VILLAGE FUND ALLOCATION APPLICATION SYSTEM

CASE STUDY: NORTHERN UGANDA SOCIAL ACTION FUND (NUSAF)

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DECLARATION

I ODONGO RONALD OTIM and TUMUHAIRWE WILLAM, declare that this dissertation is our original work and has not been submitted for the award of a degree/diploma in any other university/college/institution.

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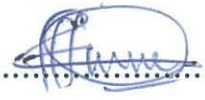
APPROVAL

This dissertation entitled "Village Fund Allocation Application System" was done under my supervision and has been submitted to the College Of Applied Science And Technology for examination with my approval as supervisor.

Name Okello Alfred **Signature** 

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LIST OF ABBREVIATIONS AND ACRONYMS

DBMS	Database Managements System
DFD	Data Flow Diagram
ITG	Integrated Test Group
NIS	Network Information Service
NUSAF	Northern Uganda Social Action Fund.
RAM	Random Access Memory.
TVFAAS	Traditional Village Fund Allocation Application system.
VFAAS	Village Fund Allocation Application system

ABSTRACT

In NUSAF there was use of traditional system. Traditional Village Fund Allocation Application System (TVFAAS) used paper and files to store data. This was not secure. Time consuming and processing was difficult. The objective of this study was to determine the paper work problem surrounding the funds distribution system in NUSAF. The researchers also had questions to ask pertaining to their study. The sample questions included among others, the following: What hardware resources were required to build an effective and interactive VFAAS? , What software resources were required to build an effective and interactive VFAAS?, What protocols were required for VFAAS storage, security, and retrieval? , This study was conducted using a cross-sectional survey research design. In this study, the researchers traced NUSAF records, interviewed a couple of local people around Lango sub-region and the extent to which the current system could be improved. In this study, the sample size was 100 participants but only 50 interviewees were selected from among the NUSAF clients and staff of NUSAF. Data was collected using questionnaire, interviews and review documents. This study employed stratified sampling technique, which identified sub-groups in the population and their proportions and selected from each sub-groups from a sample. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled NUSAF clients from the Lango sub-region and the staff of NUSAF. 100% of the respondents revealed that there is no computerized Village Fund Allocation Application System in NUSAF. The study revealed that 80% of the respondents say the system is time wasting and unreliable. 20% of the respondents however tend to believe that the current system should stay. It was then concluded that computerization of Village Fund Allocation Application System in NUSAF is the only way to go.

CHAPTER ONE

1.0 Introduction

This chapter gives a detailed explanation on the background of VFAAS, the research? faced by the old system and the recommended solutions to the above short coming, the research objectives which includes both the main and specific ones, were asked by the researchers and answers got after the system was implemented, the significance of the study which highlights the benefit of the new system and the general public at large, and finally the scope of the study which gives area of jurisdiction of the researchers as per their study.

1.1 Background of the Study

The Northern Uganda Social Action Fund (NUSAF) was established by the government of Uganda with funds from World Bank in 2003 aims to empower communities in Northern Uganda by enhancing their capacity to systematically identify, prioritize, and plan for their needs and implement sustainable development initiatives that improve socio-economic services and opportunities after the war and cattle rustling. The fund is divided into two phases, the first worth $133m started in 2003 and ended in March 2011. The second phase worth $100m was approved last May 2012 and its implementation started on 25th November 2012. The phase is expected to last five years before another is released.

NUSAF precisely among the laws above also handled the aspect of Village Fund Allocation Application System. NUSAF used a manual paper based system which wasted a lot of time in most cases, for example one group was required to come back after one month to pick there funds approval form. This was a companied by a hectic lining up during registration, documentation among others.

However NUSAF's public image was tainted by allegation of corruption, biasness, poor service among others. Government officials and service providers have been accused of embezzlement and doing sub-standard work or no work at all, for example some report have put the number of NUSAF cases to 100 as a result of these problems local people were affected psychologically and emotionally because of the disappointments that came with group's registration after queuing for a long time, lost information due to poor storage method (paper work), and heavy bribes due to client ignorance.

In order to solve the above problem, there was need to develop a computerized system that would handle the challenges mentioned, hence the study of Village Fund Allocation Application System.

1.2 Research Problem

In NUSAF, there was use of traditional system. Traditional Village Fund Allocation Application System (TVFAAS) used paper to store data. This was not secure. Time consuming and processing was difficult. So to remove such limitation and difficulty, a new computerized Village Fund Management System was needed, which is easy to use, secure and take short time to process.

1.3 Research Objectives:

1.3.1 Main Objective:

The objective of this study was to design and develop a system that would solve paper work problem surrounding the Village Fund management in the NUSAF.

1.3.2 Specific Objectives:

i. To study the existing system in order to indentify requirements for development the new system.
ii. To design and develop a better system that would over run the old traditional system.
iii. To test and implement the new computerized system for any error and ensure that meets user's requirement.

1.4 Research Questions

i. What hardware resources were required to build an effective and interactive VFAAS?
ii. What software resources were required to build an effective and interactive VFAAS?

1.5 Significance of the Study

In Northern Uganda, the NUSAF was unable to continuously and consistently follow the progress of NUSAF beneficiaries through its paper work system. The NUSAF did not have up-to-date information on security of the beneficiaries fund data in the region. Hence with the new system in place the security of beneficiaries information was put into being by new features such as user authentication and authorization.

i. This study will make it possible for NUSAF funds to be distributed equally to all its beneficiaries without any biasness.

ii. The researchers hope that the study will form a basis for future research on the VFAAS by other academicians. This should lead to the generation of new ideas for the better and more efficient VFAAS.

iii. It will further reduce on the corruption and embezzlements of NUSAF funds since VFAAS will keep track of all transaction undertaken.

1.6 Scope of the Study

This study on the Village Fund Allocation Application System in Lango Sub-region was conducted between August, 2012 and April, 2013 through cross-sectional sample survey design of both the local community and the staff of NUSAF in Lango Sub-region only in following districts (Lira, Alebtong,Kole, Otuke, Apac and Oyam). Data was collected by the researcher using questionnaires, interviews, and of Existing Documents.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, the researchers reviewed literature related to Village Fund Allocation Application System. The review was conceptualized under the objectives of study and focused mainly on computerization, data storage, data security and simplicity and their relationships with VFAAS. These were the main issues on this study.

COMPUTERIZATION OF VILLAGE FUND ALLOCATION APPLICATION SYSTEM

Shelly Cashman (2000) defined computerization as furnishing with a computer or computer system while George Beekman (2003) defined Computerization as something modified to involve computers. According to Marilyn Meyer and Roberta Baber (1999), Computerization is a process that involves individuals, organization and society in general. These definitions agreed that computerization was a man made modification that man both directly and indirectly. However they ignored the fact that computerization was automation, processing, storage, retrieval and security which were considered as useful ingredients for this system. According to Nell Dale and John Lewis 2002), computerization was regarded as introduction of machinery to carry out tasks that were once done by manual labor. This definition however, did not explain how the computer as introduced machinery was helpful in solving the tasks and which task in particular.

In view of the discrepancies in the definitions above, the definition of computerization adopted for this study was derived from Stacey C. Sawyer and Sarah F. Hutchinson (2000). Computerization is to support (I) Working towards making the system paperless or minimizing the paper work, (2)Give pace to the Business,(3)To create the database for analysis (4) Fast Reporting & Queries. This definition was considered as appropriate because it mentioned the functionality of computerization in details.

Several theories were advanced to describe the relationship(s) between computerization and Village Fund Allocation Application system. According to Nell Dale (2002) computerization should be an effort to eliminate paper works in the 21st century offices while Stacey C. (2000) suggested that computerization should not be taken as the only way VFAAS will be secure since there was also hardware and software failure but rather taken as a necessary technology. Both propositions suggested that computerization was a thing of the current

generation. However they both failed to address the issue of hardware and software compatibility, security measures that would be taken and the productivity of the system. Without the above measures in place, the system is as good as never was designed.

In view of the issues raised above, the relationship between computerization and VFAAS should be characterized by the hardware and software availability, affordability and compatibility.

2.1 Data Storage of Village Fund Allocation Application System

Data storage is referred to computer components and recording media that retains digital data, Brian K. Williams (1999) while Kurt F. Lauckner (1994) defined data storage as the term which had been used for the purpose of storing the data on different drives. However H.L Capron (1982) argued that data storage was the device which had been developed for the purpose of storing the data in the device for a longer period of time so that it could be easily retrieved when needed. These definitions agreed that data storage was the act of keeping records in a digital form for future reference. However they ignored the fact that, data storage was basically a computer hardware thing which was paramount in storage issues. -

According to Johannes Gehrke (2000), data storage is regarded as the part of a computer that stored information for subsequent use or retrieval. This would then imply that data storage for our VFAAS would not put into account the size of the Random Access Memory (RAM) and the hard disk. In a case like this, the definitions did not give a clear description of data storage hence considered dangerous for this study.

Considering the above facts, the definition of data storage for this study was derived from Fred R. (1999). Data storage is the place (RAM and Hard disk) where data is held in an electromagnetic or optical form for access by a computer processor. This definition was considered appropriate because it explained the storage area, the data storage form and how to access it when needed. RAM for instance took the form of integrated circuits that allowed stored data to be accessed in any order with a worst ease performance of constant time, Clancy (2008). The hard disk on the other hand is a non-volatile, random access digital data storage device, Artamonov (2007). Computer processor is the portion of a computer system that carries out the instructions of a computer program, to perform the basic arithmetical, logical, and input/output operations of the system, David (1996).

A good number of theories explained the relationship between data storage and VFAAS. According to Kurt (1994), data storage should be looked at as a way digitally or electronically important information can be safely recorded for future reference. While Capron (1982) argued that data storage is in fact the holding of data in an electromagnetic form for access by a computer processor. These theories agreed that data storage was a digital or electromagnetic method of keeping information. However they both failed to mention whether the data was stored permanently or temporally, any backup setup in case of any loss, and the safety of the data (security). In view of the issues raised above, the relationship between data storage and VFAAS should be characterized by the volatility of the data, accessibility, addressability, capacity and performance. This would serve to help the VFAAS to be as efficient and perfect as a new system that was meant to offset the traditional village fund allocation application system at NUSAF.

