kepner-Tregoe process in the classroom are not necessarily an accurate reflection of real world problems or the dynamics of people who make decisions (Davenport & Harris, 2007). According to Porat and Hass (1969), and Streufettr (1973), the Kepner-Tregoe process was infinitely more complete and sophisticated than any previous attempt, but still did not address the issue that decision making must allow for the so-called “soft” factors.

Daft and Marcic (2003:171-215) stress that the subjective or affective domain plays an active role in establishing criteria for even the most mechanical of decisions. They argue that whatever system is used, it must allow all types of criteria to figure in the evaluation process. Reports from the Science Daily Magazine (2013), the “Which & Why Decision Valuation Software” suggests the most effective decision making tool in existence. The Which & Why Decision Valuation Software, takes into consideration the entire pool of collected research from Bacon to Franklin,

Kepner-Tregoe to Saaty, and adds the genius of modern computing power to offer what might well be the simplest, quickest, and most precise methodology ever for decision making.

Since the 1960s until now, there has been an explosion of computer-educated employees, which phenomenon has brought to the labour market white collar employees known as “knowledge workers” (Sultan, 2013:160-165). Their main characteristics are that their job definition is synonymous to information management. Their jobs demand from them constant adaptation not only to the technological changes of their working tools, but also to the tasks they carry out. Bouchlaghem, Glass and Matsumoto (2008) observed that by the late 1990s, when information was regularly disseminated across computer networks and other electronic means, network managers, became information managers, who found themselves faced with increasingly complex hardware and software tasks.

Africa’s pharmaceutical industry is the fastest growing in the world, although it is relatively small in global terms. Given a population of close to a billion people and the prevalence of a host of illnesses and diseases, the demand for pharmaceutical products far outstrips the supply and this demand will continue to increase as more Africans move to urban centers (Jacobs, 2012). There is strong evidence that governments in African countries are aware of the growth potential in the pharmaceutical sector, and are endeavoring to implement national policies to encourage growth (Lippeverd, 2001:311). The sub-Saharan Africa represents a paltry 0.6 per cent (worth \$3.8bn) of the world pharmaceutical market, according to 2007 estimates by the International Finance Corporation (IFC). Gustav (2012) observed that the underdeveloped infrastructure in the African region is the main reason for the pharmaceutical sector’s poor show. Despite

infrastructural shortcomings, the pharmaceutical sector in Africa is growing fast in a diverse range of fields (UNIDO, 2010).

In the last five years, the African pharmaceutical market is estimated to have grown to \$10bn, according to the research by Gardiner (2008). The medication to treat illnesses like epilepsy, diabetes, cardiovascular problems and cancer, however, is still thin on the ground. Access to pharmaceutical products varies widely over the continent's 54 countries, with the best coverage in Southern and Northern Africa, while West and East Africa lag behind the two. In Nigeria, growth is positive, with pharmaceuticals expenditure projected to grow from N143.65bn (\$921m) in 2011 to N167.28bn (\$1.05bn) in 2012, according to Business Monitor International's (BMI) report on the country's healthcare and pharmaceuticals industry for the third quarter of 2012, constituting a 14.4 per cent growth. In 2006, the Nigerian Federal Executive Council passed a resolution to support locally manufactured products (Antony, 2004). Positive growth is not only confined to regional leaders like Nigeria and South Africa, but also in other countries across the region, particularly Kenya, Uganda, Ghana and, to a lesser extent, Zambia, Zimbabwe and Botswana. Ghana's pharmaceuticals expenditure, based on second quarter data, rose from C469m (\$303m) in 2011 to C548m (\$343m) in 2012, an increase of 13.3 per cent, according to BMI (2010).

In Ghana, policy makers created the National Health Policy in 2005, focusing, amongst other areas, on monitoring, medicine procurement, regulation, distribution, and research (WHO, 2009). The Kenyan government has also explicitly expressed its desire to make the country a regional hub for pharmaceutical innovation, with the national health research institute playing a key role (Jacobs, 2012). Nonetheless, the pharmaceutical industry in Africa still has a long way to go, and

it is important to highlight the fact that the sector's growth is geographically patchy. With the long journey of the evolution of the pharmaceutical sector, key features of decision making which form current debates on the same subject are of great significance to this study.

1.2.2. Theoretical background

Decision making has many extensively researched theories in areas of human knowledge. Literature has shown that choice and behavior represent the core characteristics of the decision-making phenomena and involve the processes of thinking and reacting. A decision is a response to a situation comprehending judgments, expectations, and evaluation. Descriptive and normative theories propose distinct assumptions to explain the decision-making process (Oliveira, 2007:12). These theories possess distinct characteristics and follow specific methodologies for selecting a course of action. Normative, or rational, theories of decision making are based on fundamental axioms. If these established principles can be accepted, then it is possible to derive a normative theory of choice. However, descriptive, or psychological, paradigms highlight the importance of psychological elements influencing how to reach a decision. Descriptive models use cognition to explain decision making and have uncovered basic principles people use when dealing with problems, while normative theories consist of rationalistic components that indicate how decision makers should decide and explain how decision makers analyze a number of different outcomes from each alternative scenario, in selecting the final choice (Hoch, 2001). In normative (rational) decision making theories, decision makers analyze a number of possible alternatives from different scenarios before selecting a choice. These scenarios are weighed by probabilities, and then decision makers can determine the expected scenario for each alternative. The final choice would be the one

presenting the best-expected scenario, with the highest probability of outcome. It explains how decision makers employ a particular set of alternatives to solve problems (Goodwin & Wright, 1998; Hoch, Kunreuther & Gunther, 2001). The “Prospect” theory has two main elements: a value function that works similarly to the utility function in the expected utility theory, and a decision weight function to analyze the weights that are attached to the probabilities of a choice (Monohan, 2000). Thus, doubtful alternatives are evaluated through a methodology similar to the “Expected Utility” theory.

The “Expected Utility” theory could be interpreted in two ways: analytically and synthetically (Oliveira, 2008). According to the analytic view, choices represent revealing preferences, which are defined as implying utilities, whereas in the synthetic examination, decision makers evaluate both utilities and probabilities, and the integration of the judgments leading to a decision. In the analytic view, decision makers first observe what to choose, and then infer what they should have expected. Whereas the synthetic process occurs when decision makers discover what they want, how to achieve it, and what actions to implement and choices to make. In the “Economic” theory, the rational decision-making methodology leads to the selection of an alternative after completing a simple three-step process of: (a) analyzing the feasibility of the alternative, (b) pondering the desirability of the alternative, and (c) choosing the best alternative by combining both desirability and feasibility (Donald, Green and Shapiro, 1994). However, this type of decision-making model lacks analytical elements.

The “Information theory” is one of the mostly employed theories in managing information for effective decision making (Slonim, 2000). It was first developed by Claude Shannon in 1963 as a way of quantifying capacity signal channels; entropy and mutual information capture signals. Today the information theory provides a domain-independent way to reason about structure in

data and information (Sudiptoguha & McGregor, 2008). It provides a mathematical framework for the quantification of information content, linkage and loss. This framework is also used in the design of data and information management strategies that rely on probing the structure of information in data. With the information theory we can: (a) represent information as either discrete distributions or entropy-capturing information content in a distribution, (b) examine and reason about the information content of attributes in a relation instance, and characterise “goodness” of a database design and reason about normalization algorithms (Arenas & Libkin, 2003).

1.2.3 Contextual background

Omaswa (2002:3) reports how access to health services, qualified healthcare staff and medicines, are necessary components for any healthcare system. However, the issue of medicines presents special importance for various reasons as they save lives; improve health; and promote trust and participation in health services. The pharmaceutical industry contributes to improving the citizen’s health outcomes and productivity. A report made by Cheraghali (2010:15) shows that as Americans and the British take pride in their pharmaceutical industry, Iranians have only complaints because despite some new activities in producing new compounds, especially in the biological field, the output of Iran’s pharmaceutical industry is limited to the formulation of cheap and fairly old medicines that cannot cure many of the diseases experienced in those regions. Counterfeit drugs constitute probably the single biggest challenge to the pharmaceutical industry in Africa. Such drugs are defined by the World Health Organization as “deliberately fraudulently mislabeled with respect to identity and source” (WHO, 2009). It is believed that more than half of the drugs sold in Africa are fake (McLaughlin, 2012:4). According to the report by the US-based Fogarty International Centre (2010), over a third of anti-malaria drugs in sub-

Saharan Africa that have been tested over the last 10 years, have been identified as either counterfeit or of poor quality. It further indicates that apart from malaria-fighting drugs, ARVs and drugs treating tuberculosis are the most commonly counterfeited medicines. One of the major reasons why counterfeit drugs are flourishing in Africa is cost. Lippeveld (2001) observed that in the absence of adequate national health care provisions, the burden of the cost of drugs too often falls on the patient, who then may feel tempted to seek cheaper alternatives. Mclaughin (2012) notes that international health experts are warning of a mounting health crisis in parts of Africa because of an influx of counterfeit medicines from Asia and India. General awareness of counterfeit products is worryingly low in many African countries. White (2010:1650) observed that counterfeits are a massive problem that people have simply ignored, despite the fact that everything from life-saving Aids medication, to emergency contraception are being copied, faked and made with shoddy components on a huge scale. Laurie Garrett (1997) noted that, nobody has the head count or body count on the numbers of Africans that have died as a result of counterfeit or adulterated drugs, but suggests that China's role in these counterfeits has certainly been very substantial. While precise data is hard to track down due to the informal nature of African health systems (Lippeveld, 2001), several studies warn that, as many as one-third of malaria drugs in Uganda and Tanzania are fake or substandard, with most believed to originate from either China or India. With the same concern, Lukulay (2013) observed that, it was no secret that the majority of dangerous medications came from China and India, because those countries have the world's largest production bases for both active ingredients and finished drugs. This is a great challenge and calls for the robustness of effective decision making in our societies.

Some firms have come up with innovative new ideas to combat counterfeits. For example, in South Africa, Bharti, Airtel and the American technical company, Sproxil, partnered to create quick and easy ways for South Africans with mobile phones to verify the authenticity of drugs. Customers remove a scratch-off label and can then send the code underneath to Sproxil via SMS to verify the genuineness of the product (Murray et al., 2004:1098). In 1993, Uganda formulated the National Drug Policy and Authority (NDPA) Statute which was enacted in 2000, to become the NDAP/Act, to contribute to the attainment of a good standard of health by the population, through ensuring the availability, accessibility and affordability at all times of essential drugs of appropriate quality, safety, and efficacy. The role of the National Drug Authority, NDA, is also to have quality veterinary drugs accessed by all stakeholders for sustainable animal health and production.

