

ABSTRACT

Local authorities E-budget system is designed for the ministry of local governance head to facilitate generation and transfer of budgets. This system comprises of two users which are administrator and subordinates who are working in the town councils. These subordinates are responsible for budget generation, viewing generated budgets and assessment of the needs to be included in the budgets. Administrator is responsible for budget generation also, for his/her own council, approval of budgets is also his/her responsibility, disapproval of budgets as well is another responsibility of the administrator, management of users, that is adding, deleting, updating user database is also the other major responsibility for the administrator, back of database to ensure security of company information is also another action that administrator is responsible for, adding of new arising local authorities, this may happen if there is an added town council in the system boundaries. E-budget system comprises of these objectives. Starting with the major one, E-budget system is responsible for generation of budgets this may be done by subordinates, the second objective is approval of budgets generated by the chief accountant who is identified administrator in the system, third of objective is the disapproval of unauthorised budgets by chief accountant again, the system also give notification of newly generated budgets by the subordinates so that chief accountant may see the new budgets need to be approved

DECLARATION

I **Nyaradzo Chabata** do hereby proclaim that I am the sole author of this dissertation. I do hereby authorise **Midlands State University** to lend this dissertation to any other institution or individual whom they may find necessary to make use of it for scholarly purpose.

Signature.....Date.....

APPROVAL

This dissertation entitled Local authorities E-Budget system done by Nyaradzo Chabata is meeting the regulations which governs the award of Information Systems degree of Midlands State University and it is approved for the contribution to knowledge and literacy presentation.

Supervisor.....

Date.....

ACKNOWLEDGEMENT

Today becomes the day I write this thank you note as the last part of my dissertation after a long time. It has been a period of passionate learning to me on a personal level and systematic arena, but it covers my personal level. Coming up with this local authorities E- budget dissertation gave a big impression to me. I want to put much reflection on all those who stood by my side throughout the process.

Firstly I would like to give credit to the almighty God. By his power and grace all things were made possible. I also want to lone out my supervisor Ms Mugoniwa who guided me with his abundant scholarship skills and inspiration throughout this period. Not forgetting my colleague and friend Miss G Mazula, my loving husband Mr O Deme and my two lovely children Takudzwa and Tafadzwa Deme who played a pivotal role towards the writing of this dissertation and supported me throughout. May God continue to guide and bless them abundantly. Lastly, I want to thank my siblings for their continuous encouragement and compassion.

DEDICATION

For you mama, Olivia Chabata, September 26 is unforgettable. I will keep your last words-from 1 Thessalonians 5 verse 17.

It was painful that you left so early.

Table of Contents

| | |
|---|------|
| ABSTRACT..... | i |
| DECLARATION | ii |
| APPROVAL | iii |
| ACKNOWLEDGEMENT | iv |
| DEDICATION..... | v |
| LIST OF ACRONYMS | x |
| LIST OF TABLES | xi |
| LIST OF FIGURES | xii |
| LIST OF APPENDICES..... | xiii |
| CHAPTER 1: INTRODUCTION | 1 |
| 1.1 INTRODUCTION | 1 |
| 1.2.1 BACKGROUND OF THE STUDY | 1 |
| 1.2.1BACKGROUND OF THE ORGANISATION | 2 |
| 1.2.2 ORGANISATIONAL STRUCTURE..... | 3 |
| 1.2.3 VISION | 3 |
| 1.2.4 MISSION STATEMENT | 3 |
| 1.3 PROBLEM DEFINITION | 4 |
| 1.4 AIM..... | 5 |
| 1.5 OBJECTIVES | 6 |
| 1.6 INSTRUMENTS AND METHODS | 6 |
| 1.7 JUSTIFICATION AND RATIONALE..... | 6 |
| 1.8 CONCLUSION..... | 8 |
| CHAPTER 2: PLANNING PHASE | 9 |
| 2.1 INTRODUCTION | 9 |
| 2.2 BUSINESS VALUE | 10 |
| 2.3 ANALYZE FEASIBILITY | 11 |

| | |
|--|----|
| 2.3.1 TECHNICAL FEASIBILITY..... | 11 |
| 2.3.2 ECONOMIC FEASIBILITY..... | 14 |
| 2.3.3. SOCIAL FEASIBILITY..... | 21 |
| 2.3.4. OPERATIONAL FEASIBILITY..... | 21 |
| 2.4 RISK ANALYSIS..... | 22 |
| 2.5. STAKEHOLDER ANALYSIS..... | 25 |
| 2.6 WORK PLAN..... | 26 |
| 2.6.2 ACTIVITY NETWORK DIAGRAM..... | 28 |
| 2.7 CONCLUSION..... | 29 |
| CHAPTER 3: ANALYSIS PHASE..... | 30 |
| 3.1 INTRODUCTION..... | 30 |
| 3.2 INFORMATION GATHERING METHODOLOGIES..... | 30 |
| 3.2.1 INTERVIEWS..... | 30 |
| 3.2.2 QUESTIONNAIRES..... | 31 |
| 3.2.3 OBSERVATIONS..... | 32 |
| 3.3 ANALYSIS OF EXISTING SYSTEM..... | 33 |
| 3.4 PROCESS ANALYSIS..... | 34 |
| 3.5 DATA ANALYSIS..... | 35 |
| 3.6 WEAKNESSES OF CURRENT SYSTEM..... | 38 |
| 3.7 EVALUATE ALTERNATIVES..... | 38 |
| 3.7.1 OUTSOURCE..... | 38 |
| 3.7.2 IMPROVEMENT..... | 39 |
| 3.7.3 IN-HOUSE DEVELOPMENT..... | 40 |
| 3.8 REQUIREMENTS ANALYSIS..... | 41 |
| 3.8.1 FUNCTIONAL REQUIREMENTS..... | 41 |
| 3.8.2 NON-FUNCTIONAL REQUIREMENTS..... | 43 |
| 3.9 CONCLUSION..... | 44 |

| | |
|--|----|
| CHAPTER 4: DESIGN PHASE..... | 45 |
| 4.1 INTRODUCTION | 45 |
| 4.2 SYSTEM DESIGN | 45 |
| 4.2.1 CONTEXT DIAGRAM..... | 46 |
| 4.2.2 DATA FLOW DIAGRAM..... | 47 |
| 4.3 ARCHITECTURAL DESIGN..... | 49 |
| 4.3.1 THE CLIENT SERVER APPROACH..... | 50 |
| 4.4 PHYSICAL DESIGN | 51 |
| 4.5 DATABASE DESIGN..... | 51 |
| 4.5.2 ENHANCED ENTITY RELATIONSHIP DIAGRAM | 54 |
| 4.6 PROGRAM DESIGN | 56 |
| 4.6.1 CLASS DIAGRAM..... | 56 |
| 4.6.2 PACKAGE DIAGRAM..... | 57 |
| 4.6.3 SEQUENCE DIAGRAM..... | 58 |
| 4.7 INTERFACE DESIGN..... | 59 |
| 4.7.1 MENU DESIGN | 60 |
| 4.7.2 INPUT DESIGN | 61 |
| 4.7.3 OUTPUT DESIGN | 63 |
| 4.8 PSEUDO CODE..... | 64 |
| 4.9 SECURITY DESIGN | 66 |
| 4.9.1 PHYSICAL SECURITY | 67 |
| 4.9.2 NETWORK SECURITY | 67 |
| 4.9.3 OPERATIONAL SECURITY | 68 |
| 4.10 CONCLUSION..... | 68 |
| CHAPTER 5: IMPLEMENTATION PHASE | 69 |
| 5.1 INTRODUCTION | 69 |
| 5.2 CODING..... | 69 |

| | |
|---|----|
| 5.3. TESTING..... | 69 |
| 5.3.2 UNIT TESTING | 72 |
| 5.3.3 FUNCTIONAL TESTING | 72 |
| 5.3.4 REGRESSION TESTING | 72 |
| 5.3.5 PERFORMANCE TESTING | 72 |
| 5.3.6 SECURITY TESTING | 72 |
| 5.3.7 ACCEPTANCE TESTING..... | 73 |
| 5.3.8 VERIFICATION AND VALIDATION | 73 |
| 5.4 INSTALLATIONS | 75 |
| 5.4.1 TRAINING | 75 |
| 5.4.2 DATA MIGRATION AND CHANGEOVER | 75 |
| 5.5. MAINTENANCE | 78 |
| 5.5.1 CORRECTIVE MAINTENANCE | 78 |
| 5.5.2 PREVENTATIVE MAINTENANCE | 78 |
| 5.5.3 ADAPTIVE MAINTENANCE | 78 |
| 5.5.4 PERFECTIVE MAINTENANCE | 79 |
| 5.6 RECOMMENDATIONS..... | 79 |
| 5.7 CONCLUSION..... | 79 |
| REFERENCE..... | 80 |
| APPENDICES | 82 |

LIST OF ACRONYMS

| | |
|------|--------------------------------------|
| BI | Business Intelligence |
| ERP | Enterprise Resource Planning |
| MAC | Management Accounting System |
| ROI | Return on Investment |
| AAP | Average Annual Profit |
| USD | United States Dollar |
| PBP | Pay Back Period |
| PMBK | Project Management Book of Knowledge |
| CA | Chief Accountant |
| DFD | Data Flow Diagram |
| PK | Primary Key |
| UML | Unified Modelling Diagram |

LIST OF TABLES

| | |
|--|----|
| Table 2.1: Server Specifications | 13 |
| Table 2.2: Development and Maintenance | 15 |
| Table 2.3 Cash Flow Statement | 17 |
| Table 2.4 Return on Investment..... | 20 |
| Table 2.5 Stake Holder | 26 |
| Table 2.6 Project Work Plan..... | 26 |
| Table 2.7 List of Activities | 29 |
| Table 4.1 Users | 52 |
| Table 4.2 Logers | 53 |
| Table 4.3 Charts | 53 |
| Table 4.4 Budget..... | 53 |
| Table 4.5 Department..... | 54 |
| Table 4.6 Queries | 54 |
| Table 4.7 Notices | 54 |
| Table 4.8 Budget History | 63 |
| Table 4.9 Login History | 64 |
| Table 4.10 Approved Budget | 64 |
| Table 4.11 Disapproved Reports..... | 64 |

LIST OF FIGURES

| | |
|---|----|
| Figure 1.1: Organisational Structure..... | 3 |
| Figure 2.1: Gantt chart | 27 |
| Figure 3.1: Activity Diagram..... | 35 |
| Figure 3.5 Key case Diagram..... | 42 |
| Figure 4.1 Context Diagram | 47 |
| Figure 4.2: Dataflow Diagram | 48 |
| Figure 4.3: Architectural design | 50 |
| Figure 4.4 Physical Design | 51 |
| Figure 4.5 EER Diagram..... | 55 |
| Figure 4.6: Class Diagram | 57 |
| Figure 4.7 Package Diagram..... | 58 |
| Figure 4.8 Sequence Diagram..... | 59 |
| Figure 4.9 Menu Design | 60 |
| Figure 4.10 Sub Menus | 61 |
| Figure 4.11 Sign up form | 61 |
| Figure 4.12 sign in form..... | 62 |
| Figure 4.13: Upload Budget..... | 62 |
| Figure 4.14 Submit Query..... | 63 |
| Figure 5.1 Testing Phases | 70 |
| Figure 5.2 White Box Testing..... | 71 |
| Figure 5.3 Password Validation..... | 74 |
| Figure 5.4 Validation Fields | 74 |
| Figure 5.5 Validation Form..... | 75 |
| Figure 5.6 Parallel Changeovers | 76 |
| Figure 5.7 Pilot Changeover | 77 |
| Figure 5.8 Phased Changeover | 78 |

LIST OF APPENDICES

| | |
|---|----|
| Appendix A User Manual | 91 |
| Appendix A Letter of Request..... | 92 |
| Appendix C Letter of conducting research..... | 93 |
| Appendix D Interviews..... | 94 |
| Appendix E Questionnaire..... | 95 |
| Appendix F List of Symbols used..... | 96 |
| Appendix G Code Snippet..... | 97 |

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

This chapter explains the background of the study, background of the organisation, aim of the study, problem definition, objectives and justification of the study. The chapter also stated the instruments that will be required in the implementation of the system.

In this Chapter, the researcher will be exploring the usefulness of the proposed computerized budget approval system- a web based application system to aid the local authorities to manage their budgets, financial control, funds flow, profitability analysis and performance analysis and to run their accounting activities easily and more conveniently so that they can come up with proper decision making during business processes like fund allotment and allocation, planning and budgeting as well as procurement.

The researcher intends to build the E-Budget system because of the desire for local authorities to depend on the system to estimate and recommend rightful amount of funds recommended for each targeted area of mutual concern to receive funding, and also to estimate the expected amount of profit and/or losses for each business process depending on area and/or department of day-to-day business operations.

1.2.1 BACKGROUND OF THE STUDY

Alleyne (2018) argued that, the background of study should effectively set forth the history and background information of the research thesis problem. The purpose of a background study is to help prove the relevance of the thesis question and so as further develop the proposed system. The e-budget system falls under a series and class of enterprise systems commonly known as Enterprise Resource Planning (ERP) systems, Business Intelligence (BI) and systems Management Accounting systems (MAC). This study, however, intends to investigate the challenges associated with the unavailability of these computer based application systems to aid proper decision making on the costing and allocation of funds depending on time and situations affecting the business and the economy at large as well as their immediate cooperate expectation and challenges.

The reason that motivated the researcher to develop the proposed system is that information technology is taking over on day to day running of businesses. Therefore organisations cannot afford to resist the need for encompassing technology. Moreover technology provides

foundation for driving efficiencies and fuelling innovation. Therefore the proposed system will create an easy platform for the ministry to administer all its local authorities with less repetition of efforts. Therefore the use of technology will help decision makers to identify, solve problems, and make decisions in more effective manner.

The ministry of Local government through the department of local authorities has the mandate to provide councils with the necessary information for them to be able to make maximum use of the available scarce funds and funding resources they have. Looking at some of the statistics as recently reported in the media. The Daily Mirror of 8th February 2011 quoted research conducted by Chemplex Corporation, the non-accountants fraternity, on designing and implementation of Enterprise Resource Planning (ERP) in Zimbabwe since 1999. Almost all statistics point toward sharp increase in technologically aided management accounting systems in comparison to their predecessors which was the traditional/manual way of dealing and handling accounting and budgeting processes and procedures.

However, to bridge the gap between the past experiences with the present situations so as to carter for such horrific scenarios the Department of Local government, Lands and Mechanization has vastly prompted that Enterprise Resource Planning system be deployed in all council departments at district levels for better decisions.

1.2.1 BACKGROUND OF THE ORGANISATION

The service of local government, Rural and Urban growth is an administration service in charge of local legislature of Zimbabwe. The Urban and Rural area council Act have been revised severally to commence productivity and adequacy in the local government. It directs municipalities, districts and provinces of Zimbabwe. The native government framework goes back to the mid-1890s with Salisbury Sanitary Board having been built up in 1891. The first municipal law was passed in 1897 which changed over Salisbury and Bulawayo into municipalities. The municipality committee was designed on the British tradition as far as capacities and fund.

In 1980, immediately after independence, African Councils were abolished and fifty five District councils established in their place. The dualistic nature of local government in rural areas continued until 1995 when District councils and rural councils were amalgamated to form fifty eight rural districts councils. The local government system provides professional,

technical, construction and maintenance services in property development. It also facilitates the provision of affordable and functional residential accommodation.

1.2.2 ORGANISATIONAL STRUCTURE

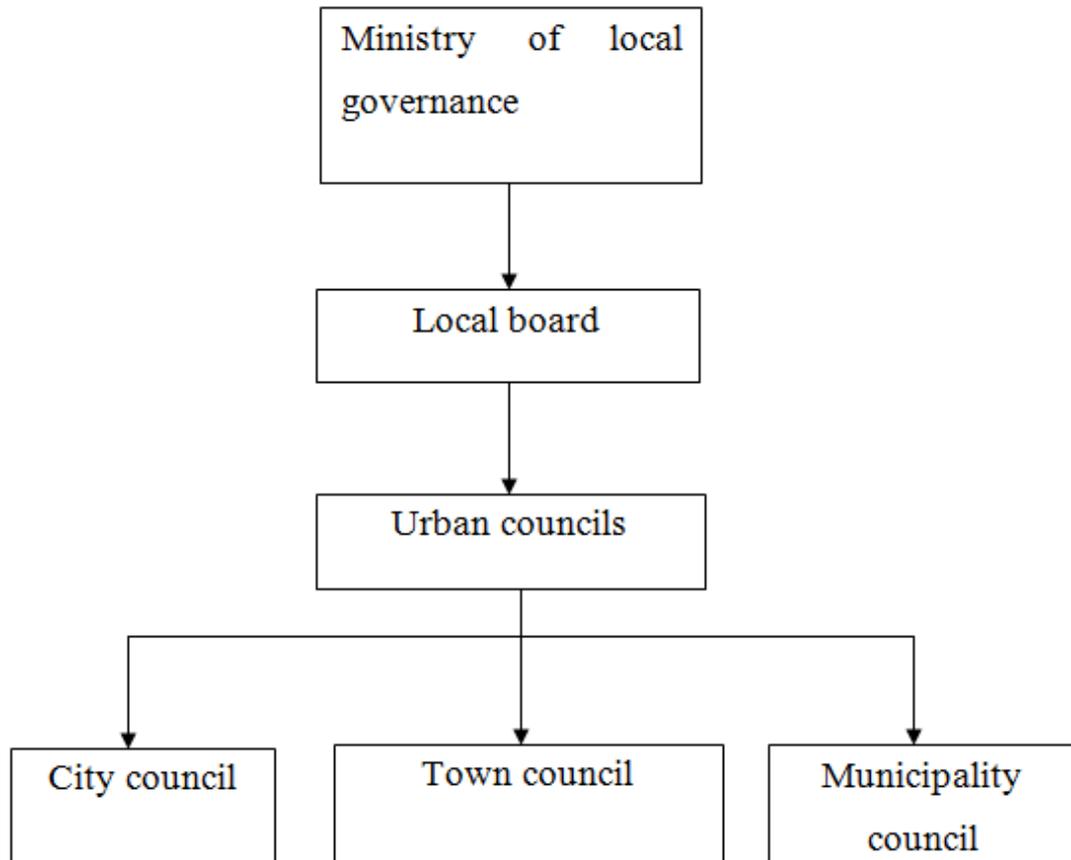


Figure 1.0:1: Organisational Structure

1.2.3 VISION

To be the centre of excellence for local governance and a well- built orderly environment to Vision achieve sustainable human settlements by 2020. (Ministry of local Government, 2013)

1.2.4 MISSION STATEMENT

To promote sound local governance, construction and maintenance for sustainable and functional human settlements to improve the quality of life for the people of Zimbabwe (Ministry of local Government, 2013)

1.3 PROBLEM DEFINITION

The ministry of local government is currently using a tradition/manual system for the approval and disapproval of budgets for local authorities. The submission of budgets is done twice until the budgets have been approved and this is taking too long and strenuous thereby increasing the chances of committing mistakes.