2.2 Data Security of Village Fund Allocation Application System

Data security is the means of ensuring that data is kept safe from corruption and that access to it is suitably controlled, Jane Horvath (2008), while on the other hand, Data security is the practice of keeping data protected from corruption and unauthorized access NIS (1998). According to the above arguments, both sources agreed that data security was the protection of data from unauthorized access. They however did not explain in details how these data can be protected from users with no access rights to it. These short falls were a bit not appropriate for this study because the study intended to improve the security of the current system. The system in use at the time of carrying out this study did not have enough safety assurance of the recorded beneficiaries and funds information. The data could easily be lost in case of a fire break out or water spilling on the paper work which has got no backup anywhere.

In view of the discrepancies in the definitions above, the definition of data security adopted for this study was derived from Armonia (2002). Data security is the protection of data from unauthorized users through authentication, authorization, encryption, and access control. This definition was considered appropriate because it described in details how the data was going to be protected. It mentioned authentication which is a way of verifying if the data in question is still in its original format Kervin (2002). Authorization is the function of specifying access rights to resources, which is related to information security and computer security in general and to access control in particular Caroll (2004). Encryption is the process of transforming information (referred to as plaintext) using an algorithm (called cipher) to make it unreadable to anyone except those possessing special knowledge, usually referred to as a key, Springer

(2009). Access control is a system that enables an authority to control access to areas and resources in a given physical facility or computer-based information system. Heinenmann (2007)

Several theories have been advanced to describe the relationship(s) between Data security and Village Fund Allocation Application System. According to Jane Horvath (2008), data security should be the protection of data from intruders. However NIS (1998) disagreed with Jane because it is not about intruders only but it carried a lot more weight than that. NIS believed that the security of data was the general safety of the machine from intentional or accidental damage. Though both propositions generalized their findings on the safety of the data, they failed to recognize the importance of the physical security of the environment in which the machine and the data is being kept. The implications of such proposition is very dangerous because even if the data is secured but the building where the machine is stationed is not strong or has security breaches, the whole study will be a waste of time.

In view of the issues raised above, the relationship between data security and Village Fund Allocation Application System should be characterized by:

i. Environmental design
ii. Mechanical, electronic and procedural access control
iii. Intrusion detection (with appropriate response procedures)
iv. Personnel Identification (authentication)
v. Establish strong passwords
vi. Put up a strong firewall
vii. Install antivirus protection
viii. Update your programs regularly
ix. Secure your laptops
x. Backup regularly
xi. Monitor diligently

These characteristics could help sort the security of the data of VFAAS. With the above in place, the VFAAS would be the perfect tool for the 21st century technology. It would be more secure compared to its predecessor, TVFAAS.

2.3 Simplicity of the Village Fund Allocation Application System

Simplicity is something which is easy to understand or explain Craig (1998).While Oppy (2007) defined simplicity as the quality or condition of being plain or natural. These definitions agreed that simplicity is when something is easy and not complex as such. True and not false though, simplicity in the context of this study may claim that such a definition may not hold water. The definitions did not give any explanations what so ever of how easy it is to understand or describe how simple something could be. The definition which was therefore considered appropriate for this study: "is a quality that is frequently sought by both users and technologists, although, as users frequently attest, it is not always found", TechTarget (2007). This definition was considered appropriate because it addressed the aspect of quality, which is the standard of something as measured against other things of a similar kind; the degree of excellence of something, David (2006) and technologists, which are persons who use scientific knowledge to solve practical problems, Richey, R.C. (2008).

Several theories have been advanced to describe the relationship(s) between simplicity and Village Fund Allocation Application System. According to Dancy (1999), simplicity means to be simple. While Craig (1998) believed that simplicity is when something is simple or complex depending on the way we choose to describe it. Simplicity is a cognitive theory that seeks to explain the attractiveness of situations or events to human minds, Chater (1999). They all gave the impression that simplicity was a derivative of the word simple. But they didn't specify in simple terms what it is all about. In view of the above raised issues, the relationship between simplicity and Village Fund Allocation Application System should be that the new system will be simple to operate, save time and cost, and provide the best services ever, The Funds will be easy to distributed because of its computerized nature, renewal will be an easy task because the information was captured and stored in a computerized and secure format.

2.4 Conclusion

Computerization is to support (1) Working towards making the system paperless or minimizing the paper work and to provide, (2) Give pace to the Business, (3) To create the data base for analysis (4) Fast Reporting & Queries. Data storage is the place (RAM and Hard disk) where data is held in an electromagnetic or optical form for access by a computer processor. Data security is the protection of data from unauthorized users through authentication, authorization, encryption, and access control Simplicity is a quality that is

frequently sought by both users and technologists, although, as users frequently attest, it is not always found.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

To develop the Village Fund Allocation Application System, research of literature on concept of computerized management system, technologies and previous work done on funds application system was reviewed by reading Books, Journals, Professional magazines, searching on Internet using search tools like Google. The results of research and review helped in understanding the existing applications of management systems in Village Fund Allocation Application System.

3.1 Research Design

This study was conducted through a cross-sectional survey research design. A cross-sectional research design is a research design where data is collected to make inferences about a population of interest (universe) at one point in time, Paul J. (2010). Cross- sectional survey presents an oriented methodology used to investigate population by selecting samples to analyze and discover occurrences. In this study, the researchers traced through the NUSAF records, interviewed a couple of NUSAF beneficiaries around Lango Sub-regions and determined the extent to which the current system could be improved. Cross-sectional survey enabled the researchers to provide numeric description of some part of the population, describe and explain events as they are, as they were or as they would be, provided issues such as economy of design, rapid data collection and ability to understand a population from part of it.

3.2 Population and Sampling

Population sampling is the process of taking a subset of subjects that is representative of the entire population, Castillo (2009). The sample must have sufficient size to warrant statistical analysis. In this study, our sample population was majorly in Lango Sub-regions among the local people and the NUSAF staff.

3.2.1 Target/Accessible Population

The target population consisted of 100 people that included the staff of NUSAF and the people of Lango Sub-regions. NUSAF is a government organization in Uganda with $100 million of funding from the World Bank. It one in whose hands the new system is. The NUSAF beneficiaries around Long sub-region were taken as a sample group because they

formed the highest number of war affected people in the country since NUSAF is based to rehabilitate war ravage region they had good knowledge of the irregularities of the system at NUSAF. They were therefore considered appropriate for providing a focal point for this study of Village Allocation Application System visa vie Traditional Village Allocation Application System:

3.2.2 Sample Size

A sample is the subset of a population, John Wiley (1962). In this study, the sample size 100 participants but only 50 interviewees were selected from among the NUSAF beneficiaries and

Staffs of NUSAF. The 50 of the sample interviewees were distributed as follows:

Table 1: Showing the Sample Population and Size

Sample Population	Size
LIRA	5
OTUKE	10
APAC	10
KOLE	5
OYAM	10
ALEBTONG	10
TOTAL	50

3.2.3 Sampling Techniques

This is a description of the strategies which the researchers used to select representative interviewees from the targeted/accessible population. This study employed stratified sampling technique, which identified sub-groups in the population and their proportions selected from each sub-group to form a sample. Stratified sampling was used to select the local people and the staff of NUSAF interviewees.

Stratified sampling technique was a technique that identified sub-groups in the population and their proportions and selected from each sub-group to form a sample. It grouped a population into separate homogenous sub-sets that shared similar characteristics so as to ensure equitable representation of the population in the sample. It aimed at proportionate representation with a view of accounting for the difference in sub-group characteristics.

Stratified sampling technique was therefore used to ensure that the targeted population was divided into different homogenous strata and that each stratum was represented in the sample in a proportion equivalent to its size in the accessible population. This was to ensure that each sub-group characteristic was represented in the sample thus raising the external validity of the study.

3.3 Data Collection

Data is anything given or admitted as a fact and on which a research inference will be based. It is anything actual, or assumed, used as a basis for reckoning. Research is empirical and reality referent. Much deduction may precede its application but data is the end result of a research procedure.

3.3.1 Research Instruments or Tools

The researchers used questionnaires, interviews and document review as the main tools for collecting data. The selection of these tools have been guided by the nature of data to be collected, the time available as well as the objectives of the study. The aim of this study was to get the views, opinions, perceptions, feelings and attitudes towards the old system in comparison to the new system built.

Such information can best be collected through the use of interview techniques Abramson, J.J. and Abramson, Z.H. (1999). Semi-structured interviews are conducted with a fairly open framework which allow for focused, conversational, two-way communication. They can be used both to give and receive information. These enabled the researchers to balance between the quantity and quality of data collected and provided more information about the system. This delicate balance between the quality and quantity of information was useful for a filler explanation of the phenomena under investigation.

Interview was used since the study was concerned with variables that could not easily be observed directly such as views, opinions, perceptions and feeling of the interviewees. The sampled size was also quite large (50) and given the time constraints, interviews was the ideal

tool for data collected. The target population was also well informed and was unlikely to have difficulties responding to the interview items.

3.3.1.1 Interviews

Interviews of users were conducted as a data collection technique and this helped the researchers to get first hand information from the respondents giving an opportunity to gather information from respondents who are knowledgeable and who are being faced and affected by the current poor licensing system at the NUSAF offices. The researcher interviewed some local people in different Lango sub-region and sampled staffs of NUSAF and at the end of the interview, data requirements were noted.

ADVANTAGES OF INTERVIEWS

i. Interviews were useful to obtain information about personal feelings, perceptions and opinions.
ii. They allowed more detailed questions to be asked.
iii. They were able to achieve a high response rate.
iv. Respondents' own words were recorded tape recorders.
v. Ambiguities were clarified and incomplete answers followed up.
vi. Precise wording were tailored to respondents and precise meaning of questions clarified.
vii. Interviewees were not influenced by others in the group.

DISADVANTAGES OF INTERVIEWS

i. Interviews were very time-consuming: setting up, interviewing, transcribing analysis, feedback, and reporting.
ii. They were very costly because we had to move to different places interviewing people.
iii. Different interviewee understood and transcribed interviews in different ways.

3.3.1.2 Review of Existing Documents

Analysis of the existing documentation at URA and all existing documents such as Daily record books; reports and other management documents were studied, this enabled the researches to understand how the Village Fund Allocation Application System, hence an appropriate measures were devised.

ADVANTAGES OF DOCUMENT REVIEW

i. Information contained in extant document(s) was independently verifiable.
ii. The document review process was done independently, without needing to solicit extensive input from other sources.
iii. Document review was typically less expensive than collecting the data on our own.

DIADVANTAGES OF DOCUMENT REVIEW

i. Data in the document source(s) was not exactly what we wanted for the needs assessment.
ii. Obtaining and analyzing necessary documents was a time consuming process.
iii. We were not able to control the quality of data being collected and only relied on the information provided in the document(s) to assess quality and usability of the source(s).