According to the NADP/A Act, NDA is charged with the development and regulation of pharmacies and drugs in Uganda; control of importation, exportation and sale of pharmaceuticals; control of the quality of drugs; promotion and control of the local production of essential drugs; encouragement of research and development of herbal medicines; establishment and revision of pharmaceutical services guidelines and dissemination of information to health professionals and the public; provision of advice and guidance to the Minister and bodies concerned with drugs, on the implementation of the National Drug Policy.

Bate (2008) indicates that over the last 12 years, the Government of Uganda has developed two comprehensive National Health Policies (NHPs) - the National Health Policy I (NHP I) in 1999, and National Health Policy II (NHP II) in 2009. Both these policies are aimed at increasing access to essential medicines as part of national efforts to deliver to Ugandans the National

Minimum Healthcare Package (UNMHCP), which puts particular emphasis on management of communicable diseases, especially HIV/AIDs, malaria and tuberculosis.

Demand for generic essential medicines is driven by the absolute size of the disease burden and interventions to reduce this burden (Beaglehole et al., 2004:2085). Bate continues that at 6.4 per cent, Uganda's HIV prevalence, although stable, is still high compared with many other countries and the number of people requiring HIV/AIDS treatment and care is increasing. There are interventions to scale up HIV/AIDS treatment and care services and, according to the Ministry of Health (MoH), at the end of June 2009, the number of people on anti-retroviral drugs (ARVs) stood at 187,974, of whom 18,000 were children. The HIV/AIDS burden also impacts on the burden of tuberculosis. According to the WHO Global Tuberculosis Control Report (2009), Uganda is ranked 15th out of the 22 high-burden countries in the world. Today, there are annually 136 new tuberculosis cases for every 100,000 Ugandans and TB is the cause of death of some 30 per cent of people living with HIV/AIDs (MoH, 2009). The National Tuberculosis and Leprosy control Program (NTLP) strategic plan gives particular attention to expanding quality Direct-Observed-Treatment, Short-Course (DOTS) therapy country-wide as the best option to control the disease (WHO, 2009).

Malaria remains the leading killer disease and the demand for malaria medicines continues to grow both in the public and private sectors (De Brouwere et al., 2007:183). In 2008/2009, in order to assess demand in the private sector and explore ways of responding, the Ministry of Health, in collaboration with private sector partners and with funding from the Affordable Medicines Facility for malaria (AMFm), piloted the procurement, distribution and use of subsidized Artemisinin-based Combination Therapies (ACTS) in the private sector (MoH, 2009).

According to the Uganda Pharmaceutical Manufacturers Association (UPMA), Uganda's pharmaceutical market has an estimated value of US\$ 276 million, of which 90 per cent of the medicines are imported, mainly from India and China, and 10 per cent produced by local manufacturers. The imported medicines and health supplies account for 5.4 per cent of Uganda's total imports (UIA, 2009). Medicines are supplied through both the public and private sectors and there are also non-governmental organizations (NGOs), faith-based organizations (FBOs) and international aid agencies involved in the procurement and distribution of medicines and health supplies (Santini, 2002:166). Uganda has a total of 11 licensed local pharmaceutical manufacturers, 590 registered pharmacies and over 6000 chemists' shops (NDA, 2013). As of 2009, the country had 114 hospitals, 60 of which were public, 46 private-not-for-profit or faith-based organization (FBO), and eight private (UNBOS, 2009). The National Medical Stores (NMS) is responsible for the procurement, storage and distribution of medicines and health supplies for the public sector, while the private sector is served through a chain of privately owned wholesale and/or retail pharmacies, chemists' shops, and clinics (Walter, 2007).

The supply of essential medicines for HIV/AIDs, malaria and tuberculosis depends on the funding mechanism. All the donor and development partner-funded procurements for ARVs, ACT (Artemisinin-based Combination Therapies) and TB medicines source their medicines outside Uganda (WHO, 2009). This is mainly because of the requirement that the suppliers should have World Health Organization (WHO) product prequalification. This situation will probably change in the near future as the local pharmaceutical industry, which produces ACT and ARVs, acquires international certification (Bate, 2008). Although these locally produced ACT and ARVs are not WHO prequalified at the moment, in January 2010 Quality Chemical

Industries Limited (QCIL) received the WHO Good Manufacturing Practices (GMP) certification and the firm is working on the product prequalification process for ARVs and ACT. As of December 2009, procurement of locally-manufactured ACT and ARVs was funded solely through Government of Uganda resources (MoH, 2009). UGX 60 billion of government funds have been allocated for these purchases as part of government's efforts to increase the availability of ACT and ARVs and to support the local pharmaceutical industry (Walter, 2007).

1.3 Statement of the problem

Uganda is a country faced with a very low life expectancy of 54.07 years (WHO, 2012), and a burden of high infant mortality rate of 45/1000 compared to USA 6/1000, United Kingdom 4/1000, Norway 2/1000, South Africa 33/1000, Netherlands 3/1000, and Monaco 3/1000 (UN, 2009 - 2013). Uganda's average life expectancy period is very low compared to other nations, like the 91years in Monaco, 60 in Rwanda, 62 in Sudan, 64 Senegal, 66 Botswana, 73.2 Egypt, 79 in the USA, and 82 in the United Kingdom. Society benefits from increased life expectancy and feel more satisfied with their societies. Having people work for a longer time will increase productivity and the total Gross Domestic Product (GDP) of any nation (Amadeo, 2013).

Given Uganda's low life expectancy, progress is low and therefore it is underdeveloped as a nation (UN, 2011). It is believed that Uganda's low life expectancy and the high infant mortality rate, are problems, among other things, due to fake or expired drugs (Mclaughin, 2012), counterfeit and adulterated drugs (Buwule, 2013:5), insufficient supply of basic life-saving drugs like ARVs and Anti-malarial drugs, engagement of unqualified personnel in the provision of pharmaceutical services, as well as the utilization of unlicensed pharmacies and drug shops by unqualified personnel (Nahamya, 2012:4-6). In relation to the above findings, Nakyanzi, Kitutu, Oria, and Kamba, conducted a study that covered "The Expiry of Medicines in supply Outlets in

Uganda”, while Brown, Babovic and Wasan (2010) did a study on “Increasing Access to Essential Medicines and Diversifying Canada’s Approach”.

However, none of the available studies has ventured into how information management affects effective decision making in the regulation, management and administration of Uganda’s pharmaceutical sector. This study therefore, intends to assess the implications of information management on the decision making process in the regulation, management and administration of the pharmaceutical sector in Uganda.

1.4 Purpose of the study

The purpose of this study is to demonstrate how information management influences effective decision making in the regulation, management and administration of the pharmaceutical sector in Uganda.

1.5 Objectives of the study

1. To find out how the quality of information gathering influences effective decision making in the regulation, management and administration of Uganda’s pharmaceutical sector.
2. To establish how the method of information organization and storage influences effective decision making in the regulation, management and administration of Uganda’s pharmaceutical sector.
3. To assess the effect of political influence on information management and effective decision making in the regulation, management and administration of Uganda’s pharmaceutical sector.
4. To determine the extent to which individual competence moderates the relationship between information management and effective decision making in the regulation, management and administration of Uganda’s pharmaceutical sector.

1.6 Research questions

1. How does quality of information gathering influence effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector?
2. How does the method of information organization and storage influence effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector?
3. How does politics influence the relationship between information management and effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector?
4. To what extent does individual competence moderate the relationship between information management and effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector?

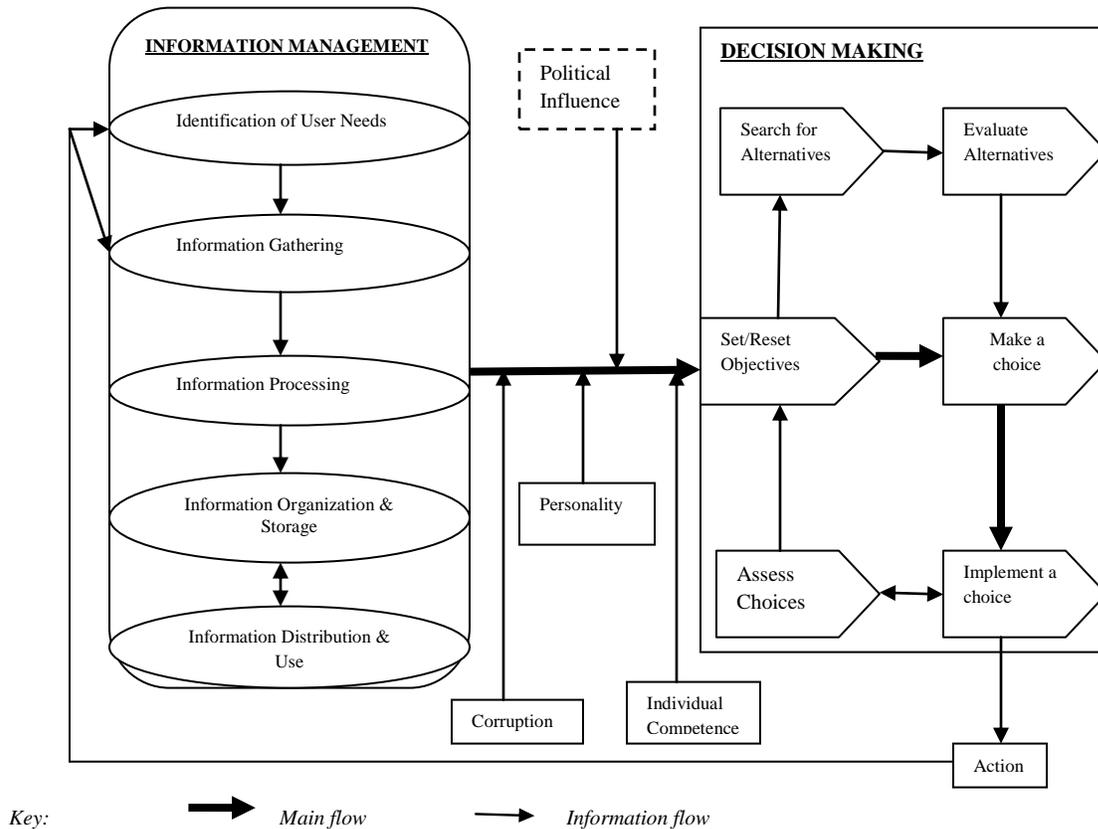
1.7 Research Hypotheses

1. Quality information gathering leads to effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector.
2. Proper methods of information organization and storage lead to effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector.
3. Politics influences the relationship between information management and effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector.
4. There is a great extent to which individual competence moderates the relationship between information management and effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector?