The main challenge of the proposed system is to be able to stimulate our local authorities and government stakeholder to adapt and embrace the system, however according to the researchers, many of the officials are computer illiterate, so training will be conducted so as to build confidence of the system users.

Doing business can be a boring activity if the costs of production i.e. budget preparation, resource allocation planning, type and amounts of money (funds) required for funding various cooperate essential projects, losses, outweigh the benefits gained through conducting business i.e. profits and desired targeted objectives.

The proposed solution seeks to develop an online management accounting system (e-budget system) for use by Ministry of local government authorities to optimize the utilization of finances and other available scarce resources to maximize output through efficient use of necessary budgetary requirements and budgeting processes. The following are the problems identified with the current setup:

- **Local authorities and councils may either make use of their little knowledge or to rely on the traditional expertise of the limited traditional/manual budget systems for doing business.**

Advances in the technological research services, and innovative cooperate cultured methods of quality service production and quality requirements are exponentially increasing with ever dynamic technological enterprise climatic changes, and with variations such as in lines of production, chain of value, costing and taxation within the modern day business spectrum; it is of great concern that such issues should be approached with care and precision and such level of precision requires the local authorities to be ‘redeemed’ from the tendency and syndrome of rely on traditional/manual methods when they need budgetary information, so as to make effective decision making.

- **There is lack of up to date budgetary information as local authority workers rely mainly on what they will have filed and learnt from past trends.**

The unavailability of computerized budgeting application systems that act more or less like knowledge base which stores the latest and newer budgeting and costing approaches and proper forecasting requirements. This stimulates pleasurable and amusing business operations and eliminates old fashioned budgeting techniques and methods, that has led to most local authority officers and stake-holders mainly to rely on what they could have learnt and to stick to the same old traditional budgeting methods

- **Local authorities' officers at times get information late when it is no longer useful and outdated.**

Proper fund allocation and application requires proper insight planning and skillful budget preparation. Local authority officers at district and ward level usually rely on process input management and utilization of information and techniques that they exhibit from their respective research to carry out most of their budgeting exercises. This however has the disadvantage in that: If the local authority research officer do not report early for update ward level meetings the unskilled labor force at the bottom of the goods/service production chain will get stranded not knowing the best alternatives to forgo.

Other problems associated with the current budget system set-up include the following:

- It is difficult for the ministry to produce a record of all accepted budgets brought in by the local authorities.
- Budgets are easily lost since they are hard copies.
- The current system does not sent a notification about approval or disapproval of budgets.
- Local authorities are currently facing financial problems therefore they may fail to bring in budgets to the ministry on specified dates. Henceforth this will be a setback to both entities.

1.4 AIM

This research aims to design and implement a thriving reactive mobile e-solution for the ministry that allows local authorities to upload their budgets online. Also alert of text notification from the ministry to the local authorities on approval and disapproval of budgets

in a more approachable way to increase productivity in the ministry through the provision of proper and timely advice to all the stake-holders.

1.5 OBJECTIVES

The system should be able to:

- To design and implement an electronic-based Management Accounting application system (e-budget system) for local authorities that is responsible for Uploading budgets online to the ministry.
- To approve disapprove budgets send by local authorities to the ministry.
- To view all budgets uploaded in either ways.
- To send notifications of all uploaded budgets.
- To provide a text notification for database backup whenever downloaded.

1.6 INSTRUMENTS AND METHODS

The e-budget platform was designed and programmed by the researcher with the view to make it educationally and economically supportive to Extension officers and farmers by embedding the concepts of budgeting, proper fund allocation and allotment as a valid educational and control measure that bears an adorable impact in the day to day operations of budget planning and preparation requirements and budget management to the local authorities. MySQL for the database, phpMyAdmin for managing the database, JQuery, AJAX, XML, Java and wicket was used to support the development of the e-budget system.

Instruments to be used are as follows

- Interviews
- Observations
- Books
- Internet
- Questionnaires

1.7 JUSTIFICATION AND RATIONALE

Local authority's budget approval system will encourage ministry to embrace computerized information systems in the day to day running of entities and promote efficiency and effectiveness in council operations. Moreover it would promote good corporate governance in local authority's as it will foster pros of embracing it. It will assist the ministry to achieve their mandate effectively through the use of information systems and thereby enhancing

service delivery. Information systems can be used as a strategic tool and in this vein ministry can make their strategic plan with the aid of information systems.

After identifying the above problems, it is of significance to develop a web-based accounting management (e-budget system) for local authorities' in Zimbabwe that would cater for the business budgeting and accounting management processes and activities. This project seeks to support the use of computer aided systems in daily government operations, and business management activities. The researcher wishes to bring out a modern idea which can then be implemented with success.

The development of an e-budget system for use by local authority's in Zimbabwe will help improve business productivity. With this system in place the local authority's officers can just respond to a few questions and get reports of the requirements in terms of budgeting and the cash requirements to allocate for the desired intend. This greatly improves the local authority's ability to plan and budget accordingly without necessarily over spending or under estimating.

The internal development is the greatest alternative since the system will be modified to meet Zimbabwe's needs. Off-shelf Stock packages may not satisfy the unique requirements of the Zimbabwean Ministry of local government. The researcher is also an obsessed software developer who believes that techno-premiership should be the order of the day; hence, the beneficiaries of the Ministry of Local governance business processes should be entrepreneurs in their own right. The e-budget system will be implemented and is expected to achieve the following:

➤ **Contribute to the national budgeting plan**

The e-budget system should be able to generate well budget estimations and recommendations that will help or contribute to the national budget planning processes i.e.

- The approval and disapproval of budgets
- Contribute to a rise in the GDP
- Help manage the country's wage bill

➤ **Improve the local authority's decision making capacity**

The system should help local authority's tackle complex budget estimation problems within limited amounts of time. It must then recommend on the best alternatives for local authorities to forgo.

The Ministry should be able to use the system when making decisions that takes a lot more time to find solutions. Thus to this extend, the researcher finds it more appealing to develop a management accounting system (e-budget system) to help local authorities come up with the best alternatives when making technical decisions and to budget for their Ministry activities.

➤ **Capacitate local authority's thereby helping them to do their duties more efficiently**

The e-budget system will create the dispensation of the local authority services a lot approachable, easier, effective and more efficient. Local authorities will be in a position to access is important budgeting information in time for them to make right decisions.

1.8 CONCLUSION

This first chapter essentially serves as an introductory chapter, which proposes the research to be carried out. Its main aim was to introduce the background of the ministry, a web-based management accounting system (e-budget system), and to define what it is. This chapter also seeks to out-line the Vision and Mission of the Ministry of local government, to explore and to outline the objectives of the e-budget system in carrying out budget planning, approval, disapproval and estimation. The remainder of this dissertation is organised as follows: Chapter 2 represents the Planning phase. Chapter 3 outlines the Analysis phase. Chapter 4 presents the Design phase whereas Chapters 5 is about design phase, conclusion and recommendations.

CHAPTER 2: PLANNING PHASE

2.1 INTRODUCTION

According to Gray (2012) this is the second phase in the project life cycle, which involves the creation of a set of plans to help guiding developers during product development. The system planning stage is the beginning stage for the frameworks analysis and configuration process. This stage has two principle errands. The main tasks are to asses and organize systems demands. The second errand is to do a first analysis of the proposed project. This phase encompasses the following tasks:

Estimation of time to complete the tasks

Objectives

- Elaboration and modification of the project scope, timetable, risks, and expenses
- Evaluation and explanation of activities to organize all significant contributory plans
- Clarity of events for how the project will be executed, monitored, controlled, and closed
- Planning the future course of action
- Development of the Project Management Plan(s) (PMP)
- Approval to advance to the requirements

Aim

The reason for the Planning Phase is to design all project procedures and activities required to guarantee project achievement and to make a thorough arrangement of plans, known as the PMP, to manage the project from this stage until end of the project.

Why Build the System?

- To provide expert knowledge base and increase the capacity to control the production practices which in turn reduces the threat and uncertainty, improve the efficiency of decision making and better recognized the variations in diverse influencing features thus depicting enhanced management policies and decision making
- To store much of the information that an expert needs to make decisions and make them on hand for others; therefore the notion of knowledge based budget accounting has an adequate prospective to improve the budget preparation production
- To provide a good inference engine mechanism that automatically matches facts

against patterns in the rules then determines which rules are applicable and execute accurately

- To identify type of costs and make correct diagnosis for proper budgeting methods
- To produce ad-hoc, monthly and annual reports on budgets.

2.2 BUSINESS VALUE

According to Gandlin (2014) Business values relate to the expected positive aspects that will accompany the implementation of the project. These aspects are relative to the amalgamation of the system and the general organizational functionality. The driving force behind the development of the e-budget system is to have cost management and budgets experts' knowledge readily available to the local authorities. The system will help the Ministry of local government in achieve quality budgets and efficient report generation processes as well as improving on the service output quantity.

Shareholder Value

Kendall and Kendal (2014) defined shareholder value as the value enjoyed by the shareholder. It is the significance to develop a web-based accounting management (e-budget system) for local authorities' in Zimbabwe that would cater for the business budgeting and accounting management processes and activities. This project seeks to support the use of computer-aided systems in daily government operations, and business management activities. The researcher wishes to bring out a modern idea which can then be implemented with success. This will in turn improve the value and the goodwill of the shareholders as they are responsible.

Customer Value

Defined by Dennis et al (2015) as a customer perceived preference for and evaluation of those products attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations. This project will enquire users to provide their needs to be included in their monthly budget. The project will help customers to provide all their needs so that council may take into consideration the needs of all residents for example issue of road maintenance may be budgeted based on community request.

Employee knowledge

According to Forouzan et al (2012) these are the items of information that an employee should know at the time he /she is hired into the job. The development of an e-budget system for use by local authority's in Zimbabwe will help improve business productivity. With this system in place the local authority's officers can just respond to a few questions and get reports of the requirements in terms of budgeting and the cash requirements to allocate for the desired intend. This greatly improves the local authority's ability to plan and budget accordingly without necessarily over spending or under estimating.

Managerial Value

According to Schneider (2018) these are abstract ideals that act as guiding principles for managing enterprises. The Ministry will be able to use the system when making decisions that takes a lot more time to find solutions. Thus to this extend, it is more appealing to develop a management accounting system (e-budget system) to help local authorities come up with the best alternatives when making technical decisions and to budget for their Ministry activities.

2.3 ANALYZE FEASIBILITY

Feasibility study is purposed so as to create awareness amongst the stake holders, so as to access the viability of the project Schneider (2018).It helps answer essential question thus should the authorities proceed with the project proposed. Feasibility studies can be used in many ways but primarily focus on proposed business ventures. System developers and researchers have conducted a feasibility study to determine if the project is worthy doing.

Feasibility study aims to objectively and rationally uncover the strengths and weaknesses of the proposed system, by calculating the quantitative business value of the systems and its returns as well as helping the authorities to identify its opportunities, regardless of threats which are present in the environment, the resources required to carry through, and ultimately the prospects for success.

2.3.1 TECHNICAL FEASIBILITY

This study involves the evaluation of computer hardware and software which is currently available at the ministry so as to assess if they are compatible with the proposed system

requirements as well as finding out if the proposed (unavailable) equipment is affordable. The technical feasibility considers the technical requirements of the proposed project Kendall and Kendal (2014). The technical requirements are then compared to the technical capability of the organization. The systems project is considered technically feasible if the internal technical capability is sufficient to support the project requirements. If the internal technical capability cannot support the project, the project still can be considered technically feasible if an outside entity could be utilized to support the technical requirements and the costs associated with this outsourcing would still be within the scope of the proposed budget and economic feasibility.

Hardware Requirements

Table 2.1: Server Specifications

| ITEM | Minimum required specifications | QUANTIT Y required | Available QUANTIT Y | Available |
|----------------|--|--------------------|---------------------|--|
| Server | Server Tower Proliant ML350 G6 E5606 QC Intel Xeon | 1 | 0 | - |
| Processor: | 4.0GHz core i7 | 1 | 1 | 2.50GHz core (TM)2 Duo CPU |
| Dual Port | 1000GB 3G SAS 15KK Hot Plug Dual Port | 1 | 1 | 500GB 3G SAS 15KK Hot Plug Dual Port |
| Memory: | 8GB PC3 10600R DDR2 | 1 | 1 | 2GB PC3 10600R DDR3 |
| Power Supply | 460W HOT SWAP Redundant Power Supply | 5 | 2 | 260W HOT SWAP Redundant Power Supply |
| Server Adapter | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter | 1 | 2 | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter |
| Controller | Smart Array P410i/ZM Controller | 1 | 2 | Smart Array P410i/ZM Controller |

Software Requirements

Below are the software requirements, and the software are readily available.

- Operating System: Windows Server 2016, Windows 10Enterprise Edition
- Microsoft Office 2013, Microsoft Visio 2013, Microsoft Project 2013
- WAMP :- available for free download over the internet

Technical Feasibility Overview

There is enough evidence to justify the commissioning of this project since it is technically feasible.

2.3.2 ECONOMIC FEASIBILITY

Schneider and Gersting (2018) argued that economic feasibility is an analysis of project's costs and revenues in an effort to determine whether or not it is logical and possible to complete. A systems request is economically feasible if the projected benefits of the proposed system outweigh the estimated costs involved in developing (or purchasing), installing and operating it.

Costs

- **Systems Developers Cost:** These are the funds which are charged by the system developers.
- **Initial Costs:** These are costs associated with starting-up the new computerized solution.
- **Operational Costs:** On-going costs of using and maintaining the system after implementations.

Cost Benefit Analysis

Cost-benefit analysis is a metric that weighs the costs to be incurred as a result of the proposed system over the probable benefits of the system as argued by Quah and Toh (2012). Unlike most costs, most benefits have no monetary value; therefore, most of these will be quantified using the appropriate estimation methods to assign these values to provide a monetary basis for comparison purposes. It is not wise to invest in a project that has costs that outweigh the benefits to be derived from the proposed system.

The various quotations that were gathered on 29 December 2017 have shown that the costs of resources were costing as shown in table 2.2:

Table 2.2 Developments and Maintenance Cost

Table 1.2: Development and Maintenance

| Development Cost | Cost associated in Us Dollars(\$) |
|---|--|
| Server Tower Proliant ML350 G6 E5606 QC Intel Xeon | 2 000 |
| 4.0GHz Processor core i7 | 1000 |
| 2.50GHz core (TM)2 Duo CPU | 250 |
| 1000GB 3G SAS 15KK Hot Plug Dual Port | 500 |
| 8GB PC3 10600R DDR3 | 500 |
| 460W HOT SWAP Redundant Power Supply | 500 |
| Embedded NC326i PCI Express Dual Port Gigabit Server Adapter | 250 |
| Smart Array P410i/ZM Controller | 500 |
| Hp Sever (Backup) | 500 |
| Windows2016 Sever Software | 500 |
| System development cost | 1500 |
| Software Upgrades | 500 |
| Conversion Costs | 500 |
| User Training | 500 |
| | |
| Maintenance (Operational)Costs | |
| Hardware Upgrades and Repairs | 500 /year. |

| | |
|--|---------------|
| Software Upgrades | 500 /year. |
| Software licence | 300 /year. |
| Consumables and stationery | 500 /year. |
| Other Costs | 600 /year. |
| Sub Total | 12 400 |
| Provision for Inflation and Budget Rundown (10%*Cost) | 1 240 |
| Total Budgeted Cost | 13 640 |

Table 2.3 Cash Flow Statement

| Year | 1 2017 | 2 2018 | Total |
|---|---------------|----------------|---------------|
| Benefits: | (USD) | (USD) | (USD) |
| Balance B/D | | (2 640) | |
| Estimated Reduced Labour Expenses | 5 000 | 7 000 | 25 000 |
| Reduced use of paper | 1 000 | 2 000 | 3 000 |
| Reduced Labour | 3 000 | 5 000 | 8 000 |
| Reduced Operating Costs | 2 000 | 3 000 | 5 000 |
| Total Benefits | 11 000 | 17 000 | 28 000 |
| | | | |
| Development Costs: | | | |
| Server Tower Proliant ML350 G6 E5606 QC Intel Xeon | (2 000) | 0 | (2 000) |
| 4.0GHz Processor core i7 | (1000) | 0 | (1000) |
| 2.50GHz core (TM)2 Duo CPU | (250) | 0 | (250) |
| 1000GB 3G SAS 15KK Hot Plug Dual Port | (500) | 0 | (500) |
| 8GB PC3 10600R DDR3 | (500) | 0 | (500) |
| 460W HOT SWAP Redundant Power Supply | (500) | 0 | (500) |
| Embedded NC326i PCI Express Dual Port Gigabit Server Adapter | (250) | 0 | (250) |
| Smart Array P410i/ZM Controller | (500) | 0 | (500) |

| | | | |
|-----------------------------|-----------------|----------------|-----------------|
| Hp Sever (Backup) | (500) | 0 | (500) |
| Windows2016 Sever Software | (500) | 0 | (500) |
| System development cost | (1500) | 0 | (1500) |
| Software Upgrades | (500) | 0 | (500) |
| Conversion Costs | (500) | 0 | (500) |
| User Training | (500) | 0 | (500) |
| Total-Development C: | (9500) | 0 | (9500) |
| | | | |
| Operational Costs: | | | |
| Hardware Upgrade | (500) | (500) | (1000) |
| Software Upgrades | (500) | (300) | (800) |
| Software licence | (300) | (300) | (600) |
| Stationery and Consumables | (500) | (500) | (1000) |
| Other Costs | (600) | (600) | (1200) |
| Total Operational-C: | (2 400) | (2 200) | (4 600) |
| | | | |
| Sub Total cost: | (12 400) | (2 200) | (14 100) |
| 10% (Run Down ,Inflation) | (1 240) | (220) | (1 410) |
| Total Costs: | (13 640) | (2 440) | (15 510) |
| Total Benefits: | (2 640) | 11 940 | 12 490 |

Analysis:

Several methods can be used to compare evaluate projects on the basis of their cash flow projections and these include the following:

Net Profit

Return on Investment.