3.3.1.3 Questionnaires

Questionnaire is a collection of terms to which a respondent is expected to react to in writing. Questionnaires are useful for collecting information within the shortest period of time. It was used on the literate population. Questionnaires were administered on personal basis to respondents. The questionnaires flexibility and a wide coverage. Participants were able to easily describe needed information in writing.

ADVANTAGES OF QESTIONNAIRES

i. They were relatively easy to analyze
ii. They were familiar to NUSAF staff and the local people
iii. Large samples of the given population were contacted at relatively low cost.
iv. They were simple to administer
v. The format was familiar to most respondents
vi. Information was collected in a standardized way
vii. They were usually straight forward to analyze
viii. They were used because of the sensitive topics which users would feel uncomfortable speaking to an interviewer about.
ix. Respondents had time to think about their answers, they were not usually required to reply immediately.

DISADVANTAGES OF QUESTIONNAIRES

i. When we could forget to ask a question, we could not usually go back to respondents, especially if they were anonymous.

ii. It was sometimes difficult to obtain a sufficient number of responses, especially from postal questionnaires.

iii. Respondents ignored certain questions.

iv. Questionnaires were incorrectly completed.

v. They were not suitable to investigate long, complex issues.

vi. Respondents misunderstood some questions because of poor design and ambiguous language.

vii. Questionnaires were unsuitable for some kinds of respondents' e.g. visually impaired respondents.

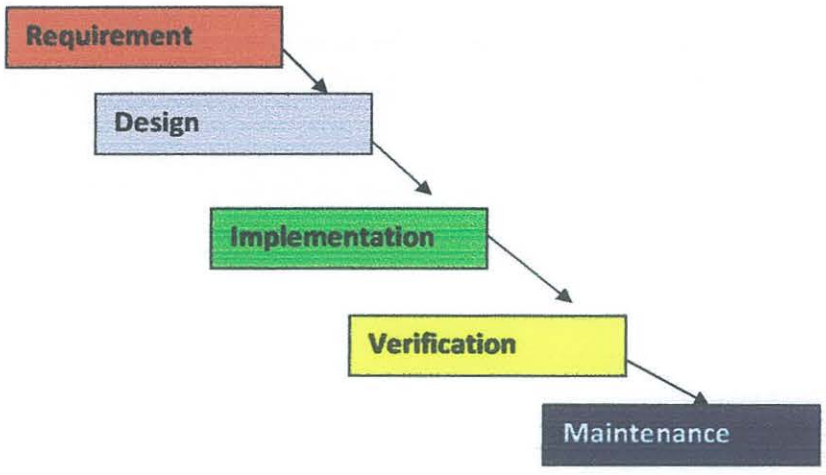
3.4 Planning Tee Development Process

The consideration here is to define a product lifecycle model. The software lifecycle encompasses all activities required to define, develop, test, deliver, and operate and maintaina software product.

3.4.1 Waterfall Model

The waterfall model is a sequential design process, often used in software development processes, in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of Conception, Initiation, Analysis, Design, Construction, Testing, Production/Implementation and Maintenance, McConnell, Steve (2006). It is illustrated below:

Figure 1: showing the waterfall model

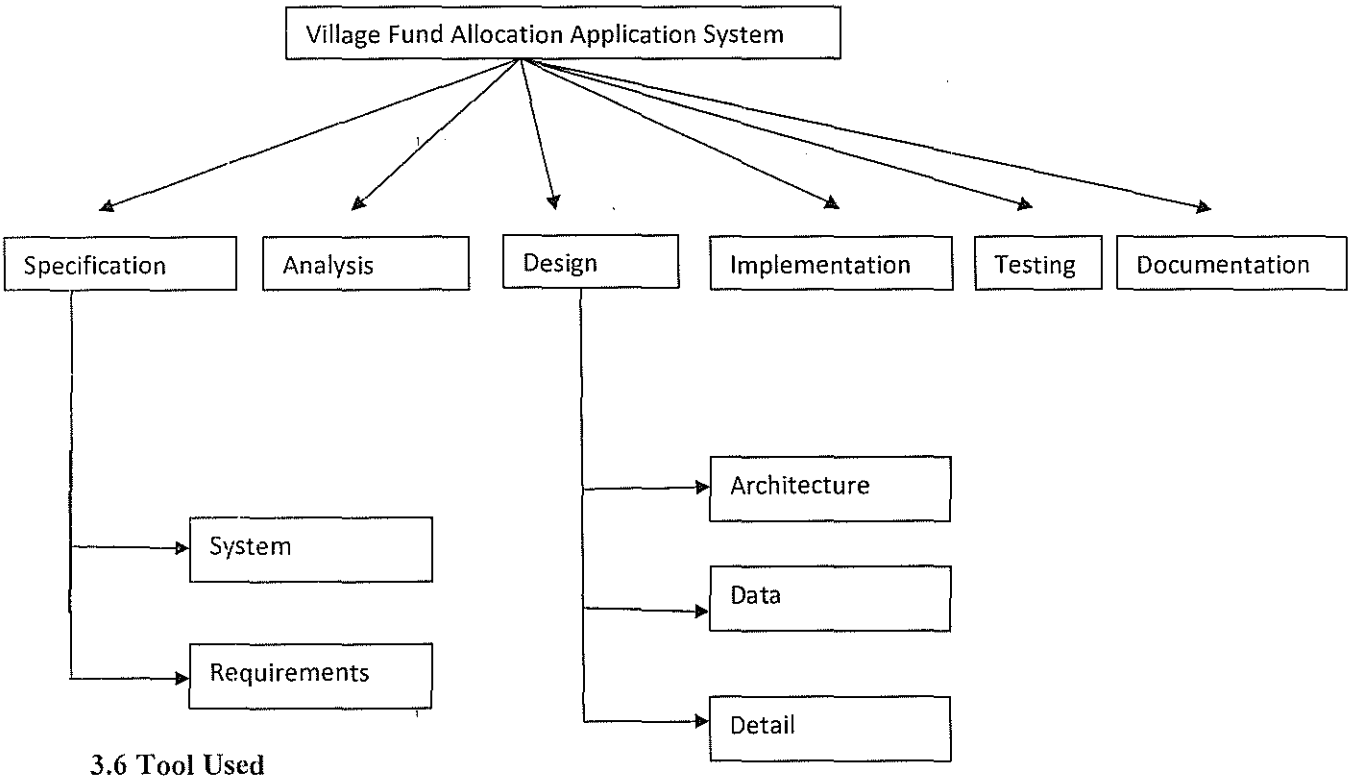


3.5 Preliminary Development Schedule

This study used preliminary development schedule to estimate its system design.

3.5.1 Work Breakdown Structure

Figure 2: Work Breakdown Structure



3.6 Tool Used

Table 2: Showing Software Used

SOFTWARE REQUIREMENT	DESCRIPTION
Adobe CS6(php)	Is a program primarily used to create an design features of the pages.
CSS	CSS is used to define how elements should appear on the system like colors, styles
Wampserver	The main purpose of a wamp server is to run test applications before being uploaded on to the actual server.
JQuery	The purpose of jQuery is to make it much easier to use JavaScript on your website

Windows operating system	The main use of an operating system is to ensure that a computer can be used and do exactly what the user wants it to with different applications
HARDWARE REQUIREMENTS	DESCRIPTION
CPU	PENTIUM IV
SPEED	2 GHZ
COPROCESSOR	BUILT-IN
TOTAL RAM	128
HARD DISK	40GB
KEYBOARD	1O5KEYS
MOUSE	LOGITECH MOUSE
PRINTER	HP DESK JET

Table 3: showing hardware used

3.7 Limitations of the Study

i. Time constraint: the time given by the university to complete the research project was not enough to carry in depth research.

ii. Financial constraints: a lot of money was required for buying the materials for carrying out the research; for transport to the field; for collecting data and for printing.

iii. The system required user training after implementation

3.8 Conclusion

Research design used for this study was a cross-sectional survey design which enabled data collected to make inferences about a population of interest. The sample population was 100 but only 50 participants were registered. The sampling technique used was stratified sampling technique which helped to local people and staff of NUSAF interviewees. The research instruments used were questionnaires, interviews, and review of existing documents. The waterfall model was used as the life cycle model of the new software with work breakdown structure as the preliminary development schedule. Both the hardware and software tools used were highlighted and limitation to the study sited.

CHAPTER FOUR

FINDINGS, PRESENTATION AND ANALYSIS

4.0 Introduction

This study investigated the best option for Village Fund Allocation Application System. This was in light with the traditional paper work at NUSAF. The data was collected using observations, interviews, and review of existing documents. This chapter presents the results of the analysis. This study aimed at designing a computerized framework for enhancing effective license management system for URA. Data collected were analyzed by categorizing to establish patterns and relationships from the information gathered. Secondly, data were presented and analyzed in percentages using tables, graphs and pie charts. Percentage was obtained by a formula %=(nfN)* 100 where n is the number of respondents, N is the total number of respondents.

4.1 Findings and Presentation

The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled drivers from the Lango sub-region and the staff of NUSAF as follows:

Table 4: showing responses of NUSAF beneficiaries and staff of NUSAF whether they use computerized Village Fund Allocation Application System

Response	Number of NUSAF respondents	Percentage (%)
Yes	-	-
No	40	100
Total	40	100

From the above table, 100% of the respondents revealed that there is no computerized Village Fund Allocation Application System this was after the interview from the local people who have been using the system.

4.2 How Traditional Paperwork Operates In Northern Uganda Social Action Fund

From the observation and interviews conducted with the beneficiaries and the NUSAF staff, the findings revealed that the registration process is a night mare. This is because one has to queue for a very long period of time and a lot of documents are required at this stage plus analysis of each document. Both the clients and staff serving get so exhausted with handling very big cliental hence errors of omission and other inefficiencies that are realized during funds renewal.

4.3 Problems Faced By Traditional Paperwork in NUSAF

Missing group's information

Due to the poor storage system, the group's information could easily be misplaced or thrown away. This made the renewal of funds very difficult. The person affected would be advised to re-register or even denied the funds since the staff couldn't figure out what happened to there details.

Time wastage

The whole process of registration and document validation took a lot of one's time and loss of patience. This caused reluctance in getting the funds by different groups.