1.8 Conceptual Framework

The Information management process is a continuous cycle of six closely related activities, namely: identification of information needs; information acquisition/gathering; information organization and storage; development of information products and services; information distribution; and, information use (Choo, 2006, 2012). To make a decision one needs various kinds of information and technical data, including details about the problem for which a decision is needed, actors involved and their objectives and policies, influences affecting the outcome, scenarios and constraints (Saaty & Peniwati, 2013). Decision making is a process that involves: assessing choices; setting/resetting objectives, searching for alternatives; evaluating alternatives; making an informed choice and implementing the choice (Simon, 1994; Graham & Poland, 2011:139-158).(Figure 1.1)

Figure 1.1 THE INFORMATION MANAGEMENT CYCLE IN DECISION MAKING



Source: Choo (2006) *Information Management for Intelligent Organizations: The art of scanning the environment: p.20*

1.9 Significance of the study

This study will be significant to both Government and private organizations, who will find it helpful in determining the kind of information that the public needs in accessing the available services. Public institutions would be interested in results of such a study in determining which, how and where relevant information is to be sourced and disseminated, for effective decisions. The study will assist organizations in becoming aware of the decision options available, in order to improve on the delivery of pharmaceutical services in the health sector. The private sector will

particularly benefit from the results of the study, because of the improved decisions within the regulation and administration of services, while the public will benefit in terms of improved, better, and quicker services. The researcher will benefit by getting a better understanding on the subject of information management and effective decision making processes, while the academic fraternity will have additional knowledge base added on to the existing one, regarding the subject matter.

1.10 Justification of the study

Policy makers in the management, regulation and administration of the Ugandan pharmaceutical services sector, need appropriate information for effective decision making. However, according to the World Health Organisation (WHO, 2004), the unfortunate feature of pharmaceutical projects in many parts of Uganda, is that decisions are taken despite the absence of reliable information. In practice, decision making is all too often based on political opportunism, expediency and donor demand, which leads to inefficient and ineffective actions.

This fact was well researched on by scholars like; Waldman and Meador(2013), on “Collaborative Methods for Public Managers & NGO Leaders, Implementing Policy for Social Change”, Mutebi (2012),on “The search for a right formula, public, private and community driven provision of safe water in Rwanda and Uganda”, (Basheka, 2013:45), on “corruption in Public administration” who noted that, “Corruption has effects that are direct and indirect, short, medium or long term in nature”, and emphasized that “In whatever form, corruption is bad for development”.

A thorough analysis of the existing studies on information management and effective decision making, does not indicate the existence of similar or comparative studies specifically related to

the concept of information management and effective decision making in the regulation, management and administration of the pharmaceutical sector in Uganda. It is on this basis that this study is intended to fill in the gaps not addressed by previous scholars.

1.11 Scope of the study

Subject Scope

The study focuses on how the analysis of information needs, information gathering, processing, storage, distribution and use, determine the process of effective decision making. The process of decision making involves making and implementing a choice of actions as a result of searching and evaluating alternatives, with a given objective.

Geographical Scope

The study will be conducted both within the Kampala central region of Uganda, , and the Entebbe Wakiso region of Uganda, which will cover the National Drug Authority- the Uganda government national pharmaceutical regulatory Agency, the pharmaceutical service providers in two regions covering the National Medical Stores and selected private pharmacies within the Kampala and Entebbe municipalities.

Time Scope

The study period ranges from 1990 to date because this is the optimal time within which most of the studies concerned with the concepts of information management and decision making were carried out. The study is scheduled to cover a period of three years as indicated in the work plan and timeframe, in Appendix 3.

1.12 Operational Definitions

Data – The word data is the plural of Latin datum, past participle of dare, "to give", hence "something given". Thus, in general, data consists of propositions that reflect reality. According to Albrecht (2004), data is the essential raw material, an element to be manipulated.

Information - According to Albrecht (2004), information is an association of data elements that acquire meaning in a particular context. The Oxford English Dictionary defines information as “Knowledge communicated concerning some particular fact, subject or event; of which one is apprised or told; intelligence, news”.

Knowledge – is what is known. The term knowledge is also used to mean the confident understanding of a subject, potentially with the ability to use it for a specific purpose.

Information management is the proper and astute administration of available information resources for the express purpose of fulfilling of personal, group, community and societal needs and aspirations in a suitable way.

A **decision** is a choice made from available alternatives (Bazerman, 2005). A decision is a final product of the specific mental/cognitive process of an individual or a group of persons/organizations and therefore a subjective concept (Banker & Kauffman, 2004:281-298). It is a mental object and can be an opinion, a rule or a task for execution/application.

Decision making is the cognitive process leading to the selection of a course of action among alternatives (Kahneman & Tversky, 2000:453-458).

The Pharmaceutical sector is that part of the economy which develops produces and markets drugs licensed for use as medications (McGuire et al., 2007). He explains that the pharmaceutical industry is subject to a variety of laws and regulations regarding the patenting, testing and marketing of drugs.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will review the most relevant literature on the study variables of the research topic, as put forward by various researchers and scholars. This section will analyze and examine the relationship between the dimensions of Information management (independent variable) and the elements of effective decision making (dependent variable), highlighting how political interference, individual competence, corruption, and personality attributes, modulate this relationship within Uganda's pharmaceutical sector. To this effect, therefore, the literature will focus on the relevant theories, which will be reviewed from the information management and decision-making levels of both individual cognitive abilities and organizational level perspectives. The researcher will critically examine the literature from both empirical and non-empirical studies, including publications from different scholars, about the study variables of the subject matter, as identified by the objectives of the study, with the view of attempting to draw conclusions on the overall effect that the independent variable exerts on the dependent variable.

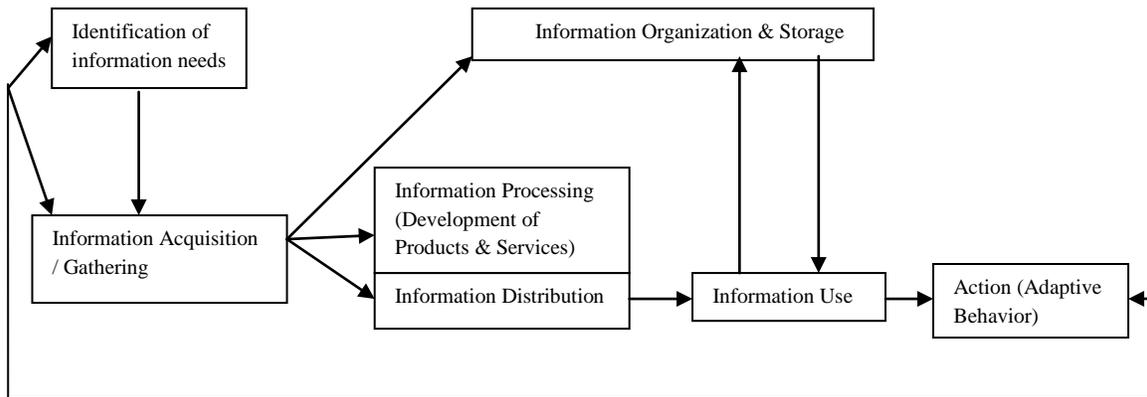
2.2. The concept and study of Information Management

Information management is a broad conceptual term that has various meanings and interpretations among different constituencies. Often, the term is used interchangeably with others. For instance, information management is often equated with the management of resources, information technology (IT), or policies and standards (Choo, 2012). Macevilutes & Wilson (2002); Ikoja-Odongo & Mosert (2010), suggest that information management draws upon ideas from both Librarianship and Information Science. Information management can be

defined as: “The economic, efficient and effective coordination of the production, control, storage, retrieval and dissemination of information from external and internal sources, in order to improve performance of the organization” (Grenfell, 2008). It describes the role of technology in organizations and institutions (Neely& Jarrar, 2004:506-509) and the making of effective decisions. In public institutions information management is the sum of all managerial activities which transpose the potential contribution of information processing to translate their strategic goals into success (Afifi & Fowler, 2011). Mannie, Herman, Van Niekerk, Chris, & Adendorf (2013:8) consider information management as: the proper and astute administration of available information resources for the express purpose of fulfilling personal, group, community and societal needs and aspirations in a suitable way. Taking the experiences from the aforementioned scholars regarding their understanding of the concept of information management, the researcher will relate this study to the different aspects of information management in the regulation, and administration of the pharmaceutical sector in Uganda. In this work, emphasis will be put on researching about the possible consequences of either proper or improper application of the dimensions of information management during the identification of user needs, information acquisition/gathering, organization and storage, processing, distribution and use, while relating them to the decision-making processes in the regulation of the pharmaceutical sector, especially during the importation and distribution of pharmaceutical products by both the public and private practitioners within the sector.

The process model suggested by Choo (1995, 2002, 2012), (Figure 2.1) will be used as the basis for the analysis of information management, because it combines important aspects of information management in relation to decision making.

Figure 2.1 The Process Model of Information Management- Adapted from Choo (1995, 2002, and 2012).



2.2.1 Identification of information Needs

Smith (2011) defines this, as a process that focuses on the requirements related to the goals, aspirations, and needs of the users to provide them with satisfaction. It deals with obtaining factual information regarding the organization’s current situation. Information needs must first be well planned for, before identifying them. Planning for the required information in organizations is one of the major activities engaged in by management decision makers (Choo, 2002). For instance, it is done every time they have to make decisions on a market research for the development of new products or services, and systems. They plan to identify information requirements, acquisition, maintenance and use. The issue is that although it is sometimes done subconsciously, it helps to prevent problems later on (Choo, 2002). Planning is therefore essential because it helps to prevent situations of unnecessary data duplication and waste thereby enabling decision makers to know what data they need and how they will use it (Fitz, 2006). In the identification of information needs, members of an organization recognize the volatility of

the environment, and seek information about its salient features in order to be able to make sense of the situation, and to have the necessary information to take decisions in solving problems. Information needs are therefore defined by the subject-matter requirements. If decision makers are to be informed by information then, clearly, knowing their needs and objectives is important in order to obtain the corresponding data (Liden, 2007).

The Ugandan pharmaceutical sector recognizes many important factors in the identification of information needs that determine the successful performance of the industry. Such factors include: the volatility of Uganda's political and economic environments (Wunsch & Oluwu, 1990; Oluwu, 2002:3); competition within the industry (Rugumambaju & Kutwabami, 2010), and, generally, the prevailing market conditions (Hanson, 2012:54), thereby making the above arguments relevant to the current study.