Net Profit:

Net Profit is the difference between the Total Cost and Total Income over the life of a project.

The net profit of this particular project is calculated below

$$\begin{aligned}\text{Net Profit} &= \text{Total Benefits} - \text{Total Costs.} \\ &= \$28\,000 - \$15\,510 \\ &= \$12\,490\end{aligned}$$

The net profit of this project is **12 490USD**

Return on Investment (ROI):

Also known as the Accounting Rate of Return (ARR), **ROI** can be used to compare the net profit against the investment required. ROI is used to calculate the viability of the project. It is the most widely used cost benefit analysis technique and is calculated using the percentage of profitability.

ROI is expressed as a percentage and is calculated as follows:

$$\text{ROI} = (\text{Average Annual Profit} / \text{Total Investment}) * 100$$

Where; Average Annual Profit = NP / number of years.

$$\begin{aligned}\text{For this particular project; Average Annual Profit} &= 12\,490 / 2 \\ &= 6245\end{aligned}$$

$$\begin{aligned}\text{And; ROI} &= (6245 / 15\,510) * 100 \\ &= \underline{40.26\%}\end{aligned}$$

The return on investment is positive. Ratio of income generated to investment is sufficient and favorable as argued by Owen and Law(2010)

Table 2.4 - Return on Investment -Payback Analysis

Table 2.4 Return on Investment

| Year | (Initial Outlay) or Net Inflow | Cumulative Inflow |
|-------------|---|------------------------------|
| 0 | (USD 13 640) | (USD 13 640) |
| 1 | USD 11 000 | (USD 2 640) |
| 2 | USD 14 360 | USD 11 720 |

Payback period = A+B/C

$$= 1 + (2640/14 360)$$

$$= 1.184$$

$$\underline{=1.2 \text{ Years}}$$

The project pays off itself in approximately 1year 2 months.

Conclusion Economic Feasibility

Evaluating from the techniques that have been employed, it can therefore be concluded that the proposed system is economically feasible since the benefits overweighs the cost in the first two years of the system implementation.

2.3.3. SOCIAL FEASIBILITY

This is a process of finding out if the proposed system will fit into the organization so as to help them meet their current and ongoing goals and objectives Whitman and Mattord (2017). It also centers on evaluating, how the proposed system is going to impact on all the stakeholders of the ministry. In most cases, the success of such systems is based on how much support they have from the intended users and its surrounding stakeholders.

Social Feasibility Overview

The organization's operations are going to be positively affected. The stakeholders have accepted and they are willing to work with the proposed system. According to the findings by observers, the proposed system is Socially Feasible, because it has soaked the employees' daily talks saying and expressing how they are longing to have this new system.

2.3.4. OPERATIONAL FEASIBILITY

Operational feasibility is a measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development as argued by Owen and Law (2010). The operational feasibility assessment focuses on the degree to which the proposed development projects fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture, and existing business processes.

Whiman and Mattord (2017) argued that operational feasibility can be known as behavioral feasibility, for it measures extend in which the users will accept the proposed system acceptance by users. It should not be one that negatively affects the general operations of the organization. After conducting interviews with the management, local government officers and other Ministry workers, it was established that, the team is prepared to incorporate the new system, so as to decision making processes.

Local authority members appreciate the importance of a structured approach to Budget control and management. Management at Ministry of local government saw the proposed system as an answer to reaching out to local authority council members in the remote areas easily.

Operational Feasibility Overview

The organization's operations are going to be positively affected. The affected people are willing to work with the new system. From the above findings it can be concluded that the project is Operationally Feasible.

2.4 RISK ANALYSIS

Typically, a project risk analysis consists of analysing schedule and cost risk, though other aspects like the quality of the final product are sometimes included. There will also often be an analysis of the cash flow of the project, especially at the conception and bidding stages. A cost risk analysis consists of looking at the various costs associated with a project, their uncertainties and any risks or opportunities that may affect these costs which Owen and Law (2010) has argued. Risks and opportunities are defined as discrete possible events that will increase and decrease the project costs respectively. They are both characterised by estimates of their probability of occurrence and the magnitude of their impact. The distributions of cost are then added up in a risk analysis to determine the uncertainty in the total cost of the project.

A schedule risk analysis looks at the time required to complete the various tasks associated with e-budget project, and the interrelationship between the tasks. Risks and opportunities are identified for each task and an analysis is performed to determine the total duration of the project and, usually, the durations until specific milestones within the project are achieved. A schedule risk analysis is generally more complex than a cost risk analysis because the logical connections between the tasks have to be modelled in order to determine the critical path.

According to Whiman and Mattord (2017) risk assessment is whereby a look is taken on possible risks to the project development itself, preventative measures to avoid the risk and trying to come up with counter measures for the risks if they do occur. Risk management is very critical because if ignored, and the risks occur, then they can delay the project, increase the project costs, or even cause the project to be abandoned. Therefore there is need to identify the risks, monitor the risks and develop contingent plans and this reduces the impact of the risk.

The following section identifies the serious risks, estimate their likelihood of occurring, assess them, and to come up with ways to avert these risks and to monitor all circumstances that may lead to the risks. This stage involves ascertaining the conditions that can hinder the

smooth completion of the project as a whole and compromise the quality of the final product as well.

The following are the sources of risk that can affect the project:

Unrealistic Estimates / High Cost (Economic / Budgetary Risks)

Developing a knowledge-based system that can approve and disapprove budgets as well as validating budgets and generating reports is somewhat risky because the development cost is high. The whole process of developing knowledge-based systems is tedious and costly though it offers a high level of customization in a specific domain and solves problems in a more human-like fashion. There is a risk that the estimated costs of the project could be well below the actual and thus fueling budget overruns early in the development process. Notwithstanding that the estimates are in United States Dollars (USD). Global financial crisis currently affecting the Euro zone can weaken the dollar hence exert inflationary pressures on the Zimbabwean economy.

Counter Measures:

In light of this, the figures used for the budget estimates have been inflated by 10% of the current costs to mitigate the risk. This is in line with Project Management Book of Knowledge (PMBK), which allows up to 15% inflated figure to avoid cost overruns.

Amount of Heuristics stored in the knowledge base

Another factor that increases the cost and risk associated with the system is the amount heuristics stored in the knowledge base. Expert knowledge is more valuable than facts, yet it is the heuristic type of knowledge that gives real power to the knowledge based systems. Heuristics are nothing but practical rules; hence there is no guarantee of a solution.

Counter Measure:

To make use of ready-to-use generalized software packages. Such an approach saves time because many facilities such as searching, inference reasoning (control knowledge) and so on are available ready-made. One only has to acquire and store the domain knowledge through a user-friendly editor. This leads to comparatively low development cost as time, resources, and errors can be reduced and better flexibility can be achieved.

Changes in Requirements

User and System requirements may change during development life cycle.

Counter Measure:

In order to minimize this risk there shall be frequent expert engineer, user and developer meetings during the course of the project development so that even if the requirements change they can be identified early and precise decision taken.

Project Sponsors' Risk

There could be a risk that the project financier would decide not to fund the project until completion thus there is need to be well prepared for that eventuality.

Counter Measure:

The ministry of local governance will finance the development cost.

Developer Skill Deficiency

The developer of this proposed system is her first time to develop knowledge based system; the quality of the project might be as well compromised. This puts the project at risk of being poorly structured.

Counter Measure:

The development team will engage the services of an expert in Artificial Intelligence and Knowledge-Based Systems who shall be the overall project supervisor. Some training in knowledge based systems and effective use of the internet will also equip the developers with relevant skills.

The other option is to outsource the development task in order to take advantage of quick, cheap customization provided such a resource is available.

Quality Assurance Risks

The Development team will adhere to the International system development standards and final product will conform to International Standards. The best way to ensure that this risk is not realized is to appoint an external Quality Assurance Officer to review the quality of the system, as well as to allow the council workers, local authority officers (users) and field

experts (costing and budgeting accountants) to assess whether the system meet their expectations.

To ensure that the developer has access to the internet to ensure continuous availability of information

Stakeholders identified as lacking confidence should be educated about the developments in the IT industry in Zimbabwe.

Other Risks

Viruses- viruses' frequently attacks machines thereby affecting the system being developed. There is need to install anti-virus software and update the anti-virus definitions.

2.5. STAKEHOLDER ANALYSIS

Stakeholder analysis according to Will and Kilvington (2010) is about recognising the entire stakeholders of the proposed system and the prospects they have so that they would be met by the application. Also known as, interested parties, stakeholders exist as folks that can be influenced or that can cause an effect to the impact of activities. A stakeholder may be an entity, sets, a communal or an organization. Stakeholder sets have persons/folks, which have one mutual concern in a particular project or business. Examples of such sets are non-governmental organizations (NGO), religious heads as well as the entire society. In their eagerness to implement their new techno-driven strategy, the Ministry of Local government through the Council Department has demanded a very tight schedule of five months. This could result in undesired pressure on part of the developer making her produce a sub-standard product as she could end-up not implementing all the desired functionalities in her effort to meet the deadline. To avoid this risk, the developer should at all the time remain focused on the work at hand.

Table 2.2 Stake Holder

| stakeholder | expectations | Priority | Solutions |
|-----------------|---|----------|---|
| Developer | Implement e-budget application within the time in the work plan | High | Work according to timeline |
| local authority | Ability to plan and budget accordingly without necessarily over spending or under estimating. | High | Development of application to be executed according to requirements |

2.6 WORK PLAN

Work plan is a formal, approved document used to guide both project execution and project control. The primary uses of the project work plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines. A project work plan may be summarized or detailed. Sutton, (2006).

Table 2.3 Project Work Plan

| Phase | Start date | End date | Duration (Weeks) |
|----------------|------------|------------|------------------|
| Introduction | 5-04-2018 | 12-04-2018 | 1 |
| Planning | 12-04-2018 | 19-04-2018 | 1 |
| Analysis | 19-04-2018 | 02-05-2018 | 2 |
| Design | 02-05-2018 | 09-05-2018 | 2 |
| Implementation | 09-05-2018 | 18-05-2018 | 1 |
| Maintenance | 18-05-2018 | On going | 1++ |
| Training | 18-05-2018 | 25-05-2018 | 3 |
| Documentation | 05-06-2018 | On going | 1++ |

2.6.2 Gantt chart

| ACTIVITY/PERIOD | week 1 | week 2 | week 3 | week 4 | week 5 | week 6 | week 7 | week 8 | week 9 | week1 0 |
|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Problem definition | ■ | | | | | | | | | |
| Planning | | ■ | | | | | | | | |
| Analysis | | | ■ | ■ | | | | | | |
| Design | | | | | ■ | ■ | | | | |
| Implementation | | | | | | | ■ | | | |
| Maintenance | | | | | | | | ■ | ■ | ■ |
| Training | | | | | | | | ■ | ■ | ■ |
| Documentation | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

Figure 2.0:1:Gantt chart

2.6.2 ACTIVITY NETWORK DIAGRAM

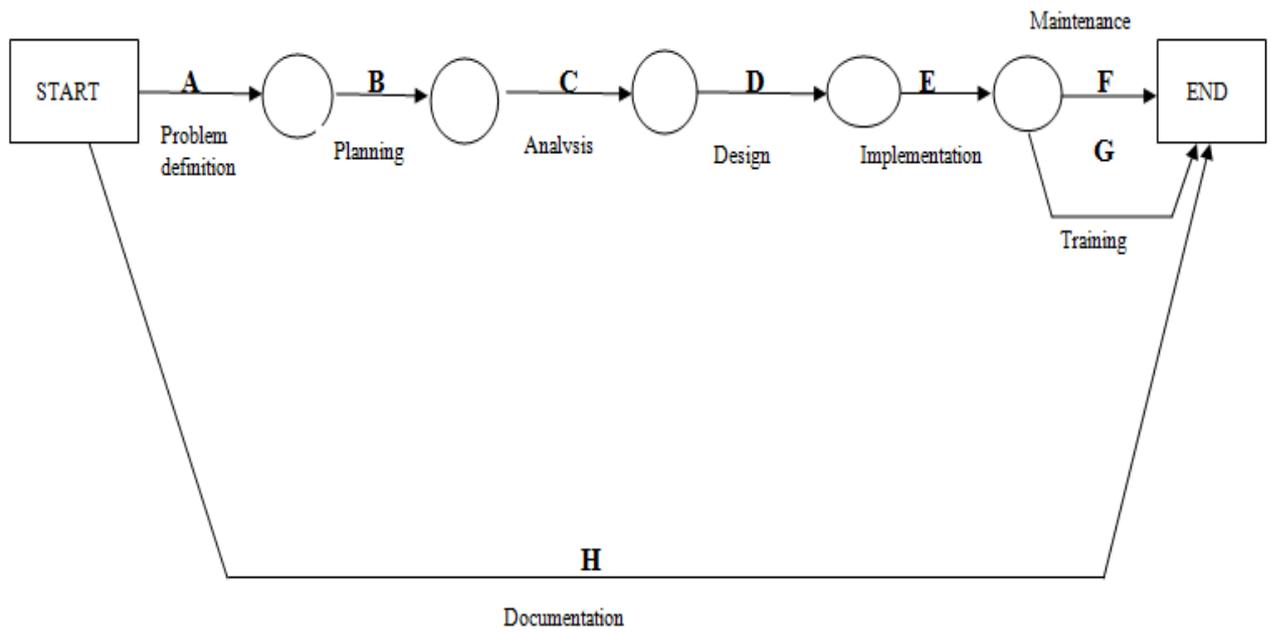


Figure 2.2: Activity Network Diagram



Table 2.4 List of Activities

| Task | Event no | Duration |
|-----------------------------|-----------------|-----------------|
| A-Problem definition | 1 | 7days |
| B-Planning | 2 | 7days |
| C-Analysis | 3 | 14days |
| D-Design | 4 | 14days |
| E-Implementation | 5 | 7days |
| F-Maintenance | 6 | 7days++ |
| G-Training | 7 | 21days |
| H-documentation | 8 | 7days++ |

2.7 CONCLUSION

The planning phase has shown how the project is going to be worked out highlighting the time frames and the risks involved. The process of feasibility resulted in a favorable outcome. The system development team can continue with their work plan since it has been shown that the requirements are going to be met and all constraints have been budgeted for and all the risks associated and the plans to mitigate them taken into consideration. Therefore the development team can now move on to the next phase where analysis of the current system is done and evaluation of different alternatives to come up with the best solution and solve the problems being faced by the local authorities in carrying out their budgeting and budget management processes.

CHAPTER 3: ANALYSIS PHASE

3.1 INTRODUCTION

The phase consists of examining the system at hand, which involves the examination of its context diagram, activity diagram and data flow diagram. Information gathering techniques, weaknesses associated with the existing system, evaluation of alternatives as well as requirement analysis are part of the analysis phase and are essential in coming up of a decision on whether to continue with the current technology or improve through the development of a new system.

3.2 INFORMATION GATHERING METHODOLOGIES

Information gathering methodologies are the techniques used to collect the essential data required for the effective and efficient development of any project Kumar (2014). Interviews, questionnaires and observation were the techniques used for information gathering, which enabled the development team to comprehend the user requirements as well as the shortcomings of the existing system

3.2.1 INTERVIEWS

Interviews consists of an interviewer/s and interviewee/s who are responsible for asking relevant data extracting questions and answering of the asked questions respectively Manual (2012). An interview is a full duplex or two-way type of communication with one or more persons being interviewer/s and the other/s being interviewee/s. The total number of stakeholders which where intervened was 35 pupils, and through the use of semi-structured interview, the project team where able to come up with a comprehensive document which encompasses of the user requirements and their expectations on the functionality of the new system. All the interview scheduling was done by the human resource office. The merits and demerits of this gathering technique included

Advantages

- Face to face discussion, which allowed the interviewers to understand non-verbal communication.
- The interviewers were able to adapt to the language which were well understood and comfortable with the interviewees who resulted in effective communication and collection of a lot of data.

- Questions which were considered unclear by the interviewees were further elaborated
- Fast decision making due to instant feedback which is associated with the interviews exercise.

Disadvantages

- Some of the interviewees stated that questions were probed in a biased way to satisfy the expectations and needs of the interviewers.
- Some interviewees did not take the exercise seriously and decided not to come to the interviews which might have resulted in missing some essential ideas.
- The results statistics proved that majority of the stakeholders were opting for the development of a new system because the existing traditional system is considered as monotonous and not user friendly. The questions used in interviews are attached on the appendices

3.2.2 QUESTIONNAIRES

A research technique that consists of a series of questions and other prompts for gathering information is known as a questionnaire Manual (2012). Open ended questions where the respondents formulated their answers and closed ended questions where the responded chose an answer from the given options, were used. 5000 questionnaires were distributed to the entire district and the analysis indicated that 97% of the circulated questionnaires were responded to whilst 2.5% were ignored and 5% where spoiled. Pros and cons of using questionnaires as a data gathering technique were:

Merits

- 97% of the circulated questionnaires were responded to, and it was considered as a good response rate.
- Despondences answered the questions on their free time so there were no disturbances on the daily activities.
- Questionnaire exercise was cheap as compared with the interviews where food and refreshments were bought for the interviewers and interviewees.
- Scalability :- questionnaire has enable researchers to reach a large number of users, through the use of internet by sending an email to each matter questionnaire by email and brings timely results

Demerits

- 2% of the circulated questionnaires were not given attention because some of the stakeholders did not take the exercise seriously.
- Some respondents did not complete all the questions that resulted in collecting incomplete information.
- Inability to read

Fact and findings

The use of questionnaires as a method of gathering information indicated that many stakeholders were not happy with the current operations and they are ready and in support of a change that would improve their productivity and job satisfaction. The appendices also consist of the questionnaires which were used during the research.