Reliability of the system

Since the system was manual and needed a lot of man power, its reliability could not be trusted. The available man power was too small to rely on and yet cliental is too big. In the case where the office gets burnt, whole information can be lost because there is no any backup system anywhere

4.3.1. Time Management and Information Availability

Responses	Number of NUSAF respondents	Percentage

Yes	100	80
No	80	20
Total	180	100

Table 4:2 showing responses time wasting and unreliable of NUSAF beneficiaries and NUSAF staff of whether the current system is time wasting and unreliable

From the above, the study revealed that 80% of the respondents say the current system is time wasting and unreliable. 20% of the respondents however tend to believe that the current system should stay

4.4 Preference for Computerized Village Fund Allocation Application System

Table 4.3: showing the response of respondents on whether or not they would prefer the computerized system to paperwork system.

Response	Number of NUSAF respondents	Percentage
Yes	100	90
No	10	10
Total	110	100

From the above the study reveals that 90% of the respondent say the current system more better than the previous paper work system, the issues of data lost were minimized completely but to same extend 10% of the still prefers the traditional paper work system.

The researchers then investigated the problems faced in the VFAAS of NUSAF. This was done to identify the problems associated with the current system and opportunities for designing a better system, using software technology. Several problems were identified as shown in table 4.3 above.

Due to the irregularity factor associated with the old system, the researchers investigated whether time saving was paramount. As shown in table 4.2, 80% of 100 of the respondents were affirmative of the time wastage in processing the funds. While 20% of the 80 respondents were comfortable with the system in place since they had nothing to lose.

A pie chart representing the above response is as shown below

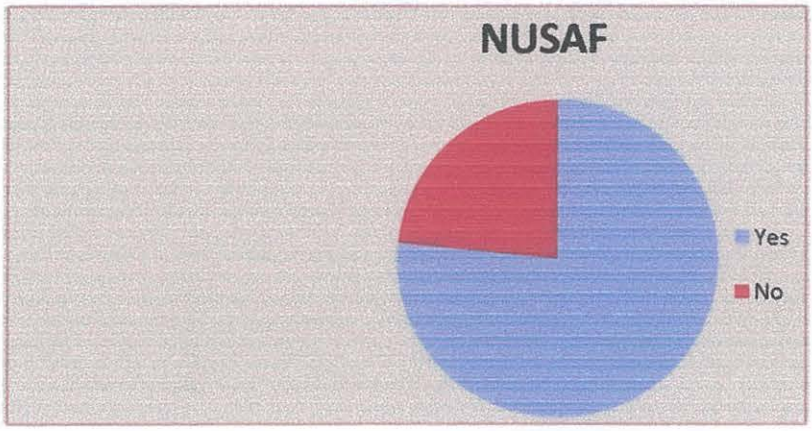


Figure 3: A pie chart showing the responses of whether the current system is time wasting or not.

As seen from the pie chart, the majority indeed agree that the current system in place is very inefficient and thus brings a lot of time wasting in the registration process and funds renewal. The study also discovered that within the process of queuing for registration or funds renewal, there are some small but unfortunate inconveniences faced by the clients e.g. bribery by people who don't want to stand in queues for so long, big government officials regions they tend to be favored that do not stand in the queue but drive their way through while leaving the rest of the people.

Due to the problems associated with the current system, the researchers investigated if the participants would be willing to adapt a new computerized VFAAS. Their findings were as below:

A bar graph showing the responses of whether or not they prefer a computerized system

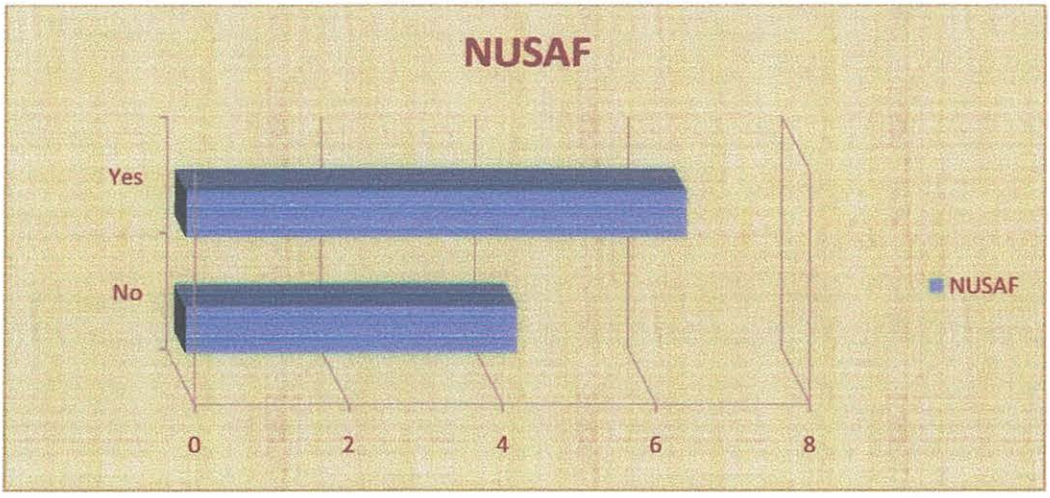


Figure 4: 2A bar graph showing the response for preference for a computerized system at NUSAF

As shown in the graph above, the majority of the participants have faith in computerized system. They believe that the new system could be the ultimate solution to the problems faced by the beneficiaries of NUSAF.

From the above, 80% of the respondents revealed that they would prefer to have the computerized Village Fund Allocation Application System 20% tend to stick to the paperwork for reasons best known to them.

4.4.1 Reasons Given For Preference of Computerized Village Fund Allocation Application System.

Time saving

The respondents noted that if NUSAF adopted the new computerized system, the problem of queuing for so long would be solved. It would hence sort the problem of registration irregularities which wasted a lot of time.

The respondents also pointed out that computerized system would enable safe data storage hence information cannot easily be lost since there are also backup provisions, this would create instant availability of beneficiaries funds information whenever needed.

Security of beneficiaries' information

The respondents did not forget the fact that the old system had security weaknesses and hence consented that the new system would have stringent security measures such as user passwords, authentication and authorization

4.5 Data Analysis

The researchers tested if NUSAF uses a computerized Village Fund Allocation Application System and 100% of the 50 respondents revealed that NUSAF does not use computerized VFAAS as shown in table 4.1. This may be due to fears that computerized VFAAS is expensive to manage and ineffective in delivery.

It also may be because the NUSAF staff fear for their jobs since the computerized system would automate most of the activities that used to be done manually by a number of employees.

4.6 Conclusion

The researchers tested if NUSAF uses a computerized Village Fund Allocation Application System, and 100% of the 50 respondents revealed that NUSAF does not use computerized VFAAS. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled groups from the sub-region of Lango and the staff of NUSAF. The study revealed that 80% of the respondents say the current system is time wasting and unreliable, 20% of the respondents however tend to believe that the current system should stay. Due to the irregularity factor associated with the old system, the researchers investigated whether time saving was paramount. As shown in table 4.2, 80% of 100 of the respondents were affirmative of the time wastage in processing the NUSAF funds. While 20% of the 80 respondents were comfortable with the system in place since they had nothing to lose.

CHAPTER FIVE
SYSTEM ANALYSIS, DESIGN AND TESTING

5.0 Introduction

This chapter will look at system analysis, design and testing. It will expound in details the facts under system analysis and design techniques for this new system. It will further explain the testing techniques used for this system

5.1 Systems Analysis

System analysis is a process of gathering and interpreting facts, diagnosing problems and the information to recommend improvements on the system. It is a problem solving activity that requires intensive communication between the system users and system developers. System analysis or study is an important phase of any system development process. The system is studied to the minutest detail and analyzed. The system analyst plays the role of the interrogator and dwells deep into the working of the present system. The system is viewed as a whole and the input to the system are identified. The outputs from the organizations are traced to the various processes. System analysis is concerned with becoming aware of the problem, identifying the relevant and decisional variables, analyzing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action.

A detailed study of the process must be made by various techniques like interviews, questionnaires etc. The data collected by these sources must be scrutinized to arrive to a conclusion. The conclusion is an understanding of how the system functions. This system is called the existing system. Now the existing system is subjected to close study and problem areas are identified. The designer now functions as a problem solver and tries to sort out the difficulties that the enterprise faces. The solutions are given as proposals. The proposal is then weighed with the existing system analytically and the best one is selected. The proposal is presented to the user for an endorsement by the user. The proposal is reviewed on user request and suitable changes are made. This is a loop that ends as soon as the user is satisfied with the proposal.

Preliminary study is the process of gathering and interpreting facts, using the information for further studies on the system. Preliminary study is problem solving activity that requires intensive communication between the system users and system developers. It does various

feasibility studies. In these studies, a rough figure of the system activities can be obtained, from which the decision about the strategies to be followed for effective system study and analysis can be taken.

5.2 EXISTING SYSTEM

In the existing system the transactions are done only manually but in proposed system we have to computerize all the beneficiaries' information transaction using the software Village Fund Allocation Application System.

PROBLEMS WITH EXISTING SYSTEM

i. Lack of security of data.
ii. More man power.
iii. Time consuming.
iv. Consumes large volume of paper work.
v. Needs manual calculations.
vi. No direct role for the higher officials.

To avoid all these limitations and make the working more accurately the system needs to be computerized.

5.3 Proposed System

The aim of proposed system was to develop a system of improved facilities. The proposed system can overcome all the limitations of the existing system. The system provides proper security and reduces the manual work.