2.2.2 Information Acquisition / Gathering

Information acquisition /gathering, sometimes called scanning, refers to the process through which an organization obtains information from internal and external sources (Horst, 2011). Lehl and Fischer (1990) define it as the act of collecting information which is used to keep records, make decisions or conduct transactions. The necessary information, if identified to be efficient in meeting the decision maker's requirements, is acquired (Anthony, 2000). This covers both the process of creating the information initially and its application. We only create information once, so there is need to ensure that, proper planning is done and the amount of legacy systems that we have, can deliver what we want. Information acquired from external sources, must be thoroughly checked for its quality and branding, so that there is no counterfeit (Horst, 2011). According to the studies provided, the information acquired affects the

information management process in any given organization. The current study identifies with this argument because the study seeks to examine the relationship between information management and effective decision making in Uganda's pharmaceutical sector.

Certain data that we acquire is more sensitive and, in certain cases, we have regulatory requirements to fulfill before we can access this information. Therefore, we need to be able to identify which users or systems are able to create the data (Sternberg & Sternberg, 2012). The rapid technology changes of this century have meant that we can create data much more rapidly as we use automated data-capturing tools such as RFID, Scart and questionnaires. The tools to be used here are selected to ensure that organizations follow a systemic and structured data collection approach (Karim, 2004). Fundamentally, information acquisition/gathering is concerned with translating the conceptual definition of information into an operational definition (Kennerley & Mason, 2008), which provides pieces of data that everyone can understand. For example, a tool such as; "The Performance Measurement Record Sheet" (Neely et al., 1997) specifies important criteria that should be defined when calculating any performance measure.

2.2.3 Information organization and storage

Information organization refers to the grouping of similar information, prioritizing, and assembling it (Liden, 2007). This ensures that groups of similar information are grouped together. Information organization can be understood from four perspectives: a data perspective; a relationship perspective; an operating system (OS) perspective; and, an application architecture perspective (MacLeod, 2010). Information storage is the systematic process of collecting and cataloging data so that it can be located and displayed on request (Harris, 2002). Once we have acquired the information relevant for decision making, we then not only need to use it but also maintain it, as it is more than likely to change over time. This means that data must have

definitions, sizes and formats, so that people can understand what it means, how it can be used and, most importantly, where it is being used (Holloway, 2012). The objective is to create an organizational memory that is the active repository of much of the organization's knowledge and expertise. The volume of data produced and collected by the organization needs to be given in ways that reflect the interests and information use modes of the organization and its members (Liden, 2007).

With the help of information technology, information can be properly organized and well stored, and this will improve the efficiency and reliability of the organization's operational activities (Horst, 2012). This is important in “data ownership” or “data stewardship”, because no one in an organization "owns information". In the past, information dictionary systems were used to record it; they then became repositories, and now they are master information management databases (Denning & Bell, 2012). This is where information is kept in a state where it can be made available, in the appropriate form, to the accuracy required, and in the appropriate time scale to support and meet decision objectives. The observations made by different researchers on information organization and storage, demonstrate the importance of properly organized and stored information for purposes of information management. The above mentioned observations are useful to the current study because proper information storage and organization is a necessary component of effective decision making in Uganda’s pharmaceutical sector.

2.2.4 Information Processing (Development of products and services)

In computing, information processing broadly refers to the use of algorithms to transform data, (Illingworth, 1997). Information processing refers to the change of information in any form detectable by an observer (Holloway, 2012). Claude Shannon defines, information processing as the conversion of latent information into manifest information (McGonigle & Mastrian, 2012).

Denning and Bell refer to information processing as the interpretation of incoming information (stimulus) to make a response suitable within the context of an objective, problem or situation. According to the freedictionary.com, the definition of information processing is, "the sciences concerned with gathering, manipulating, storing, retrieving, and classifying recorded information". It suggests that for information to be firmly implanted in memory, it must pass through three stages of mental processing: sensory memory, short-term memory, and long-term memory. Within the field of cognitive psychology, information processing is an approach to the goal of understanding human thinking in relation to how they process the same kind of information as computers (Shannon & Weaver, 1963).

Information processing is important in converting raw data into useful information, which provides knowledge to key decision makers in the pharmaceutical sector, in responding to the pharmaceutical needs of the population (Walter, 2007; Rugumambaju & Kutuyabami, 2010). The current study will examine the relationship between effective decision making and information management, of which information processing is a major component.

On obtaining information from data, freshly or from memory, it is packaged into different levels of information products and services targeted at different user groups and information needs in the organization (Choo, 2012). This is not a passive re-packaging of incoming information, these products and services have to add value by enhancing the quality of the information and improving the fit between the information and the needs or preferences of the users. This is now converting information into knowledge (Von Hippel, 1998:6) and is done by adding the important elements of relevance and context which clarify the insights that are contained in the data. Spence (2001) refers to interpretation of information as arriving at the moment at which the messages in the data become clear. Sense making is typically defined as an interpretive process

that results in the attachment of meaning to situations and events (Wagner and Gooding, 1997). Some of the commonly applied information processing methods that relate to this study include information visualization and benchmarking, where by information visualization allows data to be presented in form of graphs (Spence 2001), where as benchmarking is a way of adding context information by way of comparing it with the units of analysis, in three different ways: Competitive Benchmarking; Functional Benchmarking; and, Generic Benchmarking (Hussey, 1997; Turner, 2002). Similarly, this kind of Information processing will provide meaningful information and knowledge to key decision makers in the regulation, management and administration of the pharmaceutical sector in Uganda.

2.2.5 Information Distribution

Information Distribution is the process of making the needed information available to the project stakeholders in a timely manner (Ulrich & Eppinger, 2012). Denning & Bell (2012) define the distribution of information as the process through which individuals, groups, or different units of the organization share information and data among themselves. A wider distribution of information promotes more widespread and more frequent learning, makes the retrieval of relevant information more likely, and allows new insights to be created by relating separate items of information (Choo, 2012). The goal of information distribution is to increase the sharing of information in an organization (Hass & Hansen, 2007). Therefore the aspect of information distribution is important to this study as it will affect the outcome of the decisions being examined.

It is no good acquiring information, either internally or externally, if you will not let decision makers in your organization know and make use of it. Communication is a method of information distribution for delivering data to decision makers, (Cagan & Vogel, 2013). This may

be communicating data or information depending on whether it comes before, during, or after the analysis and interpretation stages (Anthony, 2000). Whether it is data or information that is being communicated, the question becomes: how do we best deliver the message we have concluded? Who is the audience and what do they want? What are the best channels for delivering the message? Information must be provided to the end user, at the right time, in the right place, and in the appropriate form so as to make effective decisions (Choo, 2012).

Decision makers should be given the best available information to perform their work, and the information should be delivered through channels and modes that suit well with users' work patterns.

Tufte (1997) argues that the way in which information is communicated or distributed is critical to the understanding of that information, and that the communicator needs to choose a medium and format that the audience will understand. Research data suggests that 75 per cent of what we know is learnt visually. The effectiveness of information distribution/communication can be assessed by the concept of "Information Richness". "Information Richness" is defined as the ability of information to change understanding within a time interval (Lehrl & Fischer, 1990).

2.2.6 Information Use

Information use is a dynamic, interactive social process of inquiry that may result in the making of meaning or the making of decisions (Choo, 2012). How we use information, affects the way we see the world (Boland, 1987:365) and ourselves (Thayer, 1993:107), especially when we define the world in terms of information as many do today. Information's meaning is shaped by how we see the world, or how we want it to be, (Vreeken, 2005:7).

Fundamentally, the subject of using information for decision making is concerned with the conversion of data into information and of that information into knowledge with which decisions

can be made (Illingworth, 1997). Information use is for the creation and application of knowledge through interpretive and decision making processes. Information use for decision making involves the selection of alternatives. The Performance Planning Value Chain (PPVC) is a prescriptive, normative model, describing how information use can be undertaken (Neely & Jarrar, 2004).

The use of information in decision making has an overriding causal model underpinning it, which is the conversion of data into information and information into knowledge, to enable decisions to be made (Neely & Jarrar, 2004). Thus the assumption is that “if we have better data, this will enable us to have better information, leading to better knowledge and better decisions” (Smith, 2011). This is a rational view of decision making which is implicit in much of the management research in the field. Many tools, techniques and technologies have been developed to support the conversion of data into information to inform decision makers (Banker & Kauffman, 2004). Neely and Jarrar (2004) proposed the Performance Planning Value Chain as a systemic process for using information to enhance decision-making, bringing together a vast array of tools to extract value from information and focus efforts on what will add real value to the organization. The principles of information use with respect to information management advanced by different scholars also apply to decision making in the pharmaceutical sector in Uganda. This implies, therefore, that this study will focus on information use as one of the major determinants of effective decision making in the pharmaceutical sector in Uganda. Arnett et al (2000) say that there are different types of information usage (see Figure 2.2). The different types of information usage mentioned by Arnett et al (2000) imply that dealing with information can involve manipulation for personal reasons.

Figure 2.2**Information Use**

TYPE OF INFORMATION USAGE	DEFINITION
Instrumental Usage	Research findings used to fill information gaps.
Congruous	Information is used in a manner that is consistent with the intent and implications of the study.
Incongruous	Information is purposely distorted to alter the implications of the findings.
Conceptual Usage	Research findings, although not directly applicable to the problem at hand, are added to general knowledge base.
Product	The results of the project are added to knowledge base.
Process	Information learned from the process of conducting the study is added to knowledge base
Symbolic Usage	Information is used for appearance's sake rather than for the intrinsic qualities of the information
Affective Usage	Information is used to make decision-makers "feel good."

Source: Arnett, D.B. Menon, A. Wilcox, J.B. (2000) "Using competitive intelligence: antecedents and consequences", Competitive intelligence Review 11, 3:17.

2.2.6.1 Information use for Prediction.

Ultimately, all decision making is about the future, therefore if we are to use data to improve decision making we need to build a model that provides some predictive support (Oliveira, 2007). It is insufficient for data to merely contribute to an understanding of current performance; it must also allow the development of predictive management capabilities in order to effectively manage risk and enable change (Wilcox and Bourne, 2003). The ability to predict allows management to create robust systems and resources that are resilient to environmental variety, perturbations, and threats (Beer, 1972).

2.3. Effective Decision Making / Action Planning.

Effective decision making is defined as the process through which alternatives are selected and managed to achieve organizational objectives (Saaty & Peniwati, 2013). Decision making in an

organization is about making compromises in order to meet organizational objectives (Narayana, 2012). Decision making ranges from strategic, to managerial and, routine operational decisions (Harvey, 2007). However, decision making is not only selecting the right choices or compromises but also implementing the decisions made, (Drucker, 1967).