3.2.3 OBSERVATIONS

Observation involves of noticing and watching a variety of stakeholders as they do their daily activities using the existing traditional system Kumar (2014).The main purpose of using observations as a data gathering methodology was to get first-hand information from the source without alterations. A new group which was different from the interviewers and questionnaire distributors was assigned to observe stakeholders as they conduct their daily activities.

Advantages

- Unbiased data were collected which resulted in the unbiased conclusion of how the stakeholders interact with the current system as well as how they feel about the existing system
- No intrusions with the day to day activities of stakeholders.
- The observers group was totally different from the interviewers group and the questionnaires distributors group, so most of the stakeholders did not suspect that they were being observed.

Disadvantages

- Some of the events were not observable
- The stakeholders who noticed that they were being observed changed their behaviour.

- A lot of employees complained of fatigues, and it was noticed that some of the employees ended up having burn out syndromes due to the stress imposed by the use of the current system.

3.3 ANALYSIS OF EXISTING SYSTEM

The councillors and rate payers' representatives conduct a meeting with the purpose of contributing budgeting details. When the budgeting details are written down, they are submitted to the financial team which takes the proposed budget details to the mayor for advice. After consulting the mayor, the accountants clerk and the financial team draft the budget, print and submit it to the chief accountant for approval. After the approval the finance director is then responsible for sending the budget to the ministry of local government. The ministry then approves the budget, and the councillors and rate payers are then given the final results of the proposed budget.

Inputs

Inputs are data that needs to be processed to produce the desired output Tomsho (2016).

Inputs required for budget creation are:

- Budget sheet
- Workers' salaries
- Maintenance requirements and the relative costs

Processes

The actions that converts the inputs into desired outputs is known as the processes Rosenblatt and Tilley (2016) and these included

- Budget formulation
- Mayor consultation
- Drafting of a final budget
- Approval of the budget
- Sending the budget to the Ministry
- Await final approval from the Ministry

Output

The final results that are produced after the inputs are processed are referred to as outputs Rosenblatt (2014). The outputs for the budgeting system are

- Chief accountant approval results which is a pass or fail
- Ministry approval results
- Final budget

3.4 PROCESS ANALYSIS

Process analysis focuses on describing how the system at hand operates Dennis, Wixom and Roth (2015); in this case the process analysis was done using the activity diagram.

Current System Activity Diagram

Dynamic features of the system are described using the UML activity diagram, which is defined by Dennis, Wixom and Roth (2015) as a flow chat that interlinks one activity to another. The relationship between the activities makes it easier for the system users, researchers and other stakeholders to comprehend how the current system works and its features.

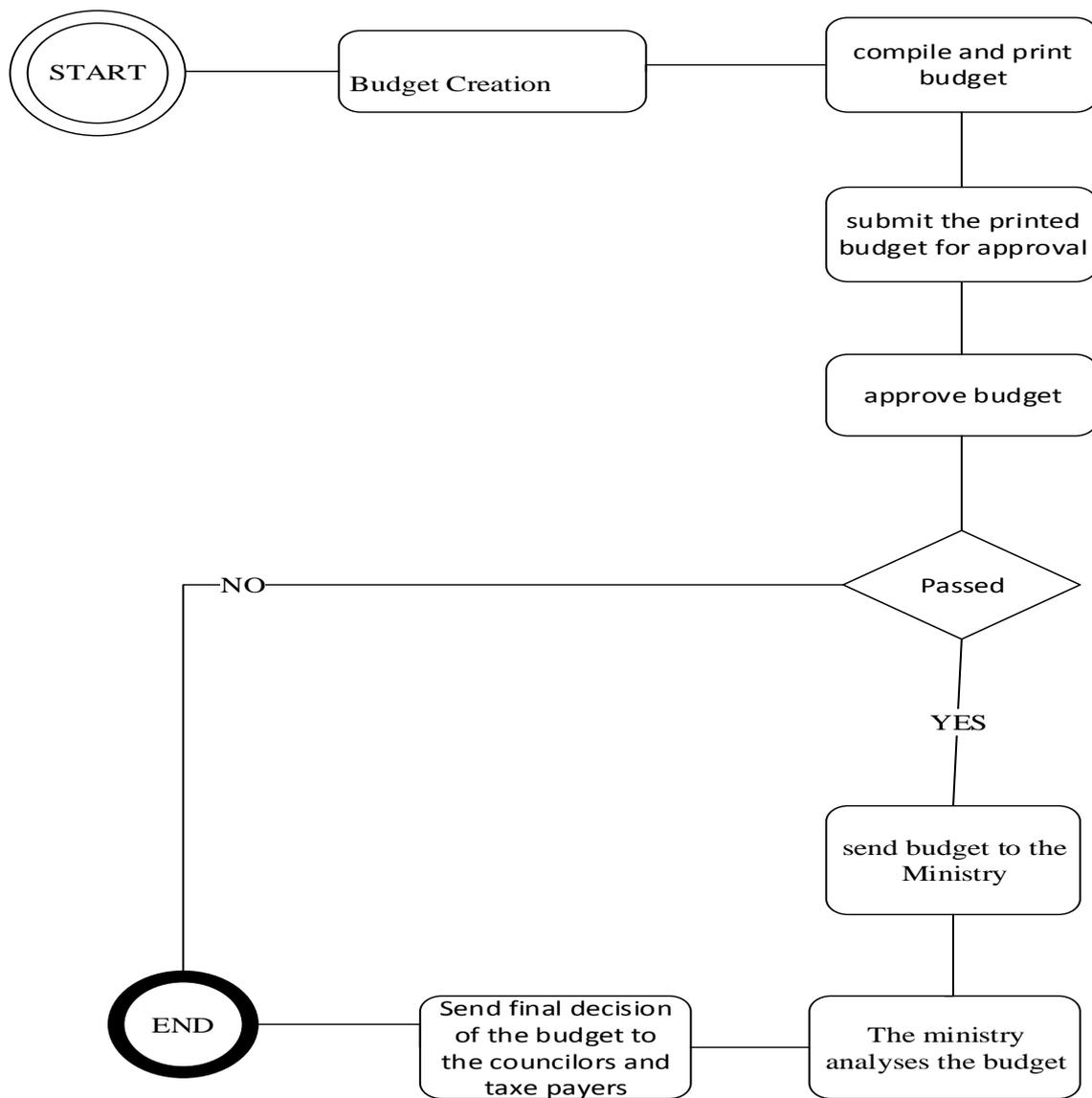


Figure3.1: Activity Diagram

3.5 DATA ANALYSIS

Data analysis is defined by Rosenblatt (2014, p34) as the “practice of data evaluation using analytical and logical reasoning to observe each component of provided data”. Data is gathered from various sources, analysed and evaluated to produce an understandable explanation of how the system at hand operates. Context diagram and DFD are the two techniques which were used for data analysis. The following context diagram is for the current system, which will be followed by the DFD of the current system.

Context Diagram

Context diagram is also known as a level 0 data flow diagram. Kendall and Kendall (2014) defined a system context diagram as the boundary between the system, or part of a system, and its environment, showing the entities that interact with it.

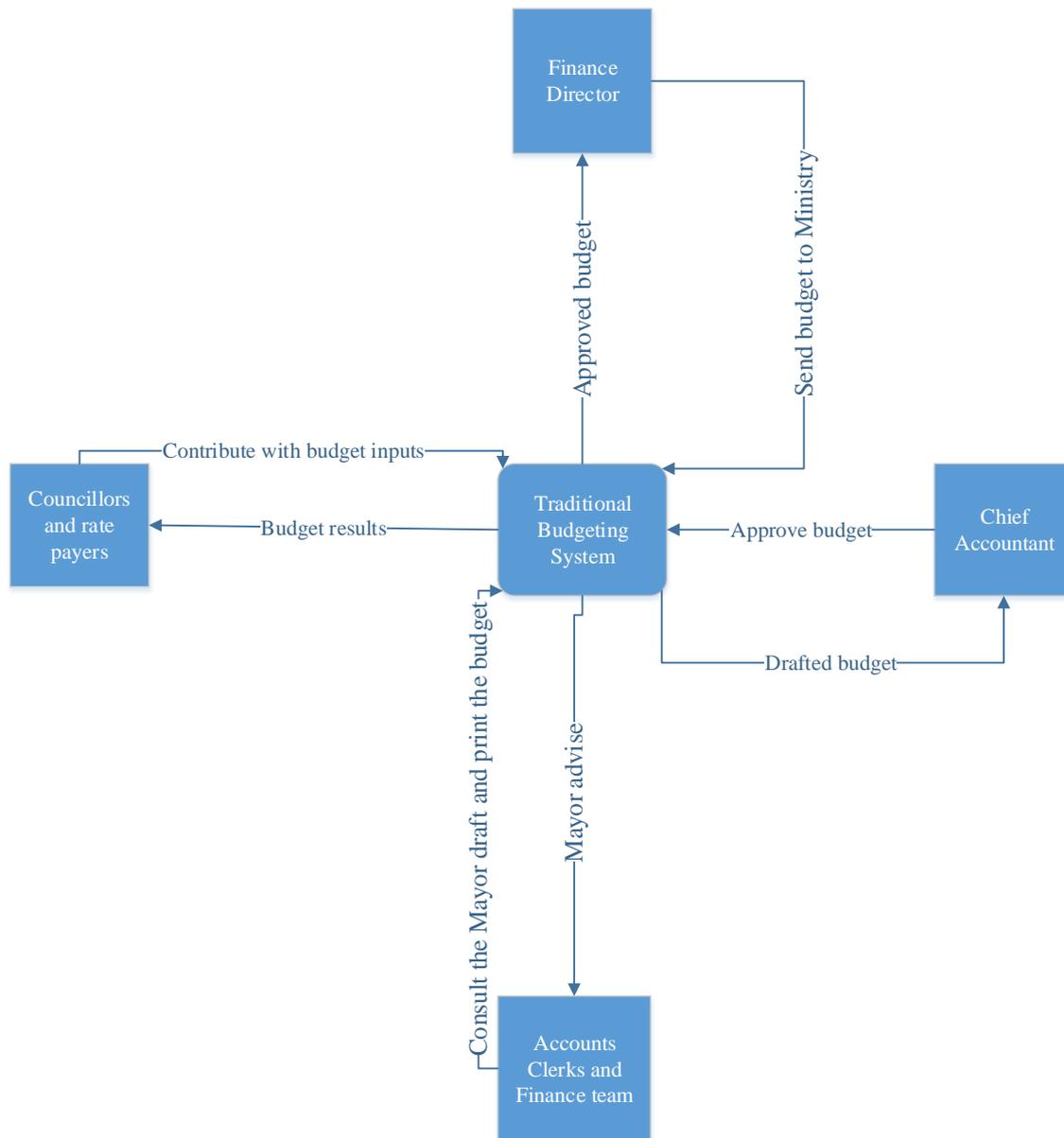


Figure3.2 Context Diagram

Key



Data Flow Diagram

DFD shows the relationship between entities, data flows, processes and data stores (Rosenblatt and Tilley, 2016). The following DFD was drafted after a comprehensive

analysis of the current system by the project team, so the following DFD illustrates how data flows from one entity to another as well as one process to another.

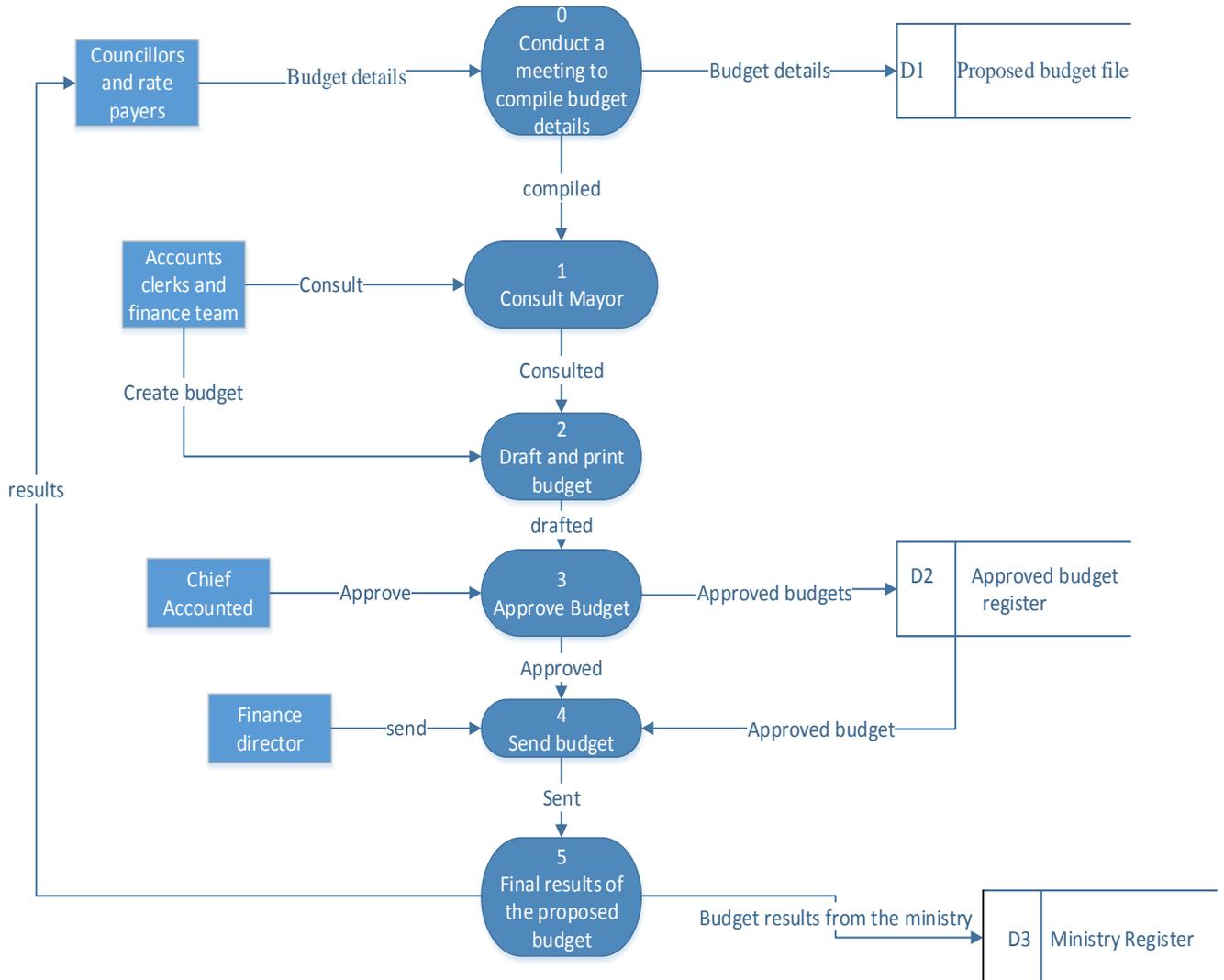


Figure 3.3: Dataflow Diagram

Key



3.6 WEAKNESSES OF CURRENT SYSTEM

- Data capturing, access and retrieval is currently done using the manual process which is monotonous and mainly associated with human error.
- There is a lot of paperwork and printing job so a bulk of printing stationery such as cartridges and bond papers is required as well as filing files, so the budget for stationery and other essentials is high.
- The files which contains all budget information is subject to some natural disasters such as fire and water flooding, leading to unrecoverable of the data since there are no other backup mechanisms.
- Lacks data integrity since there is poor security. Once the intruder gets access to the filing room s/he is able to access all the budget data thereby compromising confidentiality and integrity.
- The councillors and rate payers' representatives have to travel for meetings when they are contributing the required input for budgeting, because they cannot do it in the comfort of their homes when using the current system.
- If the budget approving authorities are not available, the budgeting process has to wait since there is no technology that supports remote authorisation or approval.

3.7 EVALUATE ALTERNATIVES

Evaluation of alternatives focuses on evaluating the available alternatives and choosing the best alternative that will bring the new system to life and these alternatives include outsourcing (the development and implementation of the new system is assigned to an external reputable organisation such as Allied Systems and Expert Systems), development (Internal I.T department does the development and implementation of the new system) and improvement of the current system (which is also known as the defector sourcing where the existing system is altered to meet the new user requirements).Dennis, Wixom and Roth (2015). Before choosing the appropriate alternative there is need to analyse and evaluate and then choose the best alternative among the available.

3.7.1 OUTSOURCE

The company gives a tender to a reputable organisation for the development of the new system as well as the implementation and maintenance of the system Balta and Phillips (2015). The researchers came up with the merits and demerits related with outsourcing as an alternative for the delivery of the new system.

Advantages

- An external organisation have the reputation to build as well as maintaining, and it also focuses on acquiring customer loyalty through provision of the high quality products and services, so analysis disclosed that there is a high probability of obtaining a high quality system from the recommended external firms such as Allied Systems, Fintech and ConTech Holdings since they have sufficient knowledge and capability required for the development and implementation of the proposed system.
- The organisation will not incur developmental costs since the contracted company uses its resources for the development of the new system.