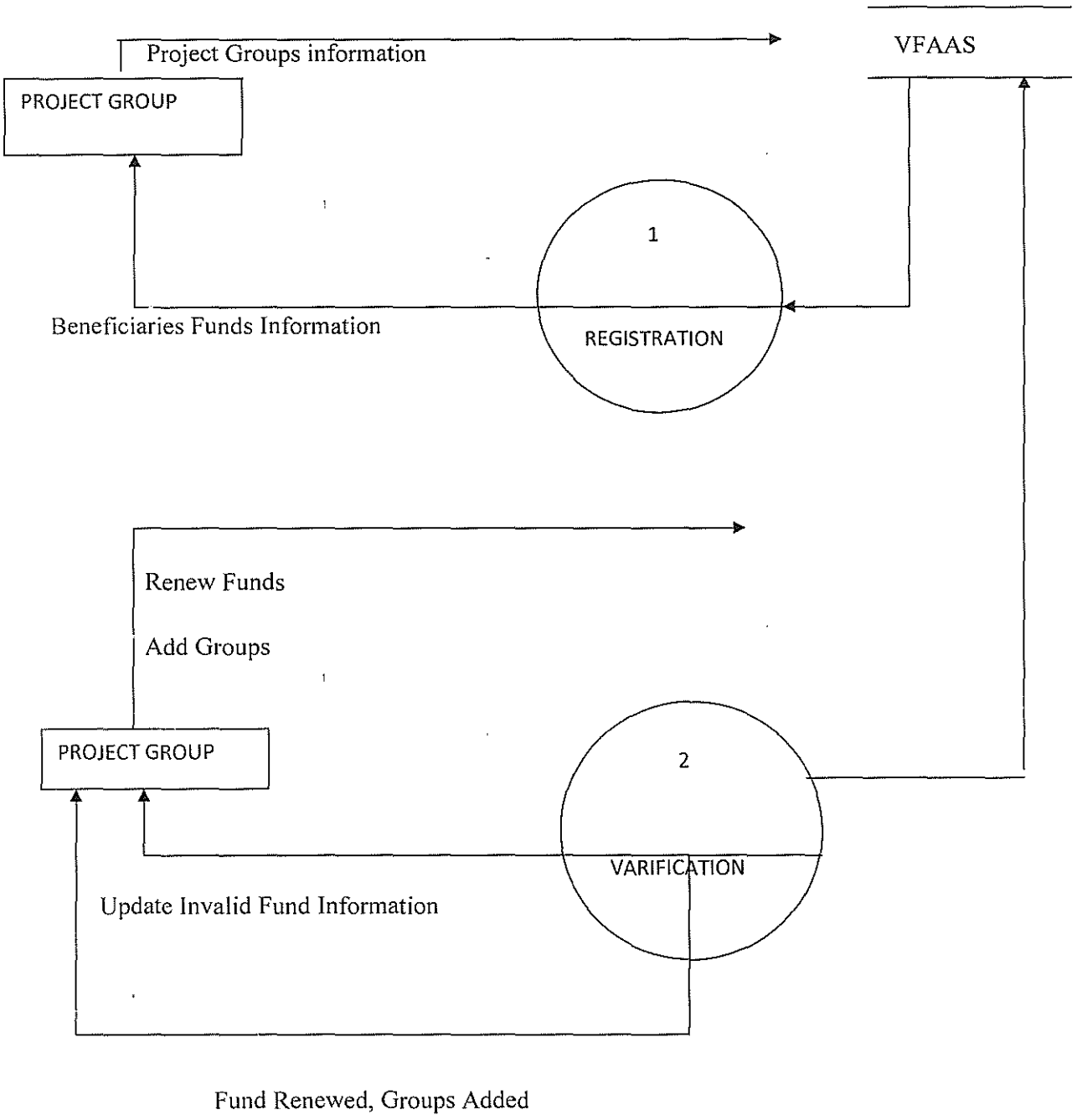


Figure 5: DFD of Village Fund Allocation Application System

ADVANTAGES OF THE PROPOSED SYSTEM

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations. It has got following features

i. Security of data.
ii. Ensure data accuracy's.

iii. Proper control of the higher officials.
iv. Reduce the damages of the machines.
v. Minimize manual data entry.
vi. Minimum time needed for the various processing.
vii. Greater efficiency.
viii. Better service.
ix. User friendliness and interactive.
x. Minimum time required.

5.4. Feasibility Study

Feasibility study was made to see if the project on completion would serve the purpose of the organization for the amount of work, effort and the time spent on it. Feasibility study lets the developer foresee the future of the project and the usefulness. A feasibility study of a system proposal was according to its workability, which is the impact on the organization, ability to meet their user needs and effective use of resources. Thus when a new application is proposed it normally goes through a feasibility study before it is approved for development.

This document provides the feasibility of the project that was being designed and listed various areas that were considered very carefully during the feasibility study of this project such as Technical, Economic and Operational feasibilities. The following are its features:

5.4.1. Technical Feasibility

The system was evaluated from the technical point of view first. The assessment of this feasibility was based on an outline design of the system requirement in terms of input, output, programs and procedures. Having identified an outline system, the investigation must go on to suggest the type of equipment, required method of developing the system, of running the system once it has been designed.

Technical issues raised during the investigation were:

i. Is the existing technology sufficient for the suggested one?
ii. Can the system expand if developed?

The project should be developed such that the necessary functions and performance are achieved within the constraints. The project is developed within latest technology. Though the technology may become obsolete after some period of time, due to the fact that newer version of the same software supports older versions, the system may still be used. So there

are minimal constraints involved with this project. The system has been developed using Jquery, CSS6.0, java among others it is therefore technically feasible for further development.

5.4.2. Economic Feasibility

The developing system was justified by cost and benefit. Criteria to ensure that effort is concentrated on project, which would give best, return at the earliest. One of the factors, which affect the development of a new system, is the cost it would require.

The following are some of the important financial questions asked during preliminary investigation:

i. What is the cost of conducting a full system investigation?
ii. What is the cost of the hardware and software required?
iii. Are there benefits in the form of reduced costs or fewer costly errors?

Since the system was developed as part of project work, there was no manual cost to spend for the proposed system. Also all the resources were already available, it gave an indication of the system being economically possible for development.

5.4.3. Behavioral Feasibility

This includes the following questions:

i. Is there sufficient support for the users?
ii. Will the proposed system cause harm?

The system was tested and implemented; users were later trained on how to use the new system. The new system posed no harm to the users or its environment because it wasn't some kind of explosive or a nuclear weapon that properly would draw concern.

The project was beneficial because it satisfied the objectives when developed and installed. All behavioural aspects were considered carefully and concluded that the project was behaviorally feasible.

5.5 System Design

5.5.1 Introduction

Design is the first step into the development phase for any engineered product or system. Design is a creative process. A good design is the key to effective system. The term "design"

is defined as "the process of applying various techniques and principles for the purpose of defining a process or a system in sufficient detail to permit its physical realization". Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm that is used. The system design develops the architectural detail required to build a system or product. As in the case of any systematic approach, this software too has undergone the best possible design phase fine tuning all efficiency, performance and accuracy levels. The design phase is a transition from a user oriented document to the programmers or database personnel. System design goes through two phases of development: Logical and Physical Design.

5.5.2 Logical Design

The logical flow of a system and define the boundaries of a system. It includes the following steps:

i. Reviews the current physical system — its data flows, file content, volumes, frequencies etc.
ii. Prepares output specifications — that is, determines the format, content and frequency of reports.
iii. Prepares input specifications — format, content and most of the input functions.
iv. Prepares edit, security and control specifications.
v. Specifies the implementation plan.
vi. Prepares a logical design walk through of the information flow, output, input, controls and implementation plan.
vii. Reviews benefits, costs, target dates and system constraints.

DATABASE TABLES

Table: registration (First Name, Other Names, Gender, Phone Number, Profession, Resident, Project Name, Group Name, Date Issued, DOB, Group Code, Email Address, Number of Members, District, County, Sub-County, Duration, Renewal Code, Previous Number of Members, Renewed Number, Amount Allocated, Fund Code)

Table: login (Username, Password)

5.5.3 Physical Design

Physical system produces the working systems by defining the design specifications that tell the programmers exactly what the candidate system must do. It includes the following steps.

i. Design the physical system.
ii. Specify input and output media.
iii. Design the database and specify backup procedures.
iv. Design physical information flow through the system and a physical design Walk through.
v. Plan system implementation.
vi. Prepare a conversion schedule and target date.
vii. Determine training procedures, courses and timetable.
viii. Devise a test and implementation plan and specify any new hardware/software.
ix. Update benefits, costs, conversion date and system constraints

Table 5: registration

Column Name	Data Type	Allow Null
First Name	Varchar (50)	No
thermoses	Varchar(50)	No
Gender	Text	No
Phone Number	Varchar(50)	Yes
Profession	Varchar(50)	No
Resident	Varchar(50)	No

Project Name	Varchar(50)	No
Group Name	Varchar(50)	No
Date Issued	Varchar(50)	No
DOB	Varchar(50)	No
Group Code	Varchar(50)	Yes
Email Address	Varchar(50)	Yes
Number of Members	Varchar(50)	No
District	Text	No
County	Text	No
Sub-County	Text	No
Duration	Varchar(50)	No
Renewal Code	Varchar(50)	Yes
Previous Number of Members	Varchar(50)	No

Renewed Number	Varchar(50)	No
Amount Allocated	Varchar(50)	No
Fund Code	Varchar(50)	Yes

Table 6: showing the database table for registration

Table: Login

Column Name	Data Type	Allow Null
UserName	Varchar(50)	No
Password	Varchar(50)	No

Table: 5:2 showing the database table for login table

5.5.4 User Interface

SCREEN SHORTS

LOGIN FORM

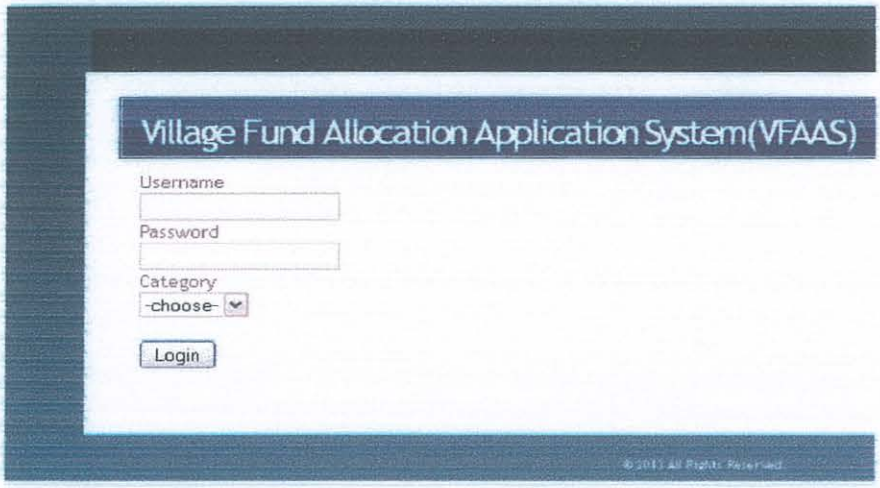


Figure 6: showing Login Form

This form is used to control user access to the system. Only users who have their user names and passwords will be in position to access the application and operate it.