Effective decisions result from a systematic process that is handled in a distinct sequence of steps with clearly defined elements, (Drucker, 1967). Decision making is the basis of competitive advantage and value creation for organizations (Harvey, 2007:4) where as improving decision making is the key to superior business performance. Effective decision making is determined by the organization's level of knowledge sharing

2.3.1 Theories explaining the Decision making process

In the economic theory, the rational decision making methodology leads to the selection of an alternative after completing a simple three-step process of; (a) analyzing the feasibility of the alternative, (b) pondering the desirability of the alternative, and (c) choosing the best alternative by combining both desirability and feasibility (Rubinstein, 1998). However, this type of decision making model lacks some analytical elements.

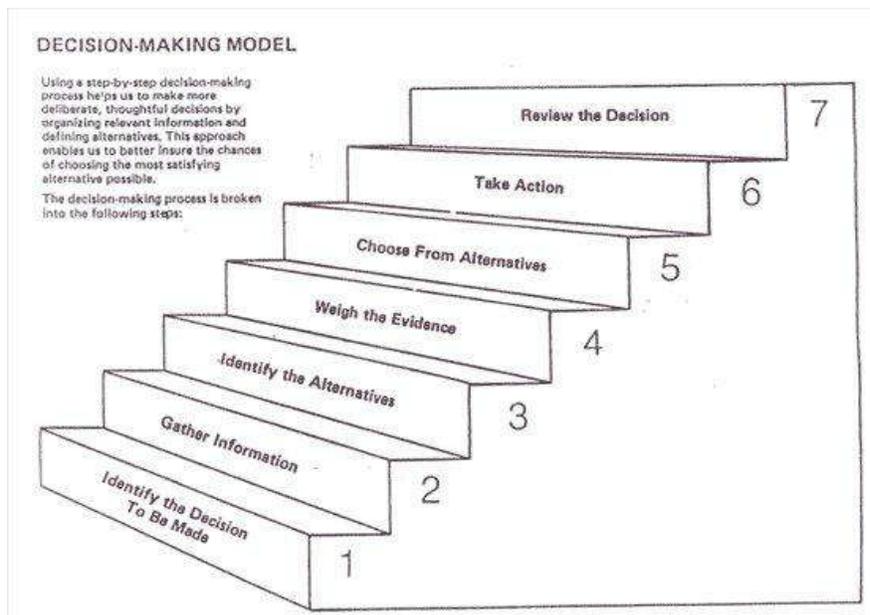
Descriptive and Rationality decision making theories possess distinct characteristics and follow specific methodologies for selecting a course of action (Oliveira, 2008). Rationality theories of decision making are based on fundamental axioms. Rationality has been defined as the compatibility between choice and value (Simon, 1994). Rational behavior seeks to optimize the value of the outcomes focusing on the process of choosing rather than emphasizing the selected alternative. A study done by Neumann and Morgenstern cited by (Hastie & Dawes, 2000), demonstrated, that when decision makers follow rational methodologies, it is possible to derive numbers that represent personal values.

The Expected Utility Theory is interpreted in two ways: analytically and synthetically (Oliveira, 2008). According to the analytic view, choices represent preferences, which are defined as utilities, whereas in the synthetic examination, decision makers evaluate both utilities and probabilities, and the integration of these judgments lead to a decision (Stein and Welch 1997). All decisions are about the present and future and, as such, must include at least an element of judgment (Saaty & Peniwati, 2013).

2.3.2 The decision making processes

This study will use the Saaty & Peniwati seven steps model, presented in Figure 2.4

Figure 2.3 **The Decision Making Model**



Source: Saaty, T. and Peniwati, M. (2013). "The decision making model"

2.3.2.1 Identify the decision to be made

This means identifying the purpose of your decision by asking yourself what exactly is the problem that needs to be solved (Saaty & Peniwati, 2013), and why the problem needs to be

solved. One of the most effective decision making strategies, is to keep an eye on your goal. You realize that a decision must be made. You then go through an internal process of trying to define clearly the nature of the decision to be made; figuring out what is most important in making good decisions (Hussy, 1997).

2.3.2.2 Gather relevant information

Lehrl and Fischer (1990) defined this step as the act of collecting pertinent information. However, the real trick in this step is to know what kind of information is needed the best sources of this information, and how to go about getting it (Gladwell, 2005). According to Herman (2001), when gathering information, it is good practice to make a list of every possible alternative, including the ones that may initially sound silly or even seem unrealistic. Accordingly, some information must be sought from within yourself, through a process of self-assessment while other information should be sought from outside you; from books, people, and a variety of other sources. It is always advisable to seek the opinions of trusted people, or speak to experts and professionals, because this will help come up with a variety of solutions in weighing all options available for a final decision. This step, therefore, involves both internal and external work.

2.3.2.3 Identify alternatives

Herman (2001) observes that this is the identification of possible paths and alternatives, through the process of collecting information, using Imagination to construct new alternatives. In this step of the decision making process, all possible and desirable alternatives are listed (Saaty & Peniwati, 2013).

2.3.2.4 Weigh evidence/Consider the consequences

This is the evaluation of one's future action (Thomas, 1991). This step is as important as step one because it will help determine the impact of the final decision on all parties involved. The results of the decision will be investigated in terms of their current and future effects. Friedman, (2004), observes that drawing on information and emotions would be important in imagining what it would be like, if each of the alternatives was to be individually executed to the end. Evaluation on whether the need identified in Step 1, would be helped or solved, through the use of each alternative, is also made. In going through this process, alternatives that appear to have higher potential for reaching the desired goal are usually preferred. This is an essential step because it allows review of the pros and cons of the different options that were listed in the previous steps (Daft & Marcic, 2003). Eventually, alternatives will be placed in order of priority, based upon the value assessment system.

2.3.2.5 Choose among alternatives

Choosing among the alternatives is defined as selecting the best alternative (Banker & Kauffman, 2004). Once all the evidence has been weighed, the best alternative is selected. A combination of alternatives can also be chosen. After identification of goals, gathering all necessary information, and weighing the consequences, then this becomes the time to make choices and actually execute final decisions (Saaty & Peniwati, 2013). It is important to understand that this step can cause some people a lot of anxiety, because this is where trust of instincts comes into play, (Friedman, 2004).

2.3.2.6 Taking action

Taking action means the actual implementation of a decision. It is at this step that the alternative chosen, is effectively implemented.

2.3.2.7 Review of the decision and consequences

Once a final decision is taken and put into action, it is necessary to evaluate the decision to ensure that it works; whether or not it has solved the prior identified need, (Saaty & Peniwati, 2013). If it has, then this decision will be upheld for some period of time. If the decision has not resolved the identified need, repetition of certain steps of the process will have to be made in order to make a new decision (Kepner & Benjamin, 1999). For example, more detailed or somewhat different information will be gathered, or additional alternatives on which to base your decision will have to be examined. This will help to further develop decision making skills for future problems. This step requires some patience, courage and perseverance, because it may take some time to see the final outcome (Gladwell, 2005). Always looking for and anticipating unexpected problems will help alleviate undue stress, if and when a problem occurs.

2.4 Moderation of the information management process for effective decision making

2.4.1 Personality

Decision makers are often influenced by emotion, personal perception, and numerous subjective influences (Kahneman and Tversky, 2000; Oatley and Johnson-Laird, 2002). In his work on bounded rationality, Simon (1983) suggests that there is no such thing as ‘dispassionate debate’, and that humans are prone to bias caused by passion, invective and feelings (Simon, 1983: 10). It is widely regarded that humans are efficient ‘pattern recognizers’, and that this ability is part of our evolutionary heritage, as discussed by Bolhuis and Goodman (2005). Despite the long

development period of this ability, it is often flawed. Numerous researchers have indicated the need for caveats in the area of human judgment, including the seminal work by Simon concerning bounded rationality (Simon, 1983). The problems of cognitive bias have been known for many years (Tversky and Kahneman, 1973, 1974; Sterman, 1989; Kahneman and Lovallo, 1993) and it is generally agreed that, although humans are able to gain a great deal of information from direct experience, our processing abilities are questionable in some key areas, especially in probabilistic environments.

The problem of emotional affect during the decision process has been the subject of numerous research studies in a range of fields of psychology, as examined by Schwarz (2000), and in economics, by Bolhuis and Goodman (2005). Part of this problem is that managers often reject affect as being present in decisions at all (Langley et al., 2005), or that decisions should be isolated from emotion (Howard, 1993). Contemporary research paradigms are beginning to alter this view - for example, Pham et al (2001) stated that according to the affect-as-information framework, individuals rely on their feelings because they perceive them as valuable information. The work conducted by Pham et al (2001) in the field of consumer choice also indicates that not only do some forms of decision making involving emotions offer more stable results and may be more conducive to mental model alignment in groups, but that, “The conscious monitoring of feelings can be significantly faster than the cold, reason-based assessment of the stimulus’s qualities” (Pham et al, 2001: 184).

Neely et al, (2002), maintain that rarely can effective conclusions be drawn purely on the above mentioned basis, as real world problems inevitably involve social and political dimensions resulting from the perspectives of multiple stakeholders. One of the mediating factors in this

interaction identified by Schwartz (2000), is personal motivation. This implies that, it is not just goal alignment amongst a management team that is crucial in driving alignment in decision making, but also motivation. In the healthcare context, the work of O'Connor and Fiol (2002:19) supports the view that emotion and motivation are powerful forces in management decisions and actions, especially during periods of upheaval. (Spender, 2003) concluded that emotional responses must be incorporated into a rational decision process in a way that controls bias, in order to be more effective in making predictions.

2.4.2 Corruption

Corruption has different meanings in different societies (Mark, 2013). Its roots lie deep in bureaucratic and political institutions, and its effect on development varies with country conditions. It is difficult to establish a clear border between legal and illegal, or merit and bribe. Various approaches to corruption can be placed into five groups (Baremboim, 2009), namely: (1) Public-interest centered, believe that corruption is in some way injurious to or destructive to public interest , (2) Market centered, suggest that norms governing public office have shifted from a mandatory pricing model to a free-market model, thereby considerably changing the nature of corruption (Thompson, 1995). (3) Public office-centered, emphasizes the perspectives of public opinion about the conduct of politicians, government and probity of public servants (Thompson, 1995). (4) Public-opinion-centered, stress the fact that misuse by incumbents of public office for private gain is corruption. (5) Legalistic- centered, emphasizes that corruption should be defined purely in terms of the legal criteria, in view of the inherent problems determining rules and norms that govern public interest, behavior and authority (Rober, 2012). Differences of opinion still exist as to the meaning of the term 'corruption', because individuals

look at corruption from their own vantage points influenced by the surrounding environment (Mark, 2013).