Disadvantages

- The external organisation charged \$26 000 for the development of the new system, which is more costly as equated to internal development cost of \$10 000. The difference of \$16 000 can be used for the development of other projects.
- All the reputable external development organisations want half of the quoted amount prior to development of the new system. The finance department stated that the amount is exhausting since they currently doing other projects which requires funding such as EIS (Executive Information System) and GIS (Geometric Information System
- The source code of the new system remains with the externally contracted organisation.
- Experienced ethical hackers and system analysts need to be hired to ensure maximum security of the new system through identification of vulnerabilities.
- Outsourcing is costly and the source code remains with the developing company so the developing company will act as the consultancy if the new system encounters any problems.
- When system upgrades are required the external organisation has to be contracted again and get paid for the upgrades. It was concluded that outsourcing is not the best alternative when we have employees with required technical skills.

3.7.2 IMPROVEMENT

Improvement involves making changes to the existing system so that it meets new user specifications which were mentioned in chapter 1 under objectives (Koumpis, 2012). Improving the system at hand is considered impossible because it is a manual system with no

technological features, so the stated user requirements will not be met. Development of the e-budget is essential if the objectives are to be met. Computerisation of all the processes involved in the current system is required for improved convenience. Trying to upgrade the existing system will only leave the identified problems unsolved.

3.7.3 IN-HOUSE DEVELOPMENT

Internal I.T department does the development of the new system using the internal and hired resources (if necessary) Gandlin (2014). Merits and Demerits of in-house development as an alternative were outlined below after an analysis the team members.

Advantages

- The source code will belong and remain with the company, which gives it the rights to modify, troubleshoot and upgrade the system anytime.
- Development cost is cheaper (\$10 000) as compared to outsourcing (\$26 000), which gives a variance of \$16 000 that can be used for other profitable projects or activities.
- Improved experience by the internal developers as well as improved job satisfaction. Internal development will equip the employees with the developmental expertise, problem solving techniques as well as teamwork abilities.
- Delivery of a high quality product since the employees will be focusing on proving excellent capabilities to the employer, and the need to be highly appraised.

Disadvantages

- The cost of hiring external system analysts and ethical hackers is not eliminated since these are needed to ensure maximum system security, since they will be able to notice some vulnerability which might have been missed by the internal team.
- In-house development was considered the best alternatives since its benefits outweigh the improvement alternative and outsourcing alternative. Developing is cheaper as compared to outsourcing. The source code will belong to the organisation making it easier for the organisation to do upgrades and trouble shootings if they face any challenge. All team members and management agreed on in-house development as the best alternative.

3.8 REQUIREMENTS ANALYSIS

Requirement analysis focuses on identifying the functional and non-functional requirements that will solve the problems associated with the system at hand. It also helps the researchers to classify the identified user requirements or specifications into functional and non-functional.

3.8.1 FUNCTIONAL REQUIREMENTS

Kendall and Kendall (2014) stated that functional requirements designate behavioural or function for instance add customer or print invoice, so functional requirements mainly specify the operations of the new system that is what the new system is supposed to be doing.

- Online budget approval
- User authentication on login
- Concurrency access of the system
- Upload and receive budget information and results electronically.

Case diagram

Msdn.microsoft.com defined case diagram as the technique that, defines the interactions between a role (known in the UML as an actor) and a system, to achieve a goal. A human being or any external system is considered as the actor. Case diagram graphically illustrates the association among different elements of a system, so it is also considered as a method that is responsible for identifying, clarifying as well as organising system requirements. The following diagram illustrates how various elements of the e-budgeting system interact.

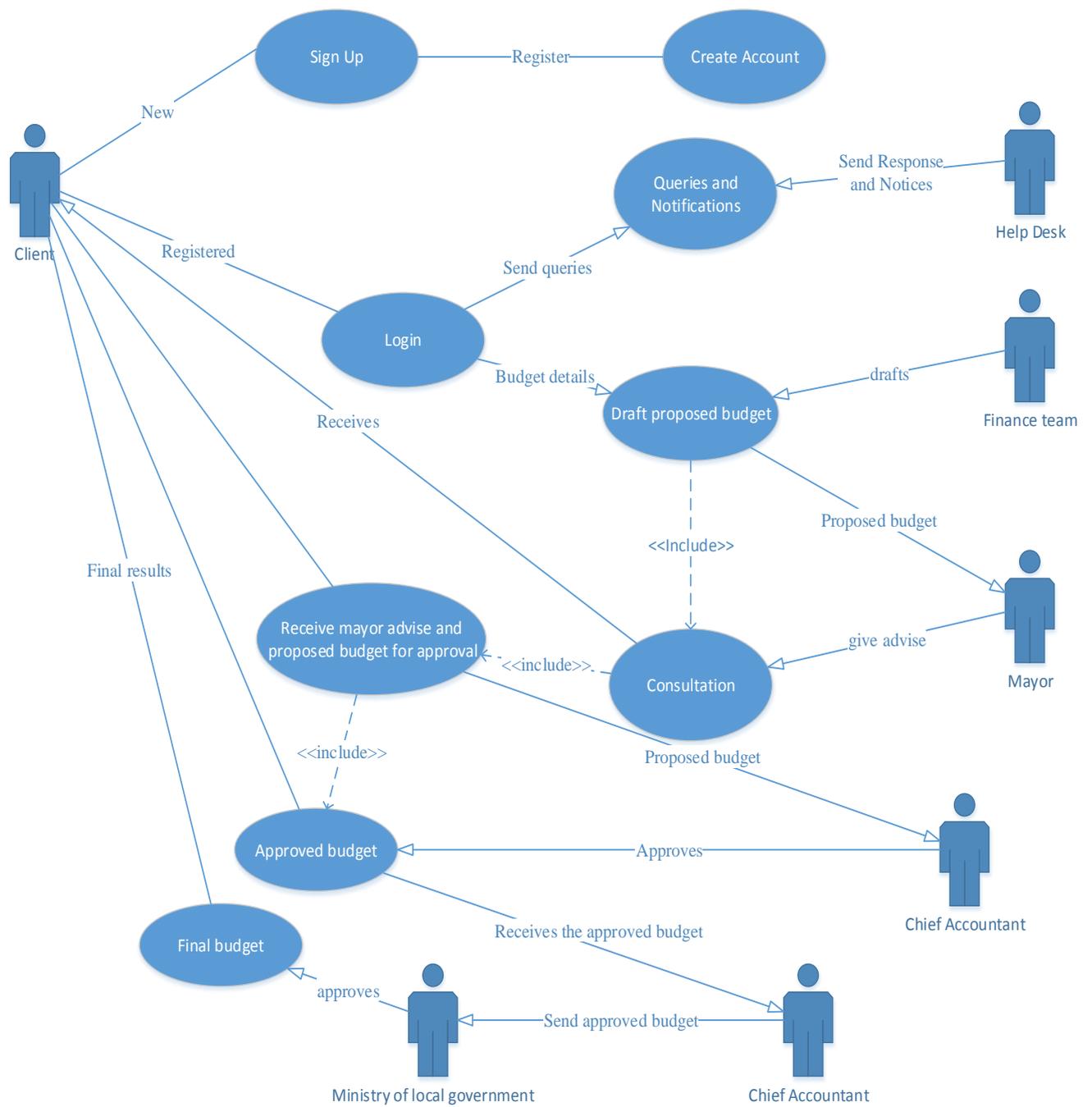


Figure 3.4 Use Case Diagram

Key

| | |
|--|----------|
| | process |
| | dataflow |

Figure3.5 Key case Diagram

Case diagrams.

The above case diagram has six actors, which we are going to use so as to help one visualise the different types of role as well as demonstrating how those roles interact with the system. The client is an actor who signs up in order to register an account, after registration is complete the client entity will be to log into the account, thereby he or she will be able to interact with an entity called help desk thus if they are any queries that needs attention. The actor finance team will upload the proposed budget, which will be further seen by the entity the mayor, and this entity will offer advice pertaining the proposed budget while the actor client will be able to view the proposed budget thus for clarity. Now basing on the proposed budget and the mayor's advice the entity chief accountant will approve or decline the budget proposal. After, the budget is approved the actor chief accountant, will then forward it to the entity ministry of local government and the local government will the forward to the actor client.

3.8.2 NON-FUNCTIONAL REQUIREMENTS

Non-functional requirements pin point the standards which are utilised to evaluate the system operational behaviour rather than the system actual functions (Rosenblatt, 2014), so non-functional requirements mainly focus on the quality characteristics that support the functionality of the system.

- The system must be easy to maintain
- The response time must be within expected range.
- The system must be usable, that is user-friendly
- System security must be ensured, so as to maintain data integrity, confidentiality and privacy.
- The system must be compatible meaning it must be operational in all environments and different operating systems.
- Extendable, the new system must be modifiable if any upgrades arise.
- The new system must also be reliable, always available and strong.

3.9 CONCLUSION

The phase mainly focuses on the operations of the current system, methodologies used to gather data about the existing system and the weaknesses associated with it. Choosing an alternative was done through alternative evaluation exercise to come up with the best alternative among the listed. The upcoming chapter will mainly focus on designing the e-budget.

CHAPTER 4: DESIGN PHASE

4.1 INTRODUCTION

Drawing of the user requirements identified during information gathering into architecture is done on design phase Dennis, Wixom and Roth (2015). This chapter looks at various designs which ranges from the system, architectural, database, interface and program design phase put attention on how the drafted requirements are to be implemented using various techniques, such as tables and EER diagram for database design.

4.2 SYSTEM DESIGN

System design as defined by Kendal and Kendal (2014) it is said to be the way of giving definitions to various modules, interaction and system data which satisfy the system necessities.

The interaction between co-ordination entities as well as the illustration of data flows within the new system is achieved through system design, using context diagram and DFD. An excellent system design must be easy to maintain, usable, reliable and portable.

Reliability

Reliability is the important feature in the system, which emphasizes quick delivery of the system and the avoidance of data loss in any ways. If data is lost there should be a quick and reliable method to recover that data. All problems which were faced in the current system must be addressed so that reliability may be ensured.

Effectiveness

This ensures that the system should be error free, and has to be so efficient so that it won't disturb the ongoing process of work. Effectiveness may be ensured when the system users included in the development process so that they specify their requirements. So this means user requirement is important thing in the development of this proposed system.

Efficient

For a system to become efficient it is supposed to meet all targets set in the proposed time frame and fulfils all user requirements. Time is any important factor in the organization so the proposed system should address.

Security

Security is the major important factor in any organization so the proposed system must be able to ensure security to all information of the bank. For the proposed system to ensure security it is supposed to use access level and authentication user names and passwords, so that no one will trespass the information.

Maintainability

Since technology is changing and advancing every day the system must be flexible to cater for those changes in the prevailing environment. The programmer must take note of this so that good software might deliver.

4.2.1 CONTEXT DIAGRAM

Context diagram makes an expression of the system under study as sole top glassy process; this diagram also reveals the association among the inner and outside entities with the in cooperation of other systems, individuals or groups, outside data marts. This diagram gives a picture of how system interrelates with the system users, so the system is at the centre and surrounded with its entities. The following diagram is a context diagram for e-budget.

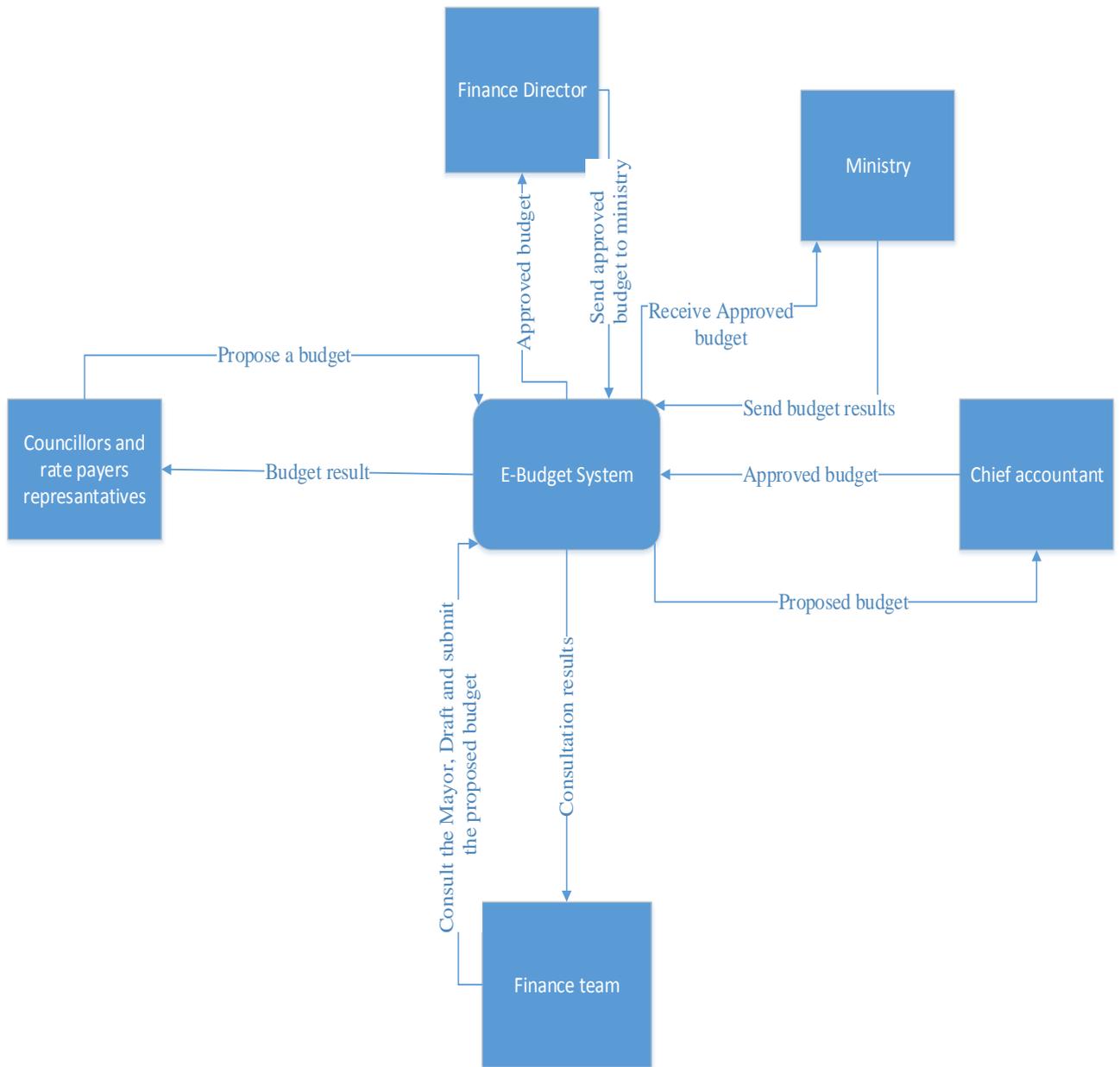


Figure4.1 Context Diagram

Key



4.2.2 DATA FLOW DIAGRAM

Data flow diagram represents the flow of information in the system. this diagram represents four different components which are data stores, entities, data flows and processes which

depicts on how the data flows which makes it easier to see how information flows within the system (Kendall and Kendall 2014). This diagram is composed of entities, data flows, processes as well as the data stores. E-budget DFD is drawn below.

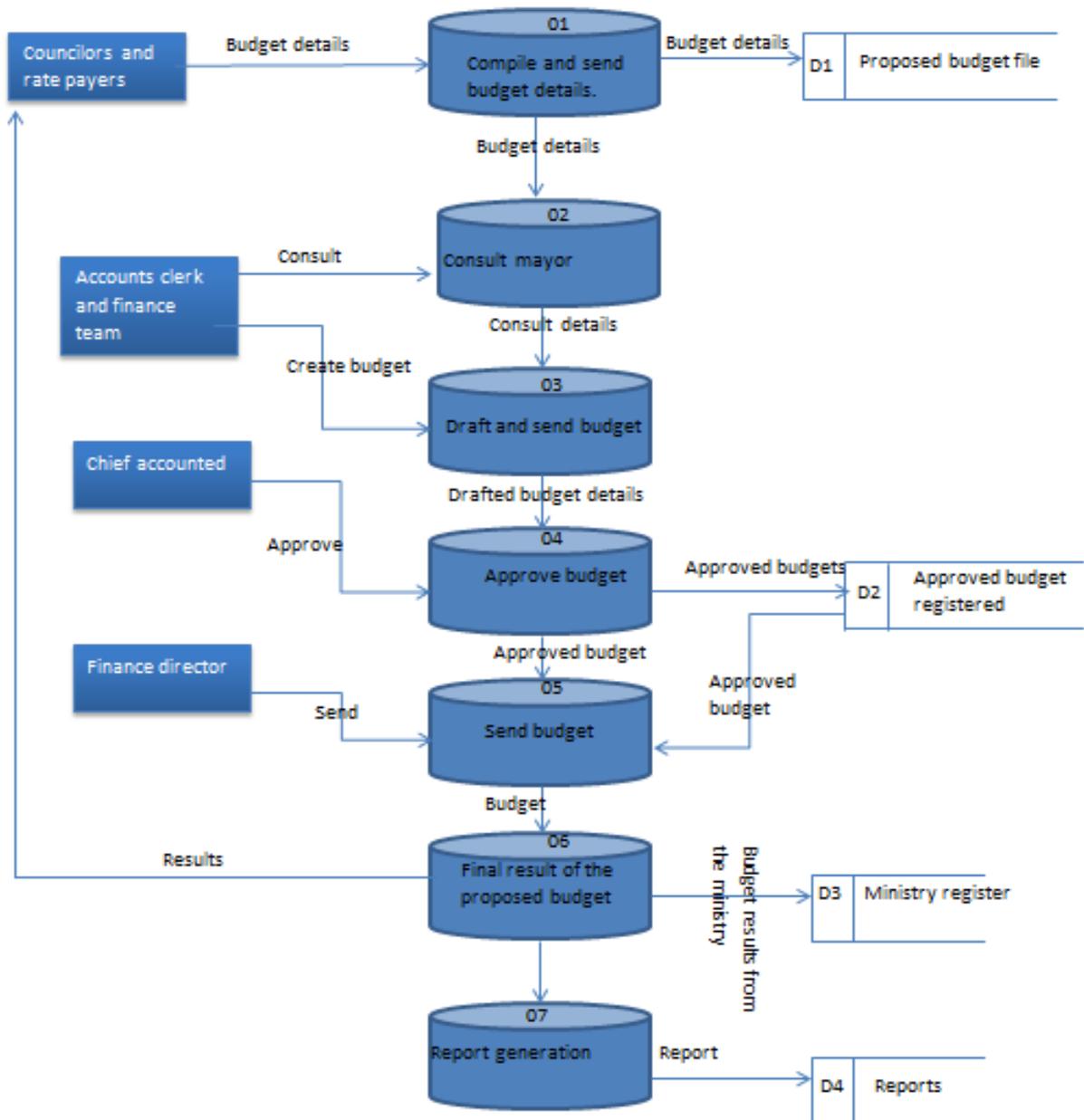


Figure4.2: Dataflow Diagram

Key



DFD and Context diagram helps the stakeholders to understand data movement within the new system and there is no technical expertise required for users to understand the operation of the system.