FORM REGISTRATION

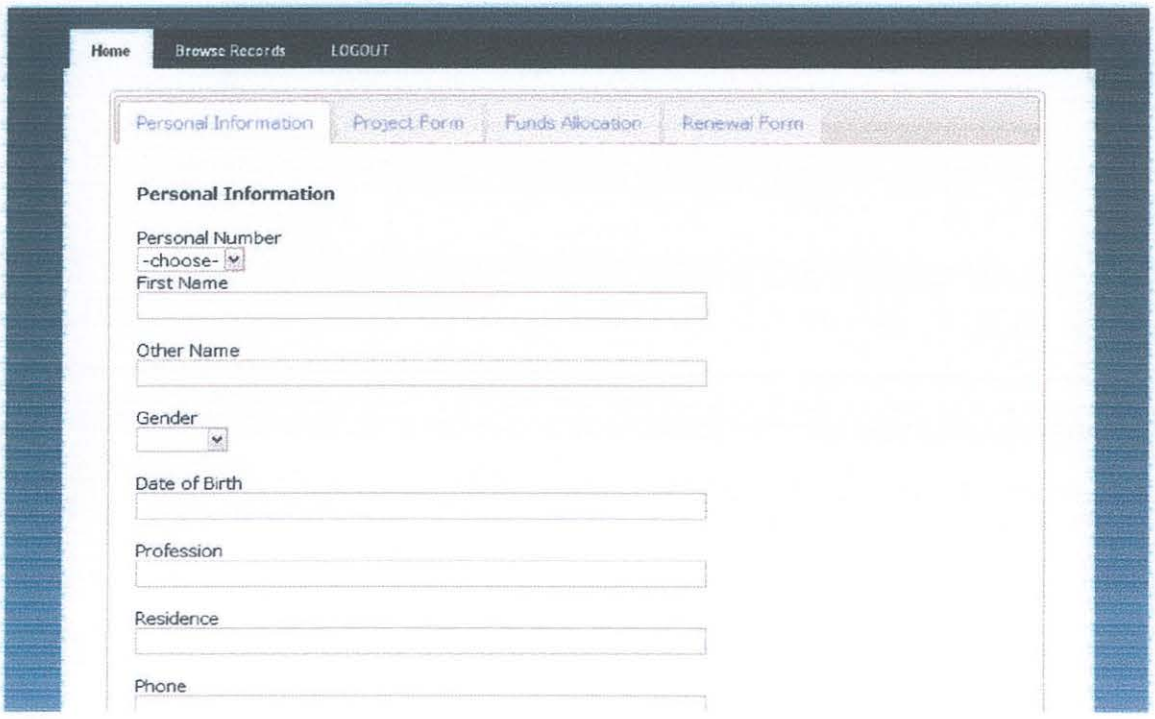


Figure 7: showing form for NUSAF beneficiary's personal information

This is the form that computers the registration details of the NUSAF beneficiaries personal information before it can be added to the database using the save button.

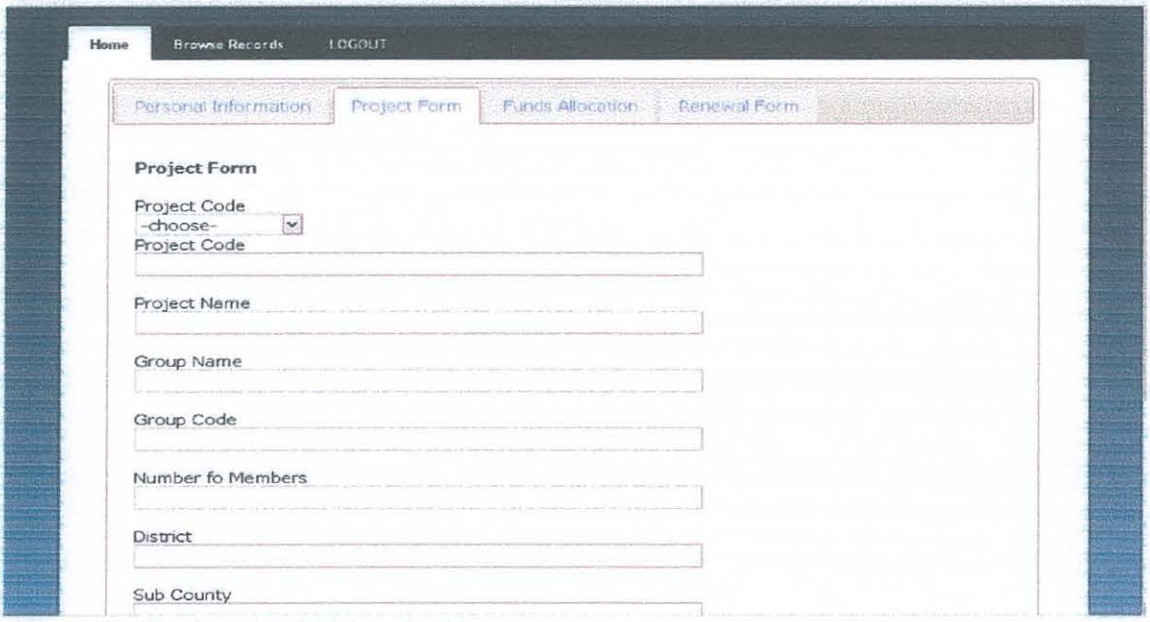


Figure 8: showing NUSAF project form

This is the form that computers the registration details of the NUSAF different projects information before it can be added to the database using the save button.

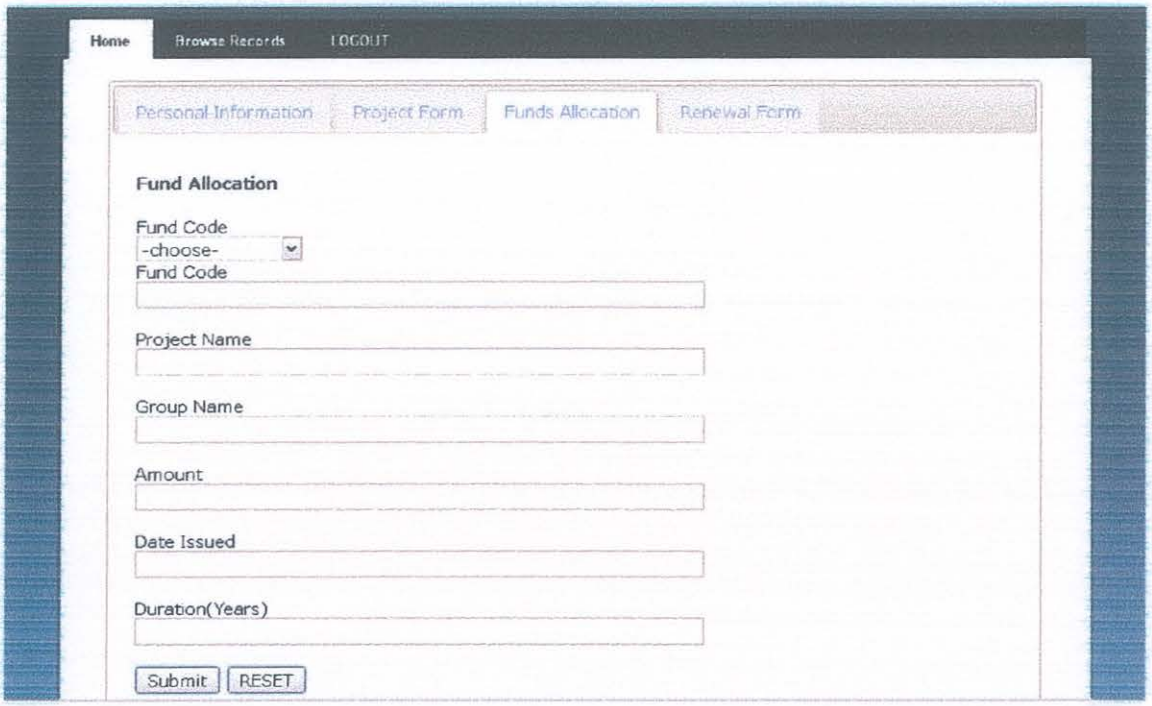


Figure 9: showing NUSAF fund allocation form

This is the form that computers the registration details of the NUSAF funds and the details of its allocation to different projects groups information before it can be added to the database using the submit button.

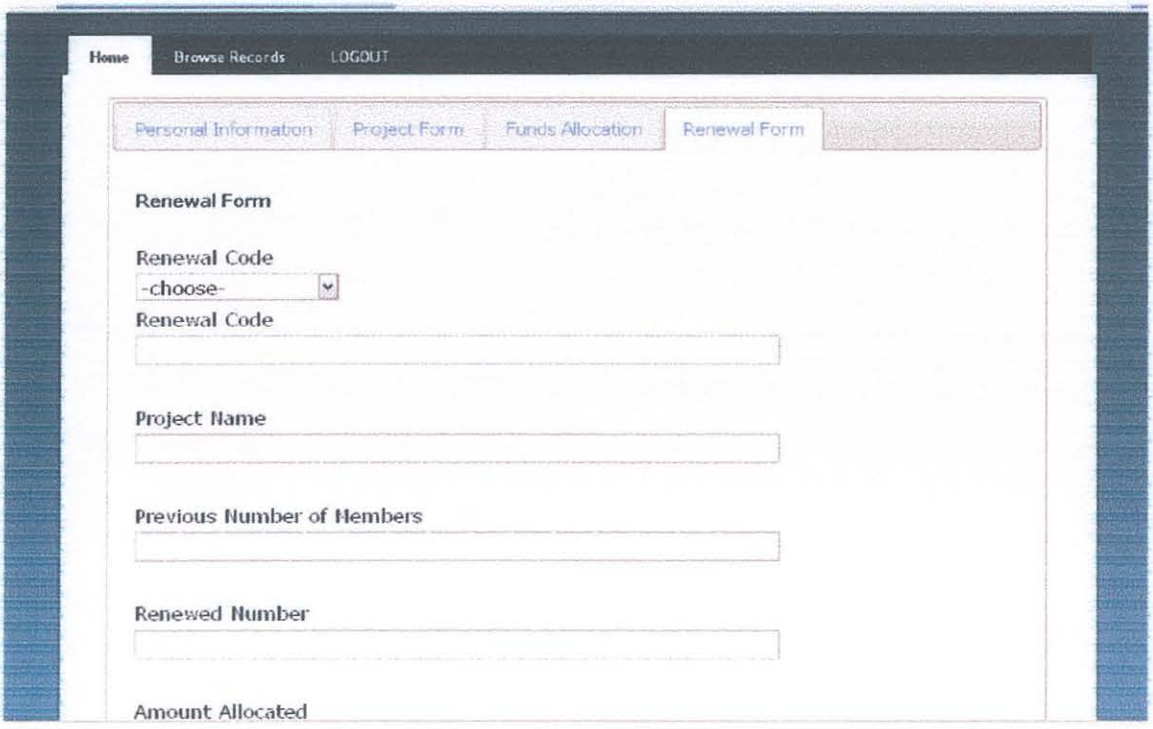


Figure 10: showing NUSAF fund renewal form

This is the form that computers the registration details of the NUSAF funds and the details of its renewal to different projects groups information before it can be added to the database using the submit button.