In recent years, corruption has been viewed from a much broader perspective, rather than looking at it from moral and functional angles (Mark, 2013). The broader definition of corruption refers to the use of one's official position for personal and group gain, and that includes unethical actions like bribery, nepotism, patronage, conflict of interest, divided loyalty, influence-peddling, moonlighting, misuse or stealing of government property, selling of favors, receiving kickbacks, embezzlement, fraud, extortion, misappropriation, under- or over-invoicing, court tempering, phony travel and administrative documents and use of regulation as bureaucratic capital (Aaron, 2010).

The term corruption covers a broad range of human actions. To understand its effect on an economy or a political system, it helps to unbundle the term by identifying the specific types of activities or transactions that might fall within it (Alexandra, 2007). In considering its strategy, the World Bank (World Development Report 1997), defined corruption as the abuse of public office for private gain. Public office is abused for private gain when an official accepts, solicits, extorts a bribe, private agents actively offering bribes to circumvent public policies for competitive advantage and profit, and through patronage, nepotism, theft of state assets, and diversion of state revenues.

According to Basheka (2013:45), corruption can be high (grand scale) or low, can involve high or low-level officials of government, can be induced by those who are in charge of a service, can be self-initiated by those who need favors to get the service, and can be at policy formulation, implementation, or evaluation stages both at central and local government levels. The young, old, male and female, can all engage in corruption. Corruption has effects that are direct, indirect,

short-term, medium and long-term in nature. In whatever form, corruption is bad for development. Corruption leads governments to intervene where they need not, and it undermines their ability to enact and implement policies in areas where government intervention is clearly needed-whether environmental regulation, health and safety regulation, social safety nets, macroeconomic stabilization, or contract enforcement (Michael, 2009).

2.4.3 Political influence

Political influence is defined as “the achievement of an individual’s goal in an organizational decision making process, using his political influence, caused either by his intervention or by the decision maker’s anticipation”.(Art & Piet 1999). Cox & Jacobson (1973:3) define influence as, “the modification of an individual’s behavior by that of another” where by an individual modifies the behavior of the decision maker, in an organization, resulting in a modified decision. According to Huberts (1988, 1994), such modification may be the result of the presence, thoughts and or the actions of the influencing individual. This implies that the influencing individual does not necessarily need to intervene in the decision-making process, in order to modify a decision, his presence, or thoughts if known by the decision maker, may be sufficient precondition for an influence. This phenomenon is known as anticipation, (Bell, Edwards & Wagner, 1969; Clegg, 1989). Political influence does not only refer to modification in the decision-making process, but also to the impact of the individual.

Political influence is the modification of decisions and actions of individuals in a decision making process by political leaders. The assessment of political influence on decision making is an important, but also a difficult issue. It is important because the phenomenon of influence and power are elementally aspects of political and social life and therefore among the main themes of current social sciences (Clegg, 1989 & Giddens, 1984). It is difficult because influence and

power are essentially contested concepts and quite hard to measure objectively, particularly so in decision making (Bell, Edwards & Wagner, 1969; Huberts & Kleinnijenhuis, 1994; Lukes, 1974). There are several reasons for assessing political influence in the process of decision making, which include: (1) The division of influence among stakeholders (Dahl, 1961; Hunter, 1953; Mills, 1956); (2) Provision of efficient feedback mechanisms for those who want to realize their ideas and goals through politics (Arts, 1998; Huberts, 1988, 1989); (3) Inferring political power of an actor from his position (Kuypers, 1973); and (4) Relevance of the theory in building the domain of politics, public administration and business administration. With regard to the techniques for assessing influence, authors generally use three classical approaches: Position, Reputation and Decision-making methods (Dahl, 1961; Hunter, 1953; Mills, 1956). Others (Huberts & Kleinnijenhuis, 1994) suggested 10 approaches, but most of them are contemporary elaborations of the three classical ones above.

2.4.4 Individual Competences

“Competence” is a term that covers anything that directly or indirectly affects job performance (Woodruffe, 1993:29). The numerous definitions in various literatures can be grouped into three main ideas: competence as a skill; competence as a personality trait; and, competence as knowledge. The concept of “competence” is used in many different areas of research, including psychology, education, management, human resources and information systems. Marcolin, Compeau, Munro, and Huff (2000:50), observed that the proliferation of approaches on the concept of competence has hindered the creation of a cumulative body of knowledge. Competence is the enabler, providing the means to better performance (Klemp, 1979:46). Because it is difficult to assess competence, performance is often used as a proxy for its measurement. However, while these concepts are related, factors other than competence—such

as motivation, effort, and supporting conditions-may influence performance (Schambach, 1994). Competence does not necessarily imply performance.

2.5 Research gap

Despite the fact that the relationship between information management and the effective decision making process, has been an area of great interest to many local and international scholars (Harvey, 2007), this study has neither been fully exhausted nor been given enough attention, especially so, with respect to its relationship with the pharmaceutical sector in Uganda. From the studies examined by the researcher, there is no established relationship between the current study and previous studies. Some of the examined studies on the global, continental and national levels include: - “Information arbitrage in global Pharma: a synthetic view of absorptive capacity and open innovation.” by Hughes & Wareham, (2010), “Stakeholder Involvement in Expensive drug recommendation decisions: An International Perspective.” By Zahara, Halla, Daar & Martin, (2012), “Promotion of Access to Essential Medicines for non-communicable diseases: Practical implications of the UN political declaration.” By Beaglehole & Bonita (2013) and “The impact of information use on decision making in the pharmaceutical industry: Library Management.” by Marie, Tracy, Kinnell & McKnight (1998).

“The role of Evidence in the Decision Making Process in Selecting Essential Medicines in Developing African Countries: The case of Tanzania.” by Mori, Kaale, Ngalesoni, & Norheim (2014), and “Pharmaceutical Innovations in Africa: Council on Health Research for Development.” by Berger, Murugi, Buch, Ijssulmuiden (2011).

“Improving Smallholder Farmer’s Access to Information for enhanced Decision Making in Natural Resource Management: Experiences from South western Uganda.” by Masuki, Mowo, Sheila, Kamugisha, Opondo & Tanui (2011), “A catch – 22?: An exploration of domestic

production of anti retroviral drugs in Uganda.” by Warren (2012), “Poor quality anti malarial drugs in Southeast Asia & Sub-Saharan Africa”. by Nayyar, Breman, Newton (2012), and “Decentralisation is Dead, Long Live Decentralisation! Capital Reform and Political Rights in Kampala, Uganda”. by Christopher & Nasozi (2013).

This study therefore recommends that future researchers explore the influence of factors such as Gender, Donor influence, corporate governance, among others, on the relationship between information management and decision making in the management, regulation and administration of the pharmaceutical sector, not only in Uganda, but also in other countries.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter will provide an operational framework of the study, involving how data will be collected and analyzed. The chapter specifies the research design that will be employed, study population, sampling plan and procedure, the data collection methods and procedures, as well as the methods of processing, analysis and interpretation of data. In the final sections of the chapter, ethical issues and how they will be handled are presented and discussed.

3.2 Research Design

The study will use both a qualitative and quantitative research approach in exploring how the concept of information management affects the quality of decision making in the regulation, management and administration of Uganda's pharmaceutical sector. A cross-sectional design survey of the ultimate key decision-makers in the pharmaceutical sector concerned with its regulation will be undertaken. This is supported by Babbie (1973, 1995) and Trochim (1999), who said that "Cross-sectional surveys are used to gather information on a population at a single point in time, in trying to determine the relationship between two factors."

Onwuegbuzie and Leech (2004) recommend the use of both qualitative and quantitative research methods; arguing that the combination is intended to reduce the limitations associated with either approach and incorporates the strength of both methodologies as further supported by Sechrest and Sidana (1995). Miles and Huberman (1994) assert that while the researcher is the data gathering instrument during a qualitative research, quantitative research uses tools, such as the questionnaire or equipment to collect numerical data.

3.3 Study Population

The study population will include the main players in the pharmaceutical sector of Uganda, which include; the National Drug Authority (NDA) responsible for the regulatory affairs, the National Medical Stores (NMS) responsible for the national procurement, management, administration and distribution of pharmaceuticals; the local pharmaceutical manufacturers and the privately-owned pharmaceutical companies which are responsible for the import, export, supply and distribution of pharmaceutical products in and out of Uganda, (UNIDO, 2007). According Rugumambaju and Kutwabami (2010:8), there are 11 licensed pharmaceutical manufactures, 477 registered pharmacies, 4,370 drug/chemist shops, 114 hospitals (60 public and 46 private). The managers and key decision makers in the pharmaceutical sector will be the response groups and therefore will be the main target group as informants to the study.

3.4 Sample size

The sample is determined by the Krejcie and Morgan (1970) table for estimating sample size. Using the sample size formula for comparison of proportions, a sample size will be drawn. Determining an appropriate sample size is one of the key aspects that influence both the accuracy and precision of research results (Sekaran, 1984; Churchill, 1995; Tull & Hawkins, 1993). Therefore one of the important characteristics of qualitative research is to obtain an appropriate sample size (Auchrbach & Silverstein, 2003) that will generate enough data so as to enlighten patterns, concepts, categories, properties and dimensions of the phenomenon under study (Glaser & Strauss, 1967; Strauss & Corbin, 1998). Scholars point out that determining sample size evolves as the data collection and analysis progresses during research (Corbin & Strauss, 1998; Glaser & Strauss, 1967) and that data dictates the sample size and that is why it is important to take data analysis during data collection (Thomason, 2011).

3.5 Sampling Techniques

A combination of sampling techniques will be used for this study. Stratified, purposive, and proportionate sampling designs will be used. The selection of respondents for this study will be made with a view of having managers and decision makers as the major respondents in the pharmaceutical sector of Uganda. Representativeness will not be the only guiding principle in the selection of the sample for this study (Bryman, 2001) and therefore purposive, proportionate and stratified sampling methods will also be used. Patton (1990) affirms that qualitative research entails purposeful sampling which necessitates selection of typical, critical or otherwise exemplary information.

3.6 Sources of Data

This study will use primary data collected from the field with the use of questionnaires in consistency with previous studies conducted in the same area of research, and this will be complemented with secondary data to be collected by reviewing works done by other researchers in a similar area of study. These works will be got from libraries, journals, documentaries, newspapers, magazines, textbooks and the Internet.