4.3 ARCHITECTURAL DESIGN

Architectural design gives a pictorial representation of how the resources such as software, hardware and network resources interact when operating in live environment. What is represented in the diagram below was depicted by the researcher after the identification of all the components in need of the proposed system and how they are related.

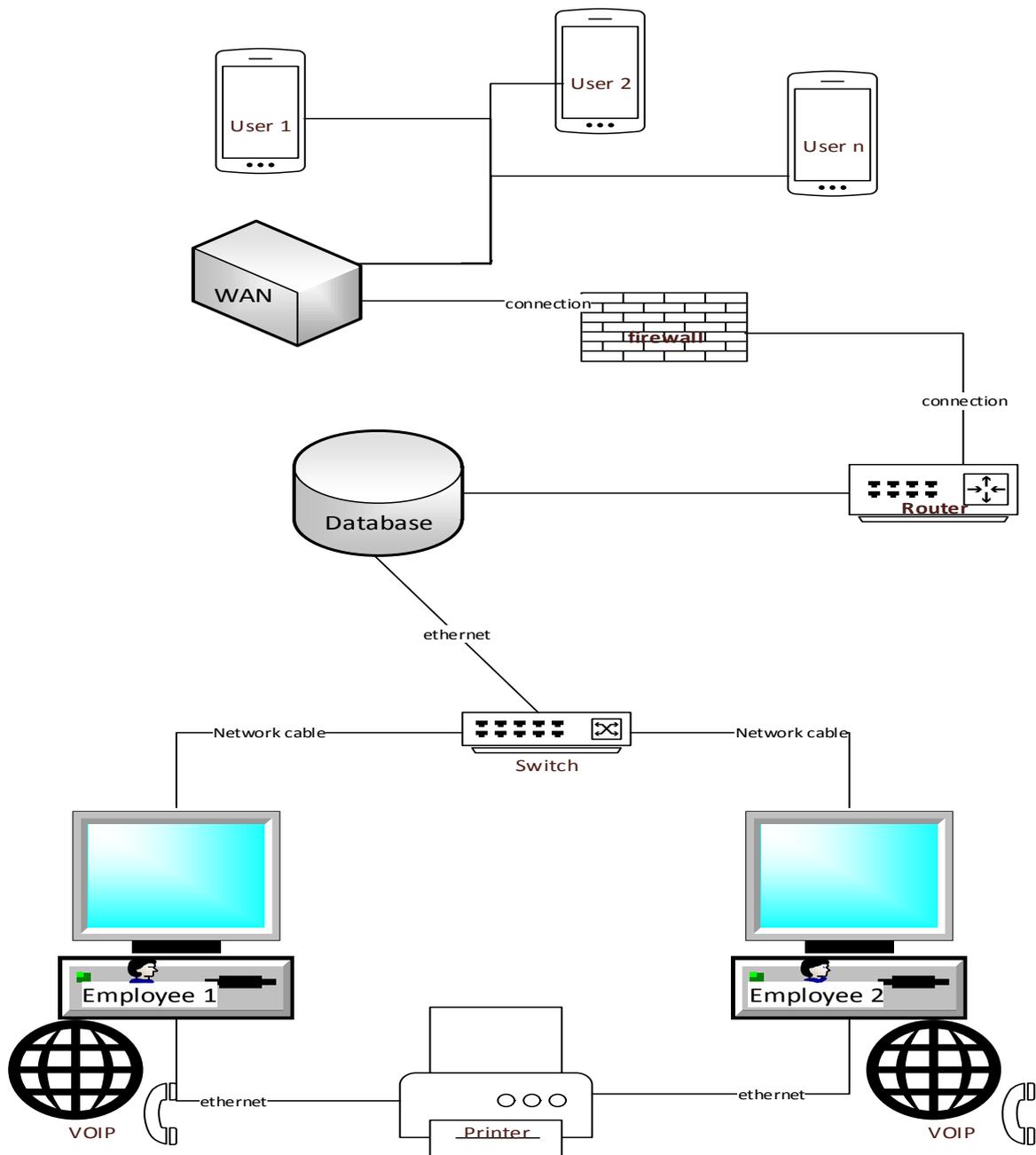


Figure4.3 Architectural design

4.3.1 THE CLIENT SERVER APPROACH

In the new system the client server approach was utilised, which means the stakeholders which are the clients or end users of the system for them to operate or access a resource over the network they use client server method. The client server machine centralise the data which may reduce database anomaly like redundancy on data which is mostly in association with the distribution method

4.4 PHYSICAL DESIGN

Physical design by definition it refers to a system of altering a rational model making it actual or physical practical exemplary with the ability of displaying components layout which are proposed users, hardware and software to be utilised in the proposed system Rosenblatt (2014). The relationship between the various system components is overly generalised by the physical design.

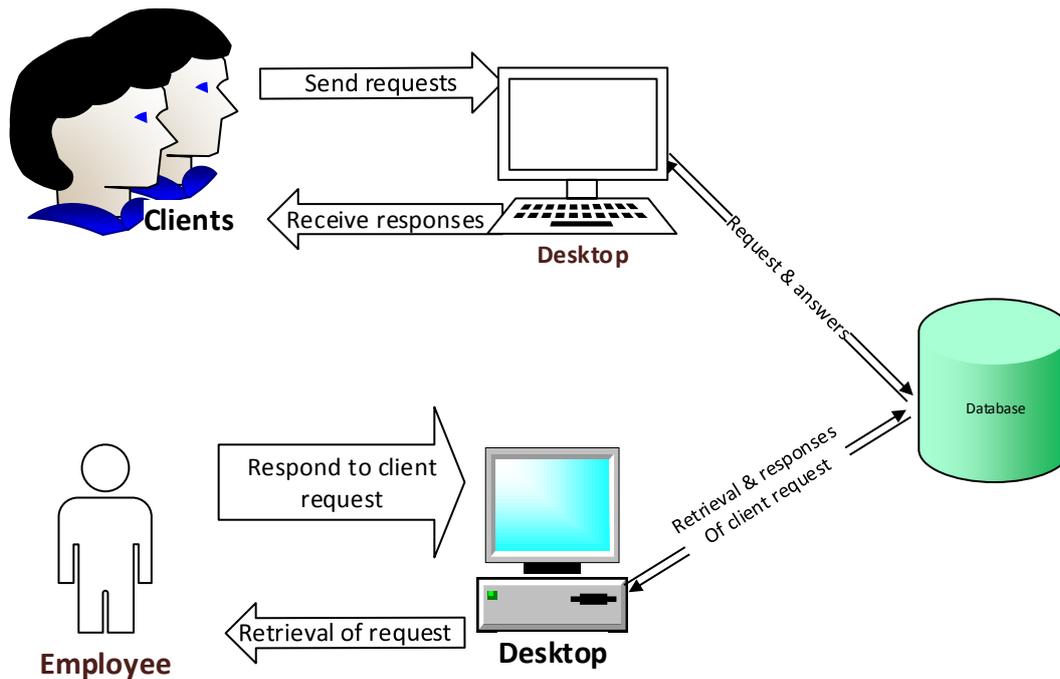


Figure4.4 Physical Design

4.5 DATABASE DESIGN

Database design can be defined as a way of generating a model of data which is understandable. The data model must include obligatory physical and coherent storage limits, which are required in the generation of a comprehensive database.

Table 4.1 Users

| Details | Datatype | Description |
|----------------|-----------------|--------------------------|
| Id | (intpk) | Primary key |
| Username | Varchar(30) | Username |
| Password | Varchar(10) | Private password |
| Municipality | Varchar (30) | Name of the municipality |
| Mobile | Varchar(14) | Mobile number |
| Email | Varchar(30) | Email address |
| Access level | Varchar (10) | User's access level |
| User | Varchar (30) | Name of the user |
| Message | Varchar(255) | Text message |

Table 4.2 Loggers

| Details | Datatype | Description |
|----------------|-----------------|--------------------------|
| Id | Int | Primary key |
| User | Varchar (30) | User details |
| Municipality | Varchar (30) | Name of the municipality |
| Time in | Date timestamp | Time signed in |
| Time out | Date timestamp | Time signed out |

Table 4.3 Charts

| Details | Datatype | Description |
|----------------|-----------------|--------------------|
| Id | Int | Primary key |
| Sender | Varchar (30) | Sender details |
| Receiver | Varchar (30) | Receiver details |
| Message | Varchar (255) | The actual message |
| Status | Int | The chat status |

Table 4.4 Budget

| Details | Datatype | Description |
|----------------|-----------------|--------------------------|
| Id | Int | Unique identifier |
| Sender | Varchar(30) | Sender details |
| Mobile | Varchar(14) | Contact number |
| Email | Varchar(30) | Email address |
| Municipality | Varchar(30) | Name of the municipality |
| Budget | Varchar(30) | The budget details |

Table 5 Department

| The details | D type | Descriptions |
|--------------------|---------------|---------------------|
| Names | Varchar (50) | Deptname |
| Area | Varchar (50) | Department area |

Table 4.6 Queries

| The details | D type | Descriptions |
|-------------------------|---------------|---------------------|
| Queries | txt | User query |
| dates | Dates | Query date |
| Identification of query | Var char(10) | Primary key |
| Employee id | Var char (15) | Emp id |
| Replies | Txt | Query reply |

Table 4.7 Notices

| Notice details | D type | descriptions |
|-----------------------|---------------|-----------------------|
| Name | Txt | Query of client |
| Date | Date | Query date |
| Employee id | Var char (15) | Emp's |
| Folder | PDF file | File with information |

4.5.2 ENHANCED ENTITY RELATIONSHIP DIAGRAM

Enhanced Entity Relationship Diagram can be referred to as a demonstrative diagram which have the responsibility of giving an explanation of various system entities and also shows the

different constraints related with the entity relationship diagram which includes subtype discriminator, completeness and disjoint.

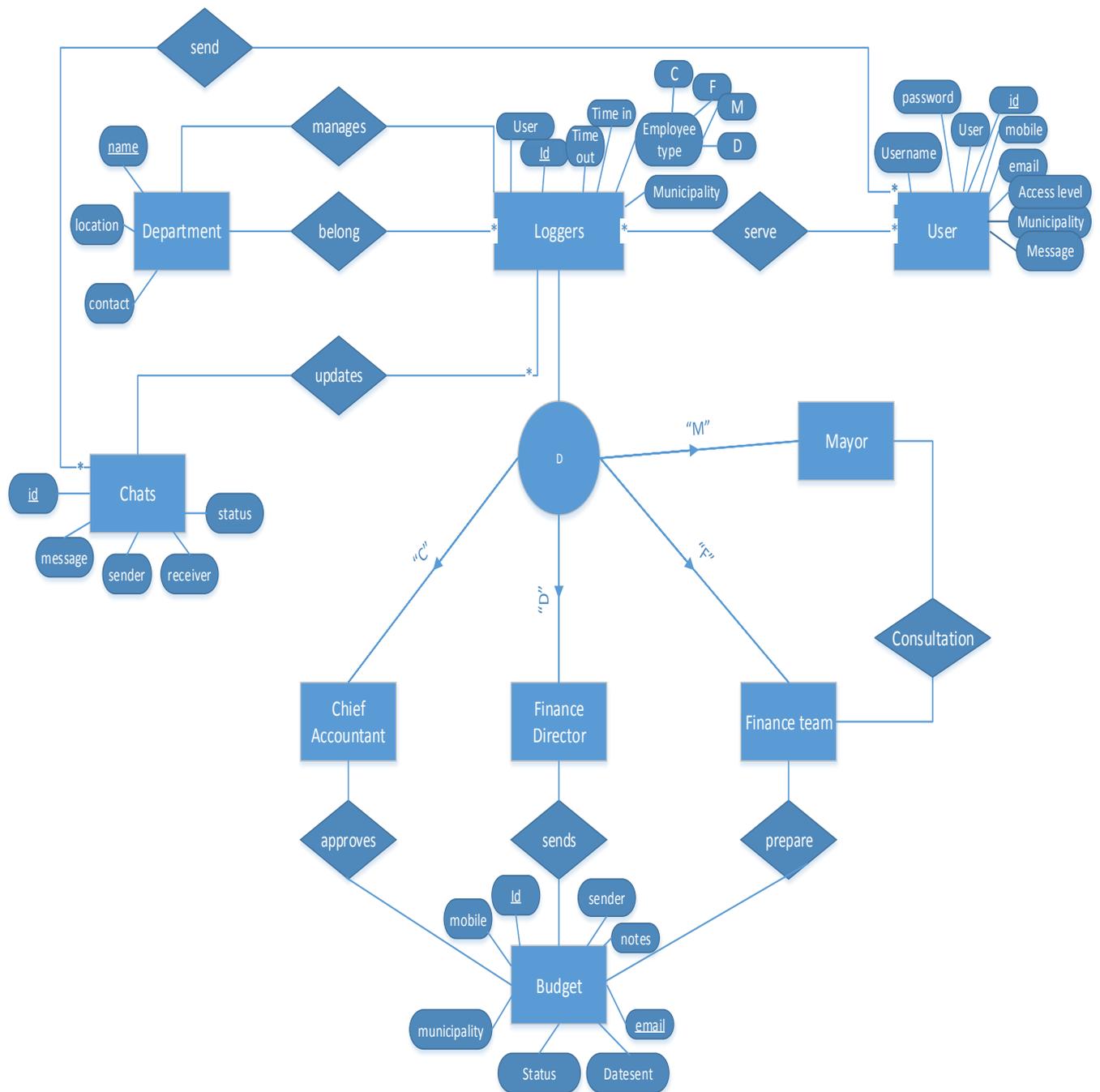


Figure4.5 EER Diagram

4.6 PROGRAM DESIGN

This is the way which is accomplished by designing illustrations like class, package, and sequence diagram. Dennis, Wixom and Roth, (2015) the listed diagrams are created using the Unified Modelling Diagram (UML)

4.6.1 CLASS DIAGRAM

This diagram provides an abstract of parts within the proposed system, and also the connections and cardinality which exists between the components of the proposed system. The accompanying diagram shows the E-Budget class chart.

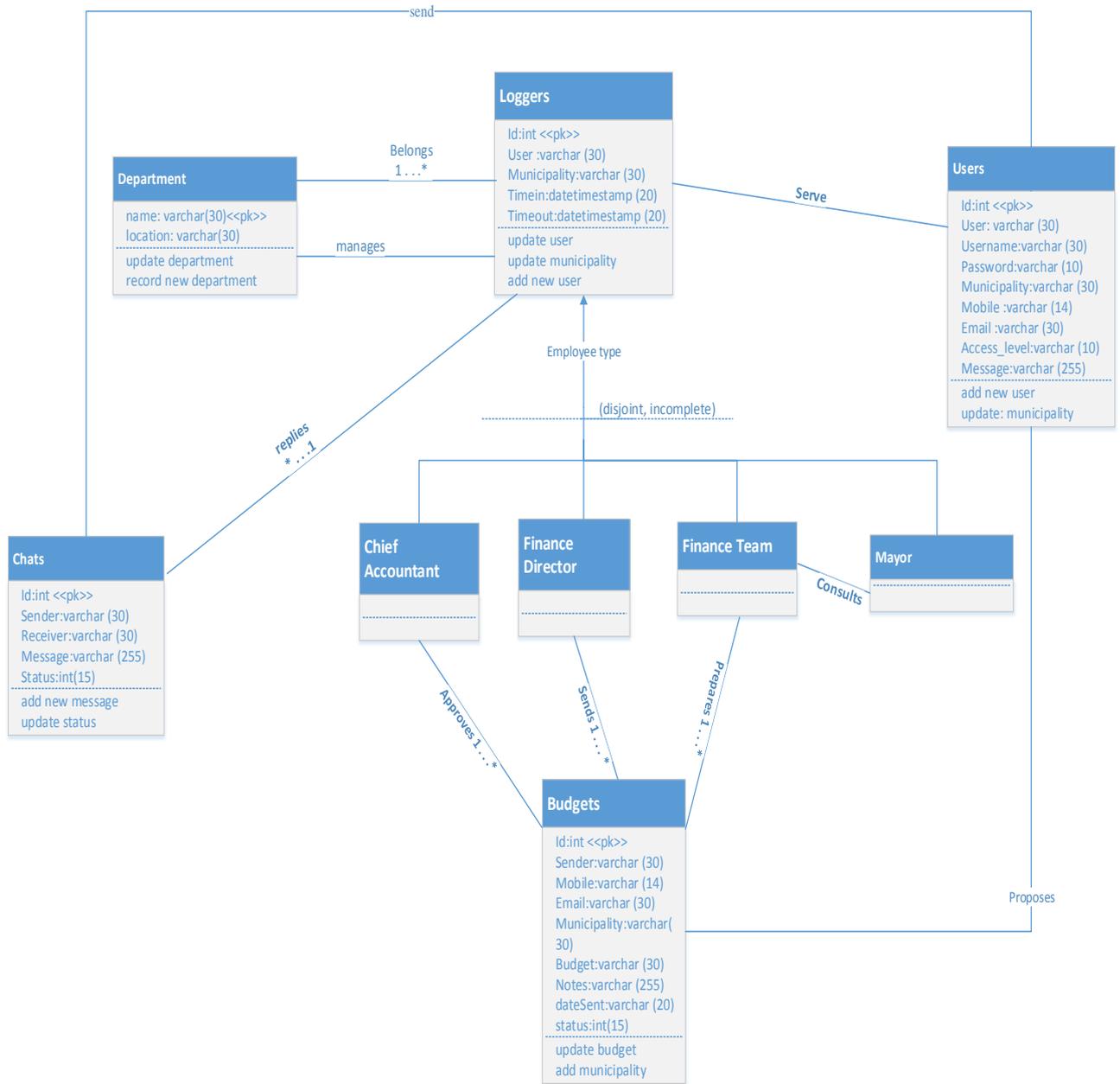


Figure 0:1 4.6: Class Diagram

4.6.2 PACKAGE DIAGRAM

This diagram gives the picture of all the components within the system to be developed, which are gathered and put within bundles which work together in a manner to fulfil what is needed by the system Denis, Wickson and Ruth (2015). Accompanying chart demonstrates significant parts or bundles of E-budget plan.