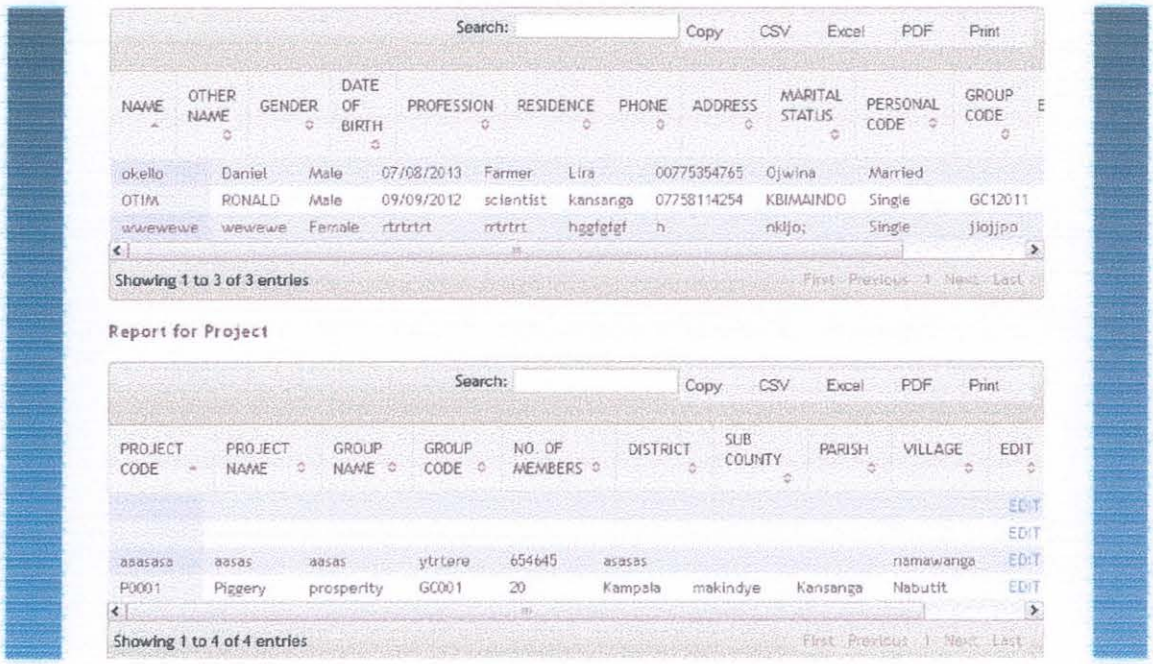


Figure 11: showing the backend of NUSAF entered data

This is the backend view of the data entered by the NUSAF personnel and it can only be changed by a NUSAF administrator not event the user or the director.

5.6 System Testing and Implementation

5.6.1 System Testing

Software Testing is the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? Software testing is often used in association with the terms verification and validation. Validation is the checking or testing of items, includes software, for conformance and consistency with an associated specification. Software testing is just one kind of verification, which also uses techniques such as reviews, analysis, inspections, and walkthroughs. Validation is the process of checking that what has been specified is what the user actually wanted.

Validation: Are we doing the right job?

Verification Are we doing the job right?

Software testing should not be confused with debugging. Debugging is the process of analyzing and localizing bugs when software does not behave as expected. Although the identification of some bugs will be obvious from playing with the software, a methodical approach to software testing is a much more thorough means for identifying bugs. Debugging is therefore an activity which supports testing, but cannot replace testing. Other activities which are often associated with software testing are static analysis and dynamic analysis. Static analysis investigates the source code of software, looking for problems and gathering metrics without actually executing the code.

Dynamic analysis looks at the behavior of software while it is executing, to provide information such as execution traces, timing profiles, and test coverage information.

Testing is a set of activity that can be planned in advance and conducted systematically. Testing begins at the module level and work towards the integration of entire computers based system. Nothing is complete without testing, as it is a vital success of the system testing objectives.

Testing is a process of executing a program with the intent of finding an error. A good test case is one that has high possibility of finding an undiscovered error. A successful test is one that uncovers an undiscovered error. If testing is conducted successfully according to the objectives as stated above, it would uncover errors in the software. Testing also demonstrate that the software function appear to be working according to the specification, that performance requirement appear to have been met.

There are three ways to test program.

i. For correctness
ii. For implementation efficiency
iii. For computational complexity
iv. Test for correctness are supposed to verify that a program does exactly what it was designed to do. This is much more difficult than it may at first appear, especially for large programs.

TEST PLAN

A test plan implies a series of desired course of action to be followed in accomplishing various testing methods. The Test Plan acts as a blue print for the action that is to be followed. The software engineers create a computer program, its documentation and related data structures. The software developers are always responsible for testing the individual units of the programs, ensuring that each performs the function for which it was designed. There is an independent test group (ITG) which is to remove the inherent problems associated with letting the built. The specific objectives of testing should be stated in measurable terms. So that the mean time to failure, the cost to find and fix the defects, remaining defect density or frequency of occurrence and test work-hours per regression lest all should be stated within the test plan.

The levels of testing include:

i. Unit testing
ii. Integration Testing
iii. Data validation Testing
iv. Output Testing

UNIT TESTING

Unit testing focuses on verification effort on the smallest unit of software design — the software component or module. Using the component level design description as a guide, important control paths are tested to uncover errors within the boundary of the module. The relative complexity of tests and uncovered scope established for unit testing. The unit testing is white-box oriented, and step can be conducted in parallel for multiple components. The modular interface is tested to ensure that information properly flows into and out of the program unit under test. The local data structure is examined to ensure that data stored temporarily maintains its integrity during all steps in an algorithm's execution. Boundary conditions are tested to ensure that all statements in a module have been executed at least once. Finally, all error handling paths are tested.

Tests of data flow across a module interface are required before any other test is initiated. If data do not enter and exit properly, all other tests are moot. Selective testing of execution

paths is an essential task during the unit test. Good design dictates that error conditions be anticipated and error handling paths set up to reroute or cleanly terminate processing when an error does occur. Boundary testing is the last task of unit testing step. Software often fails at its boundaries. Unit testing was done in VFAAS System by treating each module as separate entity and testing each one of them with a wide spectrum of test inputs. Some flaws in the internal logic of the modules were found and were rectified

INTEGRATION TESTING

Integration testing is systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing. The objective is to take unit tested components and build a program structure that has been dictated by design. The entire program is tested as whole. Correction is difficult because isolation of causes is complicated by vast expanse of entire program. Once these errors are corrected, new ones appear and the process continues in a seemingly endless loop. After unit testing in VFAAS System all the modules were integrated to test for any inconsistencies in the interfaces. Moreover differences in program structures were removed and a unique program structure was evolved.

VALIDATION TESTING OR SYSTEM TESTING

This is the final step in testing. In this the entire system was tested as a whole with all forms, code, modules and class modules. This form of testing is popularly known as Black Box testing or System testing Black Box testing method focuses on the functional requirements of the software. That is, Black Box testing enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program. Black Box testing attempts to find errors in the following categories; incorrect or missing functions, interface errors, errors in data structures or external data access, performance errors and initialization errors and termination errors.

OUTPUT TESTING OR USER ACCEPTANCE TESTING

The system considered is tested for user acceptance: here it should satisfy the firm's need. The software should keep in touch with perspective system; user at the time of developing and making changes whenever required. This system was accepted by users because it came as the solution which they had been long waiting for. It was able to display the output as per the user requirement specifications.

5.6.2 System Performance

The system performance was tested against work accomplished compared to the time and resources used. The following findings were noted as important: -

- Short response time for a given piece of work
- High throughput (rate of processing work)
- Low utilization of computing resource(s)
- High availability of the computing system or application

5.6.3 Database Connectivity

The system was able to connect and communicate with the database as fast as possible. This is because the database is not heavy and takes only a shorter time to respond to any queries that are necessary.

5.7 System Implementation

Implementation is the state in the project where the theoretical design is turned into a working system. By this, the users get the confidence that the system will work effectively. The system can be implemented only after thorough testing. The systems personnel checked the feasibility of the system. The actual data were inputted to the system and the working of the system was closely monitored. The master option was selected from the main menu and the actual data were input through the corresponding input screens. The data movement was studied and found to be correct query options and these contained various reports. Implementation walkthroughs ensure that the completed system actually solves the original problem. This walkthrough occurs just before the system goes into use, and it should include Careful Review of All Manuals, Training Materials and System Documentation

5.7.1 System Conversion

This is the process of transferring the existing data into the new database and converting any existing applications to run on the new database. The driver information that was manually kept in files and selves were entered into the system successfully. The hardware requirements of 40 GB, processor speed of 2.0 GHZ and RAM size of 2GB were met and the system was successfully incorporated.

5.7.2 Implementation Techniques

There are three types of implementation techniques which include: parallel, phase and direct conversion. This system used direct conversion technique.

DIRECT CONVERSION

With this method of implementation the users stopped using the manual system and started using the computer system from a given date. The advantage of this method is that it is less costly in effort and time than any other method of implementation. The disadvantage of this method is that if problems occur the users do not have any alternative apart from returning to a manual system which may prove difficult if it has been discontinued.

5.7.2.1 Hardware Conversion

The computers required to run this system were installed and configured and were found to respond in accordance to user specifications. The hardware minimum requirements of hard drive of 40GB, processor speed of 1.86GZ, and RAM of 128 GB were met.

5.7.2.2 Software Conversion

The software used for this VFAAS was Jquery, CSS6.0, Adobe illustrator, wamp server and windows operating system. The VFAAS was installed and configured and its performance and conformance was excellent.

5.7.3 User Training

Once the system is successfully developed the next important step is to ensure that the administrators are well trained to handle the system. This is because the success of a system invariably depends on how they are operated and used. The implementation depends upon the right people being at the right place at the right time. Education involves creating the right atmosphere and motivating the user. The administrators are familiarized with the run procedures of the system, working through the sequence of activities on an ongoing basis.

5.7.4 System Maintenance (Auditing and Evaluation)

System audits were performed to verify conformance to standards through review of objective evidence. Audits are essential to verify the existence of objective evidence showing conformance to required processes, to assess how successfully processes have been implemented, for judging the effectiveness of achieving any defined target levels, providing evidence concerning reduction and elimination of problem areas and are and are on

management tool for achieving continual improvement in an organization. This system was audited and evaluated and was found to satisfy the above performance.