3.6.1. Instruments of Data collection

The researcher will use pre-coded self-administered questionnaires covering all variables under the study on 5-point Likert scale, for collection of quantitative data, and interviews for qualitative data. The questionnaire will have both closed and open-ended questions, while interviews will be guided by a pre-determined interview schedule.

3.7 Measurement of Variables

3.7.1 Measurement of the independent variable

Data on information management will be obtained by asking questions in form of statements whose congruence with a manager's own attitudes will be measured on a five-point Likert scale. The scale will measure the extent of use, from no use to very high use. All questions asked will be adapted from published literature. The mean score will be computed from the various dimension of information management, which has been operationalised by Choo (2012) as a multidimensional concept to include: identification of user needs; information acquisition/gathering; information processing (products and services); information organization and storage; information distribution; and, information use.

3.7.2 Measurement of Moderating Variables

3.7.2.1 Individual Competence.

In measuring individual competence, the study will use the Questionnaire and Analysis Interview instruments (Chee, Yuen, Hween & Kwan (2001) in which questionnaires and interviews will be conducted on major decision makers in Uganda's pharmaceutical sector. The data collected, will then be measured against a six-point Likert scale establish the competencies of individuals.

3.7.2.2 Corruption

This study will measure corruption using the WHO's transparency interview instrument (WHO, 2008). It will use the procedures and structures of eight functions of the pharmaceutical sector, namely: Registration of medicines; Licensing of pharmaceutical business; Inspection of establishments; Medicine promotion; Clinical trials; Selection of essential medicines; Procurement of medicines; and, Distribution of medicines. This study assessment methodology will present questionnaires to key informants (WHO, 2009) for systematically collecting

information and perceptions which will be added and converted to percentages and then conclusions drawn.

3.7.2.3 Political Influence

In assessing political influence, this study, will apply the EAR method that was authored by (Dahl, 1961; Hunter, 1953, & Mills, 1956) and is based on three classical approaches: Position, Reputation and Decision making. The EAR method uses the “EAR instrument”. The instrument is qualitative in nature, able to assess the influence of politics on decision making, including complex decision making processes. This method of analysis employs in-depth interviews on the EAR dimensions of the key players in the decision making arena, and the analysis of relevant policy documents (Arts & Piet, 1999).

3.7.2.4 Personality

This study will measure Personality using Psychology’s five-factor path interview instrument (Kendra, 2014), whereby respondents will answer questions about their likes and dislikes, and where they would like to go in life. Then, the results will be compared to the psychology’s five-factor path.

3.7.3 Measurement of the dependent variable

Effective decision making in this study will be measured in accordance with the five-point Likert scale as advanced by studies from Elwyn, Tsulukidze, Edwards, Legare and Newcombe (2013). The purpose of these scales is to explore what happens in effective decision making and how much of it happens (Scholl, Loon, Sepucha, Elywn, Legare, Harter and Dirmiaer, 2011).

3.8 Data Collection Instruments and Procedure

Both quantitative and qualitative data will be collected. Primary data collection will be by the use of self-administered questionnaires and interview schedules, and interview guides (Appendices 1, & 2). The development of questions for questionnaires and interview guide will follow in two stages: Those to be followed during discussions with practitioners and experts (to establish main themes) and those for the final administration. The formulated questions in the interview guide and questionnaire will then be validated by pilot testing on a few players in the pharmaceutical sector. Secondary data collection will involve collecting and reviewing data and literature from documents, records, and reports on the variables of the study (Madhu, 2005). The data collection instruments and procedures will be specifically tailored to this study, in order to easily bring out the relationship between information management and effective decision making in the regulation, management and administration of Uganda's pharmaceutical sector.

3.9 Validity and Reliability Testing

Denzin and Lincoln (2005) assert that establishing validity and reliability of tools in qualitative research can be less precise and attest that this can be done through respondent checks, peer evaluation and multiple methods of triangulation. Lincoln and Guba (1985) emphasize that there is need for the researcher to convince the readers that the research findings of an inquiry are worth being paid attention to.

3.9.1 Reliability

In order to establish reliability of the instrument, the cronbach alpha test will be used, together with the broadening of the sample items and ensuring uniformity among the respondents. Variables with alpha coefficient values greater than 0.6 will be considered satisfactory. The researcher will ensure that the research process is consistent for all respondents. Hoepfl (1997)

agrees and says that this can be used to examine both the process and product of the research for consistency. Hips (1993) points out that the testing begins early in the study and continues through, accumulating in final critical review by a panel of respondents. In order to widen the spectrum of conceptualization of reliability and reveal the congruence of reliability and validity in qualitative research, Lincoln and Guba (1985) state that “since there can be no validity without reliability, a demonstration of the validity is sufficient to establish the reliability. This is in agreement with Patton (2001) who asserts that reliability is a consequence of validity in a study.

3.9.2 Validity

Content Validity index will be used to determine the relevance of the questions on the study variables. To ensure further validity and reliability, the researcher will carry out prolonged and persistent fieldwork. During data collection, the researcher will check information with the respondents for accuracy and also perform participant review by asking respondents to review the researcher’s synthesis of the interviews with them for accuracy of representation. This will allow provisional data analysis and validation of data to make certain a match between the findings and the respondent’s reality. A four-point Likert scale ranging from relevant and quite relevant, somewhat relevant and not relevant will be used to determine the relevancy of the questions to the study variables.

3.10 Data Analysis

Data will be entered into the computer using statistical packages for social scientists, for analysis. The data will be cleaned, sorted, edited and analyzed according to the research questions. Simple frequencies, bar graphs and cross tabulations will be derived. Chi-square tests and the Spearman Rank correlation coefficient will be used to determine the degree of relationship between the variables and to indicate the extent to which the independent affects the

dependent. During the research, quantitative data will mainly relate to geographical divisions in Kampala District.

3.11 Transcription, Data Entry and Analysis

During the transcription, entry and analysis of data, recorded interviews will be transcribed verbatim. This will involve straight transcription of all utterances, pauses, and emotions. The transcribed data will be processed in order to create a clean record from which to work. This is in agreement with Merriam (2001), who asserts that before data is analyzed, it must be prepared by typing notes, transcribing interviews and entering other data from which the researcher will be working. The transcribed data will then be entered and the results and findings consequential to transcribed interviews will be analyzed. Taking each question separately, data will be coded and analyzed thematically using qualitative techniques and applying the Nvivo computer package (Clarke, 2005) of data analysis (Barton and Hamilton, 1998; Bryman, 2001; Denzin and Lincoln, 1994; Glaser and Strauss, 1967 and Harper, 1994). Transcripts from the field will be interpreted and analyzed and this will help us understand information management and its effect on decision making.

3.11.1 Hypothesis Testing

This study will carry out two sets of tests. The first set of tests will involve Pearson's product moment correlation analysis of the relationship between the independent variable and the dependent variable. The second set of tests will mean to test for the moderation powers of the other variables on the relationship between the independent and dependent variables

3.11. 2 Computer-aided Qualitative Data Analysis

The researcher will employ computer-aided qualitative data analysis techniques, to transform data into findings. Merriam (2002) contends that data analysis should begin immediately after the first interview or observation terminates and continues from there until the analysis is complete. This is in support of Maxwell (1996), who noted that a common problem in qualitative studies is permitting unanalyzed data to accumulate, causing the final analysis to be a much more difficult and disheartening task. The data collection techniques present immense quantities of data and make data analysis an awesome task, in a situation where there are no established formulae for converting qualitative data into findings (Patton, 2002). Analysis of data in this research will involve constant movement back and forth between the entire data set, the coded extracts of the data and the analysis of the data being produced. Data analysis and writing will be an integral part of the research exercise. Quantitative analysis will also be used to establish meaning of the data. This in agreement with Abeyasekera (2000), who asserts that quantitative method of data analysis can be of great value to the researcher who is attempting to draw meaningful results from a large body of qualitative data thereby allowing reporting of summary results in numerical terms.

3.12 Ethical Considerations

An introductory letter from UTAMU will be sought by the researcher for purposes of clear identification and introduction to the field. Consent will be sought from the respondents who will be assured that the results will be for purely academic purposes. Each respondent will be given a brief explanation of the research and then inquire from them whether they are willing to take part in the research. Confidentiality will be upheld throughout the research process.

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APPENDICES

Appendix 1: Questionnaire.

INFORMATION MANAGEMENT AND EFFECTIVE DECISION MAKING IN THE REGULATION, MANAGEMENT AND ADMINISTRATION OF UGANDA'S PHARMACEUTICAL SECTOR.

Dear Participant

I am carrying out a study of the relationship between information management and decision making in Uganda's pharmaceutical sector. In order to complete the study, I need your assistance. Kindly spare some of your precious time and respond to the questions.

Please be assured that your response will strictly be kept confidential.

Thank you.

No.	STATEMENT (Please tick the number representing the choice of your answer) <u>SECTION A: BACKGROUND INFORMATION</u>
1.	Gender of respondent: 1. Male 2. Female
2.	Age of respondent: 1. Below 20yrs 2. Between 20 – 30 yrs 3. Between 31 – 40 yrs 4. Between 41 – 50 yrs 5. Above 51 yrs.
3.	Marital status: 1. Married with children 2. Single 3. Married without children 4. Widow /Widower

4.	Job title 1. CEO 2. Administrator 3. Information Manager 4. Pharmacist 5. Other					
5.	Educational/ Professional level: 1. Senior 4 & below 2. Advanced level/ Diploma 3. Degree 4. Master 5. Doctorate & above.					
7.	Number of years worked with organization: 1. Below 5 yrs 2. Between 5 – 7 yrs 3. Between 7 – 10 yrs 4. Between 10 -12 yrs 5. Above 12 yrs					
8.	What is the Organization’s main area of activity? 1. Regulation & Management of the Pharmaceutical Sector 2. Import & Export of pharmaceutical products 3. Manufacturing of pharmaceutical products 4. Dispensing of pharmaceutical products 5. Any other.....					
<p align="center"><u>SECTION B: THE INFORMATION MANAGEMENT PROCESS.</u></p> <p align="center">Below is a list of items for which I need your opinion. Please tick the number that represents your choice. 1= Strongly Agree, 2= Agree, 4=Not sure, Disagree and 5= Strongly Disagree.</p> <p align="right"><u>AGREEMENT</u></p>						
1.1	<i>Management support & controls</i> <table border="1" style="float: right; margin-left: 20px;"> <tr> <td style="width: 30px; text-align: center;">1</td> <td style="width: 30px; text-align: center;">2</td> <td style="width: 30px; text-align: center;">3</td> <td style="width: 30px; text-align: center;">4</td> <td style="width: 30px; text-align: center;">5</td> </tr> </table>	1	2	3	4	5
1	2	3	4	5		
1.1.1	My organization meets its own expectations as in managing its own information <table border="1" style="float: right; margin-left: 20px;"> <tr> <td style="width: 30px; height: 30px;"></td> </tr> </table>					