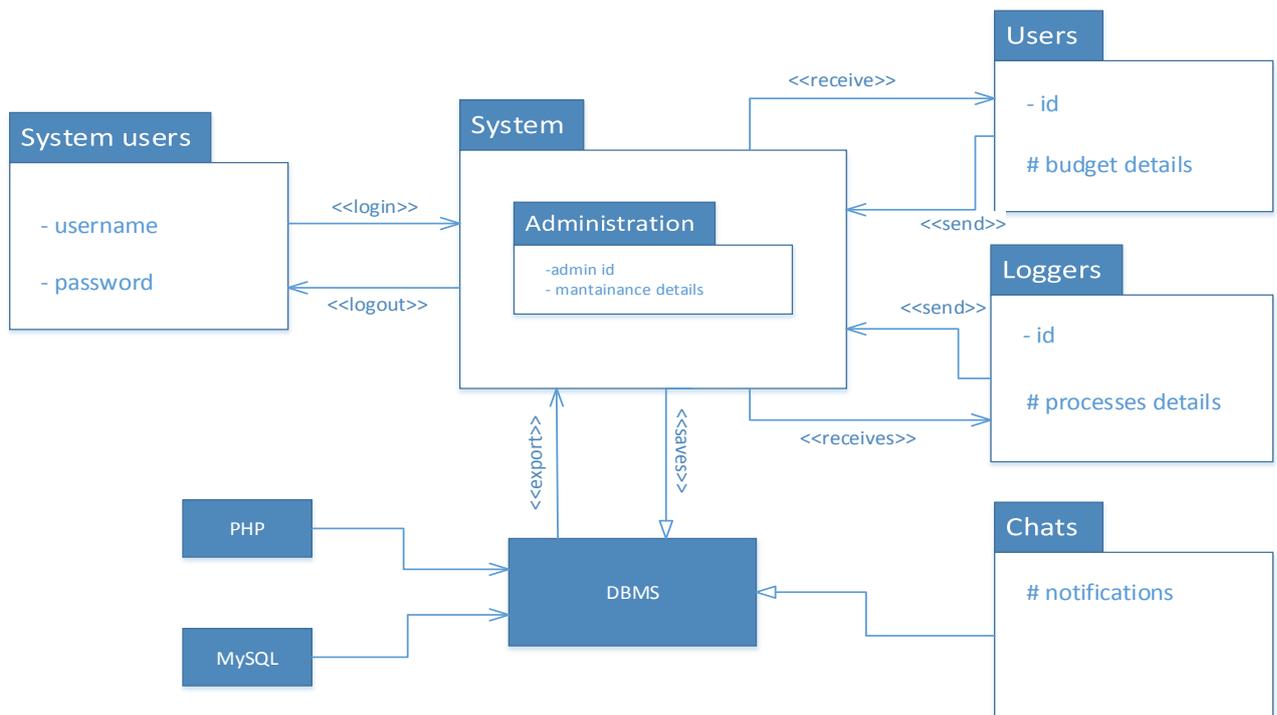


Figure 4.7 Package Diagram

key

#-- attribute which is protected



- Attribute which is private

+ attribute which is public

Dependency <<Dependency>

4.6.3 SEQUENCE DIAGRAM

It demonstrates chronological request in which E-budget modules communicate (msdn.microsoft.com). It is in charge of setting out the system's real exercises and the correspondence among these exercises.

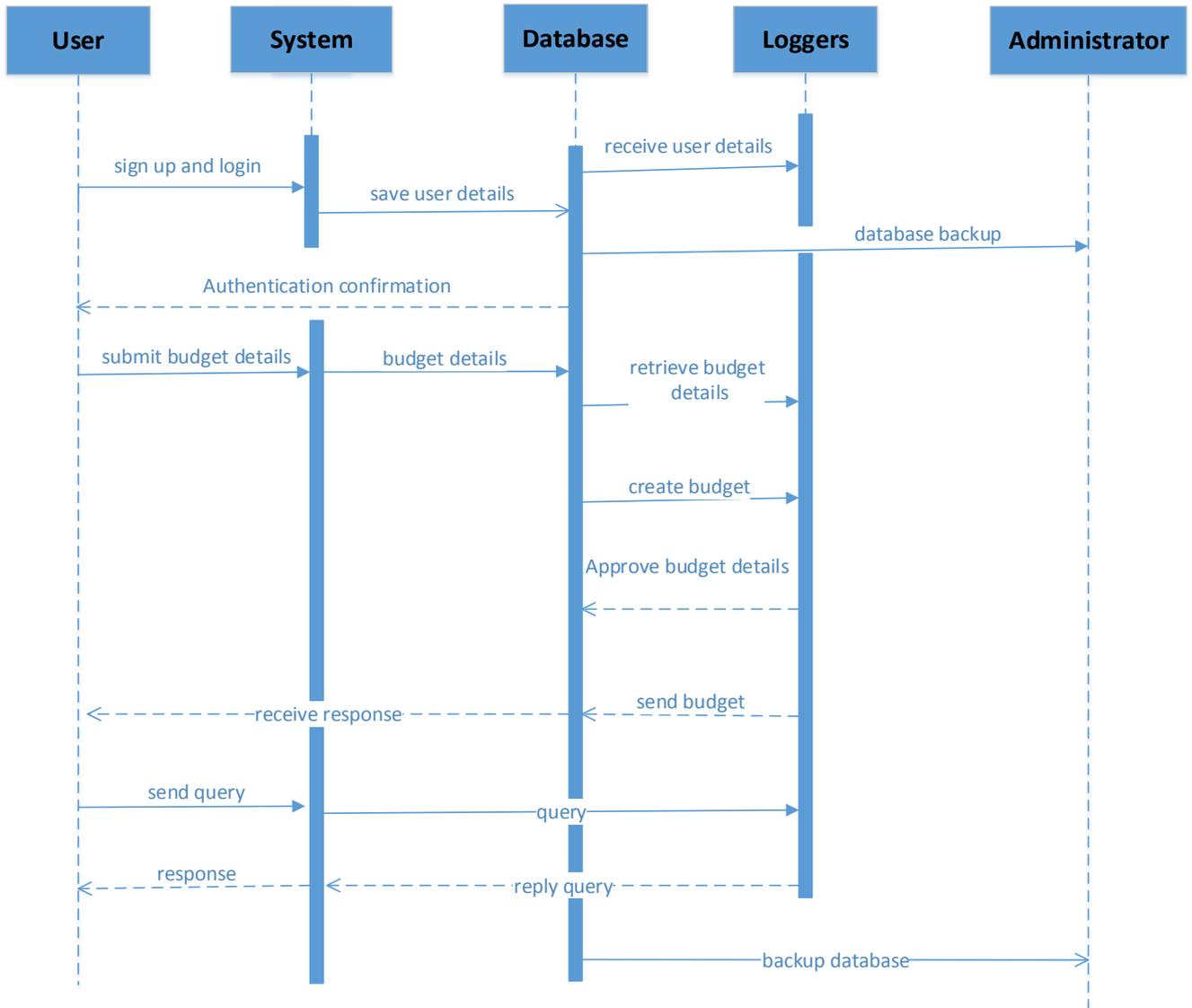


Figure4.8 Sequence Diagram

4.7 INTERFACE DESIGN

This design was defined by Rosenblatt and Tilley (2016), as is a design of a website, gadgets, tools, computers, and software which focuses much on clients understanding with connection. The main point of User interaction configuration is to make users collaboration as straightforward as same as industrious as would prudent, to achieve users objectives, which could be regularly named user attentive plan. It's a graphical UI that permits the end clients of the system to connect and have the capacity to work the system. The accompanying subtitles will show how the end clients will interface with the proposed system.

4.7.1 MENU DESIGN

This is a variety of standard and widespread orders gathered together and set at a noticeable position within the application window, the principle menu typically shows up when the client unwraps the application, and it might be modified to show up or cover up on the click of the mouse or drifting Kendall and Kendall (2014). The accompanying fig represents how the clients navigate to the main menu.

4.7.1.1 MAIN MENU

This is the main page of the system that users access after verified that is the existing user in the system through login verification.

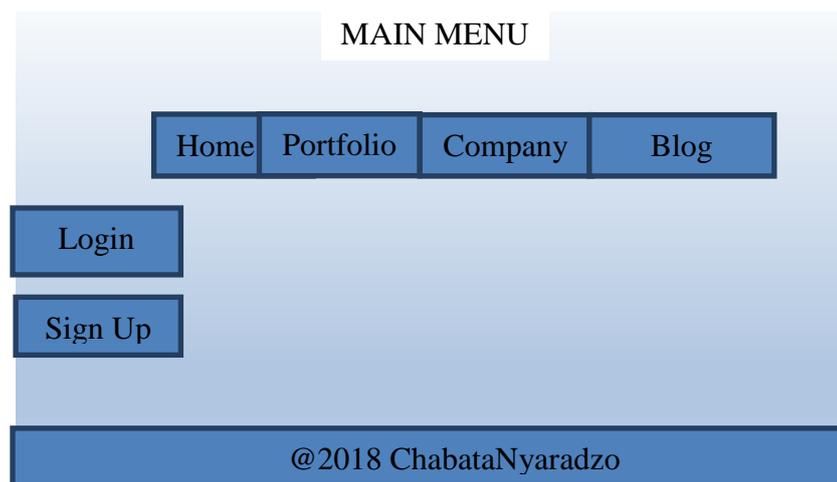


Figure 0:2 4.9 Menu Design

4.7.1.2 SUB MENUS

This is the sub menus which user view after selecting the option of uploading the budget. User may view uploaded budgets in this menu.

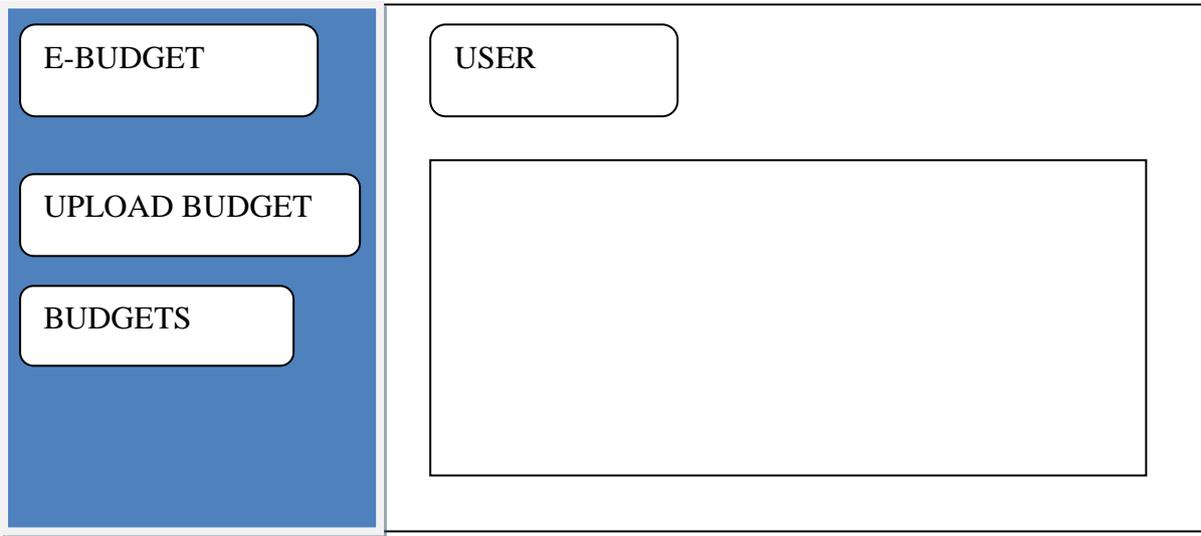


Figure 4.10 Sub Menus

4.7.2 INPUT DESIGN

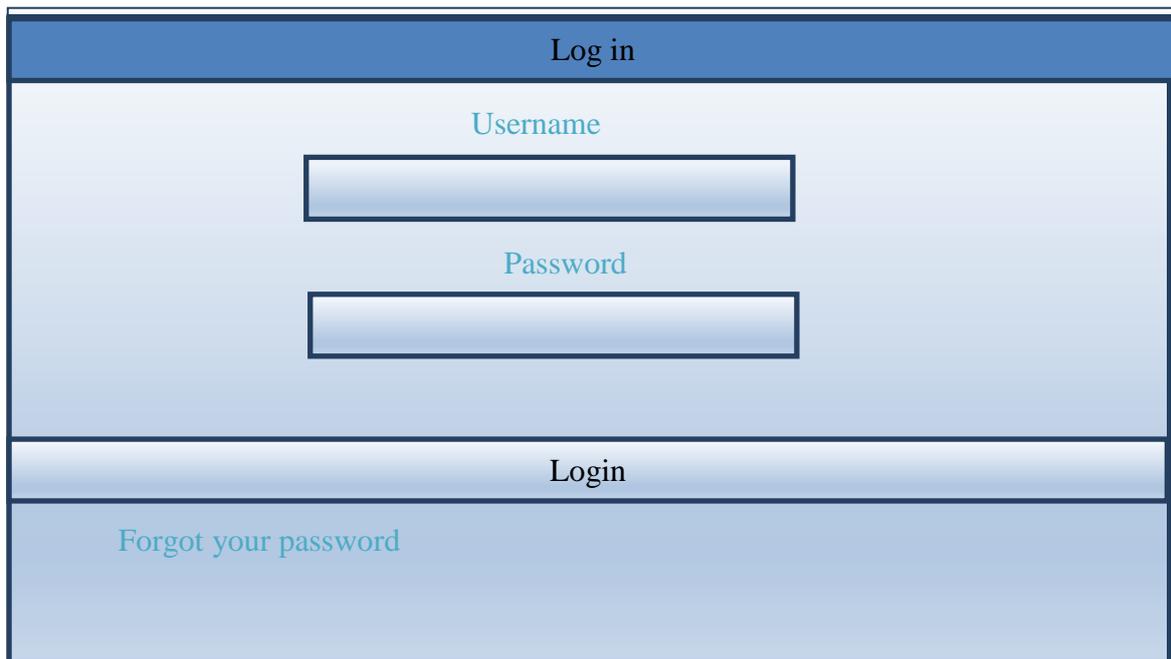
These are the structures which are utilized to acknowledge data that is vital for handling, so the info configuration (input design) must have approval checks so that the embedded information will be right, prompting information trustworthiness and precision in the database Dennis, Wixom and Roth (2015), the information shape are relied upon to act naturally logical and easy to use in order to accomplish apparent convenience if the clients are to acknowledge the new system, otherwise they will oppose the novel system if its information configuration is by all accounts confused.

Sign up form

| | | |
|----------------------|----------------------|----------------------|
| Municipality | Phone | Email |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
| First Name | Surname | |
| <input type="text"/> | <input type="text"/> | |
| Address | | |
| <input type="text"/> | | |
| Username | Password | Confirm Password |
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Message | | |
| <input type="text"/> | | |

Figure 4.11 Sign up form

Sign in form.

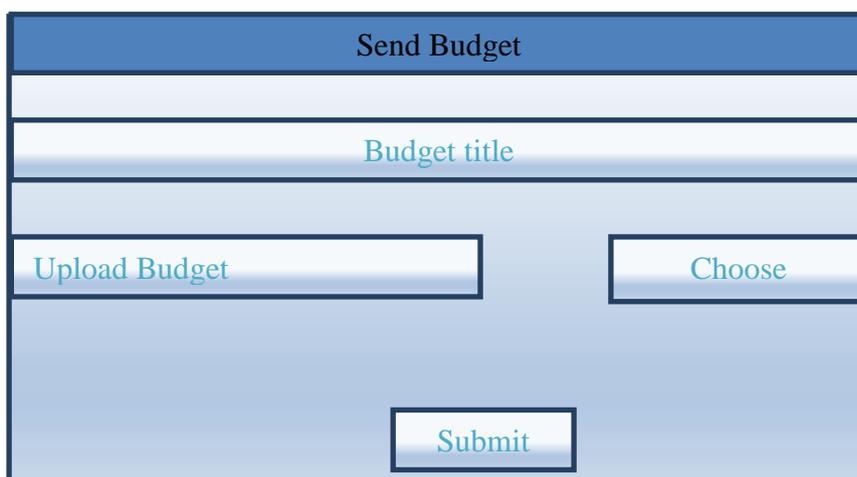


The diagram shows a sign-in form with a blue header bar containing the text "Log in". Below the header, the form is divided into three horizontal sections. The first section contains the label "Username" in blue text above a white text input field. The second section contains the label "Password" in blue text above a white password input field. The third section is a light blue bar containing the text "Login" in black. Below this bar is a larger light blue area containing the text "Forgot your password" in blue.

Figure 4.12 sign in form

New users who do not have accounts uses the sign up form to create their own accounts, the sign in form is used to login.

Upload buget



The diagram shows an "Upload Budget" form with a blue header bar containing the text "Send Budget". Below the header, the form is divided into three horizontal sections. The first section contains the label "Budget title" in blue text above a white text input field. The second section contains two white text input fields: "Upload Budget" on the left and "Choose" on the right. The third section is a light blue bar containing the text "Submit" in blue.