5.7.5 System Control

Systems control is the control and implementation of a set of functions that:

i. prevent or eliminate degradation of any part of the system,
ii. initiate immediate response to demands that are placed on the system,
iii. respond to changes in the system to meet tong range requirements, and
iv. may include various sub-functions, such as
   - continuous control of equipment performance,
   - development of procedures for immediate repair, restoration, or replacement of facilities and equipment,
   - continuous liaison with system users and with representatives of other systems, and
   - The provision of advice and assistance in system use.

5.7.6 System Backup

In information technology, a backup or the process of backing up is making copies of data which may be used to restore the original after a data loss event. Backups have two distinct purposes. The primary purpose is to recover data after its loss, be it by data deletion or corruption. The secondary purpose of backups is to recover data from an earlier time, according to a user-defined data retention policy, typically configured within a backup application for how long copies of data are required. This system is configured through the wamp server objects using the backup device. It is configured to backup after every one day to the wamp server directory disk.

5.7.7 Access Control

The primary method used to protect data is limiting access to the data. This can be done through Authentication, authorization, and access control. These three mechanisms are distinctly different but usually used in combination with a focus on access control for granularity in assigning rights to specific objects and users. This system uses some form of authentication, such as username and password, to restrict access to the system.

Further, most users are authorized or assigned defined privileges to specific resources. Access control further refines the process by assigning rights and privileges to specific data objects

and data sets. Within a database, these objects usually include tables, views, rows, and columns.

5.7.8 System Security

Database security concerns the use of a broad range of information security controls to protect databases (potentially including the data, the database applications or stored functions, the database systems, the database servers and the associated network links) against compromises of their confidentiality, integrity and availability. It involves various types or categories of controls, such as technical, procedural/administrative and physical. The new system has the following security measures in place:

i. Personnel Identification (authentication)
ii. Establishment of strong passwords
iii. Installation of antivirus protection
iv. Regular updates of programs
v. Secure laptops
vi. Regular Backup
vii. Diligent system Monitoring

5.8 Conclusion

System analysis in this study was defined as a process of gathering and interpreting facts, diagnosing problems and information to recommend improvements on the system. Preliminary study on the other hand is a problem solving activity that requires intensive communication between the system users and system developers. Design was seen as the first step into the development phase for any engineered product or system. A number of system designs were studied among which include: Logical and Physical design. Software Testing was defined as the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? Software testing was often used in association with the terms, verification and validation. A number of testing techniques were studied which include among others the following: unit testing, integration testing, and data validation testing and output testing. Implementation was defined as the state in the project where the theoretical design is turned into a working system. By this, the users get the confidence that the system would work effectively. This system was implemented only after thorough testing. Direct implementation technique was used as a means of transformation to

the new system. User training, auditing and evaluation, backup and access control were looked at broadly.

CHAPTER SIX

FINDINGS, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter covered in details the findings of this project, the necessary conclusions and the recommendations for the new system.

6.2 Research Findings

The researchers tested if NUSAF uses a computerized Village Fund Allocation Application System, and 100% of the 50 respondents revealed that NUSAF does not use computerized VFAAS. This may be due to fears that computerized VFAAS is expensive to manage and ineffective in delivery. It also may be because the staff NUSAF fear for their jobs since the computerized system would automate most of the activities that used to be done manually by a number of employees. This study also investigated the best option for Fund Allocation Application System. This was in light with the traditional paper work at NUSAF. The data was collected using observations, interviews, and review of existing documents. This chapter presents the results of the analysis. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled drivers from the sub-region of Lango and the staff of NUSAF. The study revealed that 80% of the respondents say the current system is time wasting and unreliable.20% of the respondents however tend to believe that the current system should stay. However it was concluded that a new computerized system was the only way to go.

6.3 Research Conclusions

The research problem of paper work was finally solved by computerizing the system; hence it became fast and secure to perform NUSAF client's data transaction. The objectives to this study were achieved and storage of NUSAF client's information for future retrieval was successful, the software and hardware resources needed for the system were implemented accordingly and their operation was as good as per user requirement specification. The significance of this study was seen in the effectiveness and motivation of the workers since there was ease and conduciveness in the working arena. The scope of the study was achieved since the area of jurisdiction of the researchers, the sample population and the lime allotted was observed and followed promptly. Computerization was defined as a means to support (1) Working towards making the system paperless or minimizing the paper work and to provide,

(2) Give pace to the Business, (3) To create the data base for analysis (4) Fast Reporting & Queries. Data storage was defined as the place (RAM and Hard disk) where data is held in an electromagnetic or optical form for access by a computer processor. Data security on the other hand was seen as the protection of data from unauthorized users through authentication, authorization, encryption, and access control. Simplicity was justified as a quality that is frequently sought by both users and technologists, although, as users frequently attest, it is not always found. Research design used for this study was a cross-sectional survey design which enabled data collected to make inferences about a population of interest. The sample population was 100 but only 50 participants were registered. The sampling technique used was stratified sampling technique which helped to sample NUSAF clients and staff of NUSAF interviewees. The research instruments used were questionnaires, interviews, and review of existing documents. The waterfall model was used as the life cycle model of the new software with work breakdown structure as the preliminary development schedule. Both the hardware and software tools used were highlighted and limitation to the study sited. The researchers tested if NUSAF uses a computerized village fund allocation application system, and 100% of the 50 respondents revealed that NUSAF does not use computerized VFAAS. The data collected was presented in tabular format showing responses on traditional paperwork system, basing on the observations, and interviews conducted with sampled NUSAF clients from the sub-region of Lango staff of NUSAF. The study revealed that 80% of the 50 respondents say the current system is time wasting and unreliable.20% of 50 of the respondents however tend to believe that the current system should stay. System analysis in this study was defined as a process of gathering and interpreting facts, diagnosing problems and information to recommend improvements on the system. System design was seen as the first step into the development phase for any engineered product or system. Software Testing was defined as the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? A number of testing techniques were studied which include among others the following: unit testing, integration testing, and data validation testing and output testing. Implementation was defined as the state in the project where the theoretical design is turned into a working system. By this, the users get the confidence that the system would work effectively. This system was implemented only after thorough testing. Direct implementation technique was used as a means of transformation to the new system. User training, auditing and evaluation, backup and access control were looked at broadly.

6.3 Recommendations

This new database management system has the following recommendations for it to be maintained and operated successfully:

System Requirements

1. **Supported Operating Systems**
    - Microsoft Windows XP
    - Microsoft Windows Server 2003
    - Windows Vista
2. **Hardware Requirements**
    - Minimum: 1.6 GI-IzCpu, 384 MB RAM, 1024x768 display, 5400 RPM hard disk
    - Recommended: 2.2 0Hz or higher CPU, 1024 MB or more RAM, 1 280x 1024 display, 7200 RPM or higher hard disk
    - On Windows Vista: 2.4 0Hz cpu, 768 MB RAM
    - Wampserver, Jquery, adobe CS6, CSS etc.
3. User training. The system needs the users operating it to familiarize with its functionalities. This would in turn improve efficiency of the system. Employment of system administrator to maintain the system is also necessary.

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APPENDICES

APPENDIX A: TIME SCHEDULE

Feasibility study					
Data collection					
Proposal writing and acceptance					
Design and implementation					
Report writing and presentation					
2012-2013	December-January	February-March	April-May	June-July	August-September

APPENDIX B: RESEARCH INSTRUMENT

QUESTIONNAIRE FOR SAMPLED LOCAL PEOPLE AROUND LANGO SUB-REGION

Odongo Ronald Otim and William Tumuhairwe, students of Kampala International University, pursuing bachelor's degree in Information Technology are conducting a research that aims at improving funds distribution system at Northern Uganda Social Action Fund (NUSAF) in Lango sub-region. We kindly request you to answer these questions to the best of your knowledge, and we affirm that your response will be treated with the highest degree of confidentiality.

SECTION A

BACKGROUND INFORMATION

Please tick the most appropriate box

I. Age

15-19 ☐

20-25 ☐

26-30 ☐

31-35 ☐

36-40 ☐

41-45 ☐

46-50 ☐

51-55 ☐

56-60 ☐

2. Gender

Male ☐ Female ☐

SECTION B (other information)

1. What type of business do you?.....

2. Are your business processes computerized?

Yes ☐ No ☐

3. If no, what methods do they use for processing your business?

.....

.....

4. Describe the business registration process at NUSAF.

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5. How would you prefer the registration process to be carried out?

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What communication challenges do you get with the employees of NUSAF?

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Is the client's information readily available during fund renewal?

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6. Is the time factor non problematic during the whole fund acquisition process?

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7. What challenges do you encounter as a NUSAF client during fund acquisition process?

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10. Are there areas of weaknesses that you have cited in the operation of fund acquisition system at NUSAF?

Yes ☐ ☐ No

11. If yes, suggest in your own words solutions to such short comings.

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12. Would you recommend a computerized system to replace the manual system of fund acquisition at NUSAF? Give reasons for your suggestion.

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**** * ****** ***END******** ******

Thanks for your cooperation

QUESTIONNAIRE FOR STAFF MEMBERS OF NUSAF

Odongo Ronald Otim and William Tumuhairwe, students of Kampala International University, pursuing bachelor's degree in Information Technology are conducting a research that aims at improving fund acquisition system at Northern Uganda Social Action Fund (NUSAF) in Lango sub-region. We kindly request you to answer these questions to the best of your knowledge, and we affirm that your response will be treated with the highest degree of confidentiality.

SECTION A

BACKGROUND INFORMATION

Please tick the most appropriate box

1. Age

15-19 ☐

20-25 ☐

26-30 ☐

31-35 ☐

36-40 ☐

41-45 ☐

46-50 ☐

51-55 ☐

56-60 ☐

2. Gender

Male ☐ Female ☐

SECTION B (other information)

I. How does it feel to work at NUSAF?

.....

.....

2. Are your funds distribution processes computerized?

Yes ☐ No ☐

3. If no, what funds distribution mechanism is currently in place?

.....

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.....

4. How efficient is the current system in terms of processing speed, information availability and data security?

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5. Does the current system make your work simple and professional?

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6. What challenges do you face as a result of operating the current fund distribution system?

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7. Any recommendation for a computerized system? If yes give reasons for your choice?

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**** * ****** ***END******** ******

Thanks for your cooperation