1.1.2	My organization has an Information Management strategy.	1	2	3	4	5
1.1.3	There are performance measures for the Information Management strategy in my organization.	1	2	3	4	5
1.1.4	These performance measures have been reported to executive board within the last 2 years.	1	2	3	4	5
1.1.5	Managers understand why Information Management is critical to the organization.	1	2	3	4	5
1.1.6	There is an Information Management champion at Board level.	1	2	3	4	5
1.1.7	The organization has a full list of its information assets.	1	2	3	4	5
1.1.8	The organization documents how each information asset will be used over time.	1	2	3	4	5
1.2	<i>Resourcing</i>	1	2	3	4	5
1.2.1	The organization identifies what information is critical for its operations.					
1.2.2	The organization's critical information is included in its continuity plan.	1	2	3	4	5
1.2.3	The resource needs for the Information Management are determined before practice.	1	2	3	4	5
1.2.4	The organization checks the quality of its sources before gathering the information.	1	2	3	4	5
1.2.5	The quality checks are reported.	1	2	3	4	5
1.2.6	The organization knows what information its users need to access.	1	2	3	4	5
1.2.7	The organization Plans for the required information before gathering it.	1	2	3	4	5

1.2.8	The organization obtains the necessary information from different sources.	1	2	3	4	5
1.2.9	Only the information deemed necessary to the organization goals is gathered.	1	2	3	4	5
1.2.10	The organization selects tools to be used in ensuring that they follow a systemic data collection approach.	1	2	3	4	5
1.3	<u>Data Processing</u>	1	2	3	4	5
1.3.1	The organization generates management information reports on the data collection progress.	1	2	3	4	5
1.3.2	Data is transferred onto computer files	1	2	3	4	5
1.3.3	The transferred data is coded for analysis	1	2	3	4	5
1.3.4	Faulty data is corrected to allow production of reliable statistics	1	2	3	4	5
1.4	<u>Organization & storage</u>	1	2	3	4	5
1.4.1	Information is organized with similar groups put together for easy location.	1	2	3	4	5
1.4.2	The organization has adopted naming conventions in information organization.	1	2	3	4	5
1.4.3	Information is always stored in corporate rather than personal spaces.	1	2	3	4	5
1.4.4	All the organizational departments have guidance on what information should be kept.	1	2	3	4	5
1.5	<u>Distribution & use</u>	1	2	3	4	5
1.5.1	Transfers of information are made using digital formats that remain usable by receiving departments.	1	2	3	4	5

1.5.2	Information generated can be readily transferred to the relevant department.	1	2	3	4	5
1.5.3	The organization has a publication scheme.	1	2	3	4	5
1.5.4	There are measures in place to ensure that no sensitive information could be released in error.	1	2	3	4	5
1.5.5	Information within your organization is shared across all departments.	1	2	3	4	5
1.5.6	The organization contributes to the 'Open data' initiative.	1	2	3	4	5
<u>SECTION C: THE DECISION MAKING PROCESS.</u>		1	2	3	4	5
1= Strongly Agree, 2= Agree, 3= Not Sure, 4= Disagree, 5= Strongly Disagree.						
1.	When I make decisions, I tend to rely on my intuition	1	2	3	4	5
2.	I rarely make important decisions without consulting other people.	1	2	3	4	5
3.	When I make a decision, it is more important for me to feel the decision is right than to have a rational reason for it.	1	2	3	4	5
4.	I double check my information sources to be sure I have the right facts before making decisions.	1	2	3	4	5
5.	I use the advice of other people in making my important decisions.	1	2	3	4	5
6.	I put off making decisions because thinking about them makes me uneasy.	1	2	3	4	5
7.	I make decisions in a logical and systematic way.	1	2	3	4	5
8.	When making decisions I do what feels natural at the moment.	1	2	3	4	5

9.	I generally make snap decisions.	1	2	3	4	5
10.	I like to have someone steer me in the right direction when I am faced with important decisions	1	2	3	4	5
11.	My decision making requires careful thought.	1	2	3	4	5
12.	When making a decision, I trust my inner feelings and reactions.	1	2	3	4	5
13.	When making a decision, I consider various options in terms of a specified goal.	1	2	3	4	5
14.	I avoid making important decisions until the pressure is on.	1	2	3	4	5
15.	I often make impulsive decisions.	1	2	3	4	5
16.	When making decisions, I rely upon my instincts.	1	2	3	4	5
17.	I generally make decisions that feel right to me.	1	2	3	4	5
18.	I often need the assistance of other people when making important decisions.	1	2	3	4	5
19.	I postpone decision making whenever possible.	1	2	3	4	5
20.	I often make decisions on the spur of the moment.	1	2	3	4	5
21.	I often put off making important decisions.	1	2	3	4	5
22.	If I have the support of others, it is easier for me to make important decisions.	1	2	3	4	5
23.	I generally make important decisions at the last minute.	1	2	3	4	5
24.	I make quick decisions.	1	2	3	4	5

<u>SECTION D: MODERATING VARIABLES:</u>		1	2	3	4	5
(a) <u>PERSONALITY</u>						
1= Strongly Agree, 2= Agree, 3= Neutral, 4= Disagree, and 5= Strongly Disagree.						
1.	I am a shy person.	1	2	3	4	5
2.	I am an extrovert.	1	2	3	4	5
3.	For a person of my gender, I'm considered masculine.	1	2	3	4	5
4.	For a person of my gender, I'm considered feminine.	1	2	3	4	5
5.	I usually feel relaxed.	1	2	3	4	5
6.	I enjoy setting long-term goals.	1	2	3	4	5
7.	I like meeting new people.	1	2	3	4	5
8.	I review work critically.	1	2	3	4	5
9.	I am nervous before big events.	1	2	3	4	5
10.	I conceal my feelings.	1	2	3	4	5
11.	I am modest about what I have achieved.	1	2	3	4	5
12.	I am prepared to tell people if they are mistaken.	1	2	3	4	5
13.	I have highly original ideas.	1	2	3	4	5
14.	I like to understand the underlying theory.	1	2	3	4	5

15.	I consider other people's feelings.	1	2	3	4	5
16.	I try out new activities.	1	2	3	4	5
	(b) <u>INDIVIDUAL COMPETENCE</u> 1= Failed to attain, 2= Almost Attained, 3= Attained, 4= Surpassed and 5=Greatly Exceeded.					
1.0	<i>Decisiveness</i>	1	2	3	4	5
1.1	You relatively make uncomplicated, "Safe" Decisions.	1	2	3	4	5
1.2	You Make sound decisions in somewhat vague situations.	1	2	3	4	5
1.3	You make Sound Strategic Decisions in very Ambiguous Situations Using Advanced Techniques.	1	2	3	4	5
2.0	<i>Strategic orientation</i>	1	2	3	4	5
2.1	You align current actions with the Organization's Strategic Goals.	1	2	3	4	5
2.2	You link daily tasks to Organizational Strategies.	1	2	3	4	5
3.0	<i>Development of people.</i>	1	2	3	4	5
3.1	Expresses positive expectations about others.	1	2	3	4	5
3.2	You provide in-depth mentoring, coaching or training.	1	2	3	4	5
4.0	<i>Team leadership.</i>	1	2	3	4	5
4.1	You create environment for team effectiveness.	1	2	3	4	5

4.2	You keep people informed.					
5.0	<i>Achievement orientation</i>	1	2	3	4	5
5.1	You want to do the job well; expressing feeling about performance.	1	2	3	4	5
5.2	You create own measures of excellence.	1	2	3	4	5
6.0	<i>Self-confidence/courage of convictions.</i>	1	2	3	4	5
6.1	You have confidence in own opinions, or capabilities	1	2	3	4	5
6.2	You maintain position even when faced with opposition.	1	2	3	4	5
7.0	<i>Impact and influence.</i>	1	2	3	4	5
7.1	You use complex influence strategies.	1	2	3	4	5
7.2	You take a single action to persuade others.	1	2	3	4	5
8.0	<i>Relationship building.</i>	1	2	3	4	5
8.1	You understand the significance of networking in organizations.	1	2	3	4	5
8.2	You actively seek relationship-building opportunities.	1	2	3	4	5
	<u>(C). CORRUPTION.</u> 1= Never, 2=Sometimes, 3=Not Sure, 4= Frequently and 5= Occasionally.	1	2	3	4	5
1.	How frequently do you think corruption is part of the business culture in your organization?	1	2	3	4	5

2.	How often would you assume that pharmaceutical firms are confronted with challenges related to illegitimate business practices, irregular payments or corruption?	1	2	3	4	5
3.	Do you ever notice that pharmaceutical firms make use of business practices that most likely deviate from their own official code of conduct?	1	2	3	4	5
4.	Given that a pharmaceutical firm has lost an important contract due to corruption, would you be willing to mention the issue to local authorities?	1	2	3	4	5
5.	Have you ever reacted against corruption by raising the issue at a higher political level?	1	2	3	4	5
	<p style="text-align: center;"><u>SECTION E: INTEVENING VARIABLES:</u></p> <p style="text-align: center;"><u>POLITICAL INFLUENCE.</u></p> <p style="text-align: center;">1= Yes, 2= Maybe, 3= No, 4= Does not apply, and 5= Don't know.</p>	1	2	3	4	5
1.0	Laws against drug regulation/ production do more harm than good.	1	2	3	4	5
2.0	Government should have some control over the decision making bodies of the Uganda pharmaceutical sector.	1	2	3	4	5
3.0	How often do you communicate with government officials concerning operations in your organization?	1	2	3	4	5
4.0	Which statement is closest to your own views, even if neither it is not exactly right?	1	2	3	4	5

Appendix 2: Interview Guide.

- What is your job title?
- Are you satisfied with the Information Management practices in the organization?
- How often do you use the information generated from different departments?
- How long does it take to access needed information?
- Are you given information in the best appropriate form and standard?
- Does your organization have an information storage unit?
- Is there sufficient sharing of information among all departments?
- To what extent are you involved in the decision making process of this organization?
- Do you base your decisions on information provided?
- Are the decisions you make from your own judgment?
- Do you accept suggestions from other people when deciding?
- To what extent do you compromise personal needs with reality?
- Do the decisions you make always solve the problems they are intended to?
- How do you cope with the anxiety involved in the selection of a choice among the available decision alternatives?
- Is there a systematic way of identifying the required information, its sources and how to obtain that information?

THANK YOU.

Appendix 3: Time Frame.