Figure4.13: Upload Budget

The above budget form is used to send the budget.

Submit Query

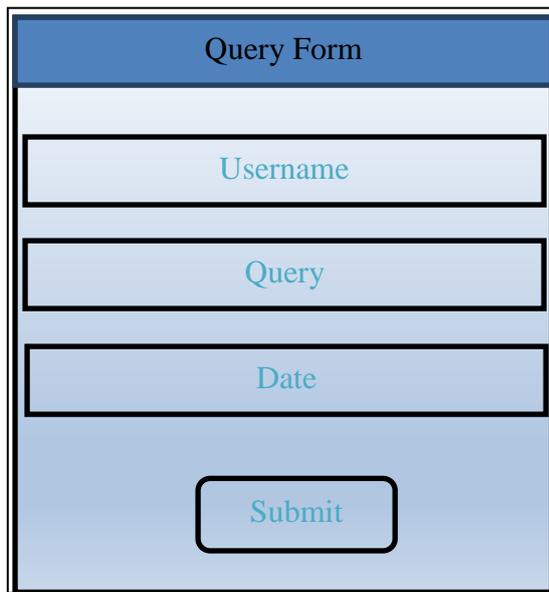


Figure 0:3 4.14 Submit Query

The query form is used for the submission of queries.

4.7.3 OUTPUT DESIGN

This design is in charge of showing the information that is already processed, which are otherwise called the outcomes, so for it to be considered as great and suitable it must show just fundamental outcomes that improve basic leadership process Dennis, Wixom and Roth, (2015).

Budget History

Table 6 Budget History

| Id | Sender | Municipality | Date Sent | Decision | Download |
|-----------|-----------------|---------------------|-----------------------|-----------------|---|
| 1 | NyaradzoChabata | Harare-Metro | 2018-01-02 [13:07] | approved |  |
| 2 | NyarieMakuke | Harare-Metro | 2018-01-10 [08:05] | disapproved |  |

Audit Access Report

Login History

Table 4.9 Login History

| Id | User | Municipality | Time Logged In | Time Logged Out |
|-----------|-----------------|---------------------|-----------------------|------------------------|
| 1 | NyaradzoChabata | Harare-Metro | 2018-02-02 09:25 | 2018-02-02 10:05 |
| 2 | NyarieMakuke | Harare-Metro | 2018-02-03 12:10 | 2018-02-03 13:07 |

This report audit access is used to track the login and logouts history, it is utilised for security reasons.

Approved Report

Table 4.10 Approved Budget

| Id | Sender | Municipality | Mobile | Email | Date sent |
|-----------|-----------------|---------------------|---------------|------------------|---------------------|
| 1 | NyaradzoChabata | Harare-Metro | 0776528965 | nyarie@gmail.com | 2018-02-02 10:05 |
| 2 | NyarieMakuku | Harare-Metro | 0776258964 | makuku@gmail.com | 2018-02-02 08:30 |

Disapproved Report

Table 4.11 Disapproved Reports

| Id | Sender | Municipality | Mobile | Email | Date sent |
|-----------|-------------------|---------------------|---------------|------------------|---------------------|
| 1 | Mufaro Chabata | Harare-Metro | 0776528965 | nyarie@gmail.com | 2018-02-02 10:05 |
| 2 | NyarieMakuku | Harare-Metro | 0776258964 | makuku@gmail.com | 2018-02-02 08:30 |

These reports give details of the budgets that are approved and disapproved.

4.8 PSEUDO CODE

Pseudo code is a word composed calculation or ventures of how the inner structures of the system will work. This algorithm enhances with those without programming dialect to comprehend the specialized piece of the system and furthermore causes the developers to see how the system is relied upon to work.

Pseudo Code:

Login

Initiate

Submit login credentials

 If credentials are, correct

Then

 Produce note of welcome

 Proceed to session of operator

Else

 Failed to login

 Printing of error note

 Stay in login page

New System User Sign Up

Put the details of sign in

 Check whether the login credentials are correct

 If credentials are wrong

 Output the error note

Else

 . Connect to the database

 Confirm save in the database

 Facilitate message of confirmation

Data save in the database

Put parameters of connection;

Make connection with the database

If the data entered is correct

Data must be saved in the database and confirm it to be saved

Else

Give notification and abort connection.

Validate login forms

If there is blank field

User must be notified

Else if you enter wrong password

Inform system user and reject admission

Else if the length of the password must be eight characters

Give note to the client and revoke access

Else if special characters are not required

Deny character and notify the client

Else

Don't move out of the login form

Data Capturing and Updating

If there is empty field

Give not to the user to enable corrections

Else if

Data entered is not meeting the required length

Notify the client to enable corrections

Else if

Data must be accepted and saved into database

Then move to next module

4.9 SECURITY DESIGN

Security design refers procedures which are in contradiction for a wide range of characteristics, which may harm data trustworthiness, security or privacy and also data uniformity (McClure, Scambray and Kurtz, 2012). These activities have three categories

which are, network security, physical security, and lastly operational security. Exchange for more points of interest on the specified measures are clarified beneath

4.9.1 PHYSICAL SECURITY

Physical design refers to physical assurance measures on Information innovation or PC framework, which incorporate software, data, hardware and network. The foundation is protected from physical exercises and activities that could make serious harm or debilitation an association, office or establishments (Forouzan, 2012). It incorporate assurance from flame, fear mongering , robbery, vandalism, surge and theft, so the safety ought to give locks, balanced counterfeit shrewd specialists like fire identifiers, smoke sensors that either alarms the dependable work force or sprinkle hostile to flame fluids or gases and in the meantime cautions the mindful individual. Observation cameras everywhere throughout the business foundation is likewise another physical safety effort, and additionally the utilization of soft boot robots like java exe on the whole building or server room.

Physical security layout

Guards from recognised security company

All of the physical assets to be locked up in the server which is only accessible to authorised personnel.

Constant monitoring of the server room temperatures will be done so as to maintain a recommended server room temperature to reduce the risk of crashing which may result in data loss.

Agents like fire and smoke detectors will be introduced in the server room so that there will be a strict monitoring on the server room to reduce the risk of fire. Activating sprinklers will also be utilised.

4.9.2 NETWORK SECURITY

As indicated by www.cisco.com (2017), organize security refers to any action that is put in place to make sure that the system is easily used and can be trusted, this brought together the hardware and software expansions. Strong system security defends the system from being attacked by various threats through the internet services that may cause harm or result into the invasion of sensitive organisational data. ZETDC secured its system however the utilization of system get to control (where just the approved clients will approach the system),

antivirus and antimalware programming, and behavioural examination (where organizers comprehend what typical system conduct looks like and recognizes irregular system conduct). System interruption identification frameworks like bundle sobering.

4.9.3 OPERATIONAL SECURITY

It is a systematic procedure which classifies different data resources at the same time also determines most of the controls which are essential for the protection of the unlawful admission to projected system Mclu, sambay and kutz (2012). Precautions on operational security put in place for users are as follows.

Employees

Active directory and domain accounts are used to access the machines, which means user password and employee id will be utilised and they will be regularly changed either weekly or after two weeks. This may be impossible for unauthorised users to guess the password.

Clients

Security measures on their devices like strong passwords and complicated patterns are being encouraged

Passwords and client's id will also be used.

4.10 CONCLUSION

This stage gives a clarification on how the E-budget resembles. Physical, architectural, interface and program designs were well explained and outlined within the chapter. The stage likewise clarified how and what information must be held in the database and also, how system segments interface on different plans specified previously. To complete the E-budget system the developers must move on to the implementation and maintenance chapter which is carried out in chapter 5.

CHAPTER 5: IMPLEMENTATION PHASE

5.1 INTRODUCTION

The previous chapter gives the detailed outline of the proposed system and its design hence the implementation phase will outline the inner part of the system that is the system code, the way it is going to be validated, verification, user training, maintenance process, and the system will be tested lastly. The prime reason of this phase is to come up with an effective system which is free from errors and which is less complicated hence user friendly.

5.2 CODING

E-Budget system was developed in modules resembling many other systems. Each and every module has a unique function after their integration as a single system. The functions of different modules of the E-Budget system are explained below

➤ Login module

This is the first page to be accessed in the system's homepage when the system has been run. This is the security check page which prompts the user to enter unique identification details which are passwords and username. .

5.3. TESTING

System testing is a priority exercise which must be done before the initial installation of the system to the organization's terminal. System testing by definition it is the pre-installation practice done by selected experts or hackers to make an investigation on the modules of the developed system within various measures Angel (2010). There are different ways normally used to test information systems but with the E-budget system selected methods will be utilized. So testing methods like regression testing, unit testing, functional and acceptance testing will be used. Under normal circumstances testing will be carried out using two different ways. Phases which are to be utilized through system testing are illustrated diagrammatically below.

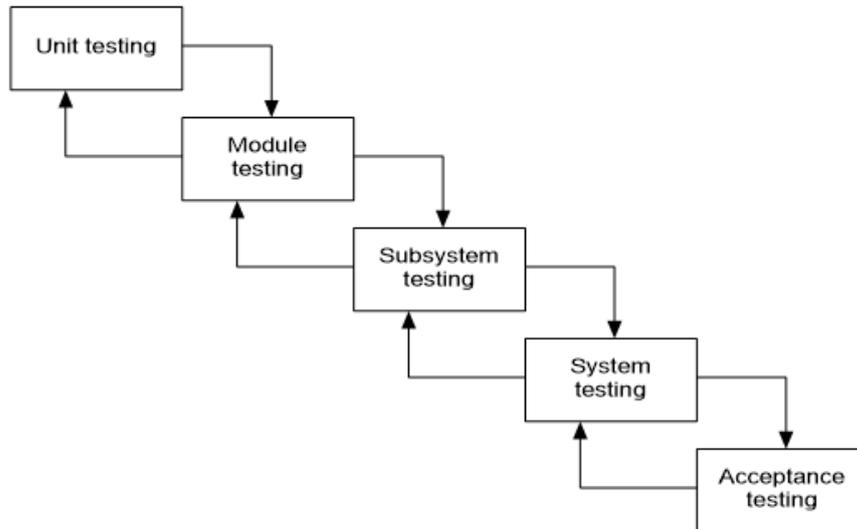


Figure 5.1 testing phases

Figure5.1 Testing Phases

➤ White box testing

This is a translucent box, patent box, or code based testing. White box testing is the testing technique in which the tester has abundant knowledge about the system to be tested and have very much knowledge of the internal parts of the system Rodriguez et al (2014). White box testing is done by the tester who possesses the programming skills or knowledge and also must know how the system is going to be implemented. This testing goes further beyond the interface, this resembles that testing will be carried out inside the system code, thus where the name white box came from as the tester will get to see the system code as a transparent glass. The diagram below shows the deep illustration of the white box testing.

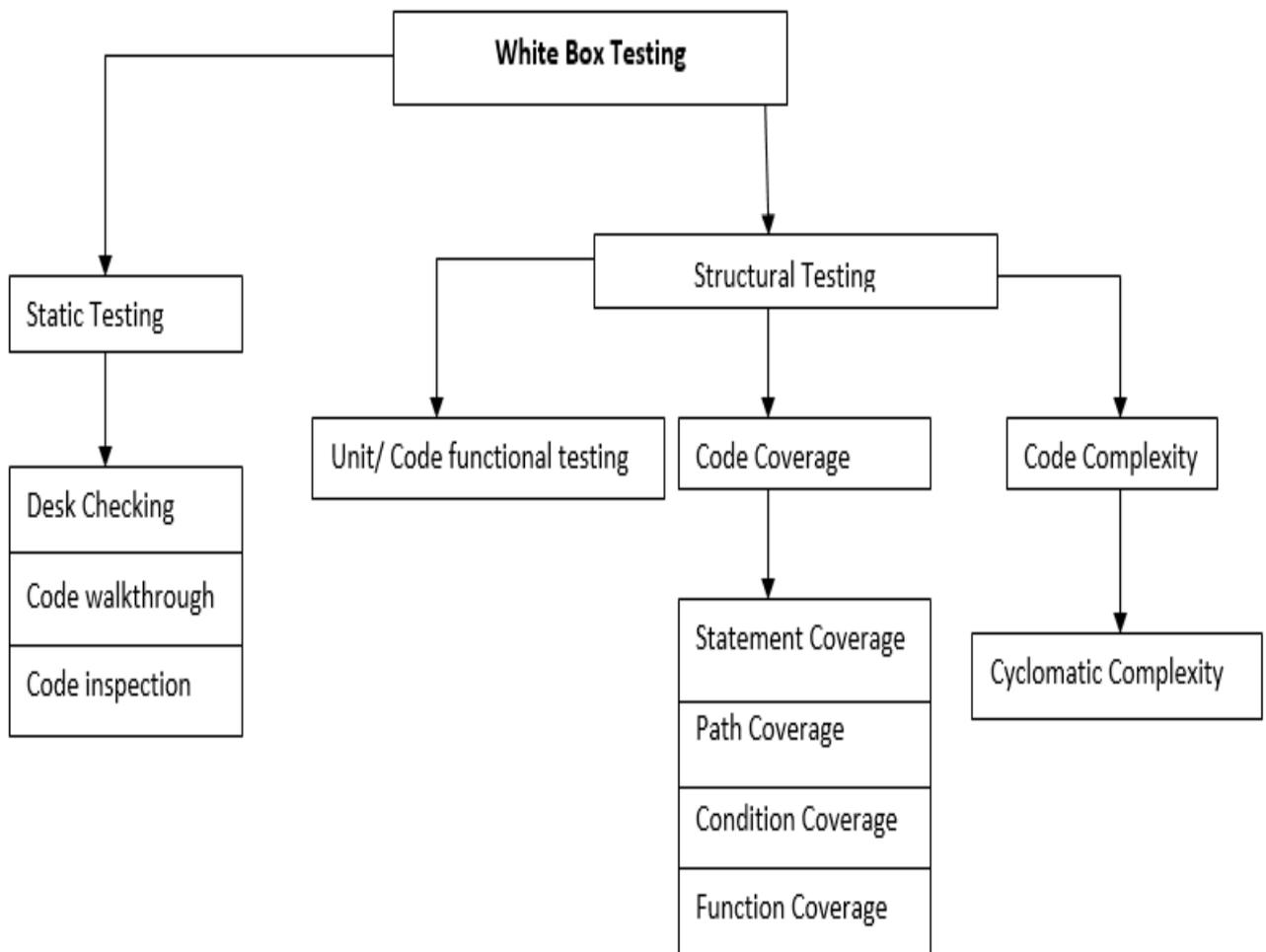


Figure5.2 White Box Testing

Static testing

According to Angel (2010) Static testing refers to system testing procedure in which most attention is put on the source code of the system rather than how it executes (in exception of the executable). This procedure doesn't rely on how the developed system executes on the client's machine. Expects are chosen to have the internal check on the code to check whether the system is performing as expected.

Structural testing

Rodriguez et al (2014) argue that this testing technique goes deeper in making investigation on the code, its structure, and the internal structure in accordance on how they are programmed. By using this technique the system is being tested in comparison with an already pre-programmed experiment.

➤ **Black box testing**

Angel (2010) stated that black box testing is a testing practice which is mainly focused on the programming aspect of the system which concentrates on the usefulness of the system. Conditional centred testing is the other name for black box testing. This testing technique is done in the life cycle of the system by the testing team.

5.3.2 UNIT TESTING

The system to be tested by this method is separated into different units, which means that each and every module is being tested separately to look for errors or bugs. Unit testing can be computerized and it is feasible. When the tester is being satisfied that there are no any other bugs among the system modules will be then integrated to the entire code. Trial testing is then done lastly after the testers are satisfied that the system is ready to be effected.

5.3.3 FUNCTIONAL TESTING

Functional testing is well known as the testing technique which is mostly done when the system is about to be delivered Angel (2010). The entire system with this technique is being tested in comparison with the user requirements. The main goal of this testing procedure is to test the functionality of the system, consistency, trustworthy, similarity and system precision. The system is being tested against set goals which means if the system doesn't meets the objectives the tester will get to know that there is a problem

5.3.4 REGRESSION TESTING

Regression testing is a continuous testing procedure which is facilitated by the dynamism of technology. Angel (2010) defined this method as a way of checking whether the progress of the system doesn't affect other modules of the system. Regression testing promotes the on-going of the system.

5.3.5 PERFORMANCE TESTING

Rodriguez et al (2014) propounded that performance testing is the testing procedure which is done on the client's machine to see whether the system is performing as expected.

5.3.6 SECURITY TESTING

Technology is dynamically changing and it is mostly utilized to perform organizational tasks in the same way storing sensitive information, so due to this fact system security is important

for its success. E-budget system will be secured so that only authorized personnel will get access to the system. The system will be storing sensitive information so threats like hackers will be given large security priority. During the system testing hackers which are principled and professional will be hired to look for all possible loopholes within the entire system. To have access to the system you need to be a registered stakeholder and the stakeholder must access data only to his/her defined modules.

5.3.7 ACCEPTANCE TESTING

Angel (2010) this testing method mostly relies on the users of the system. This is when the system is being tested to see whether the users have accepted the system or they are resisting. The testing may be regarded as useless if done at the absence of the users. After all the development process is done and all other testing have successfully passed acceptance testing will commence and this involve the users of the system. Users or stakeholders will be testing to see if their objectives or requirements are being met, is it user friendly and lastly is it secures enough before system implementation. At this stage the users if they are not satisfied with the system they totally reject it and the system will be deemed a failure.

5.3.8 VERIFICATION AND VALIDATION

Verification

Rodriguez et al (2014) defined system verification as the process of comparing the actual functionality of the system against the real reason that calls for the development of the system. Verification is mainly carried out to make sure that the system is complying with the requirements of the user. The only way to verify the system is to allow the user to perform a specific task with the system and come up with results.

Validation

Validation is carried out after the system completion to make sure that the system is secured enough or validated not to allow an unnecessary data.

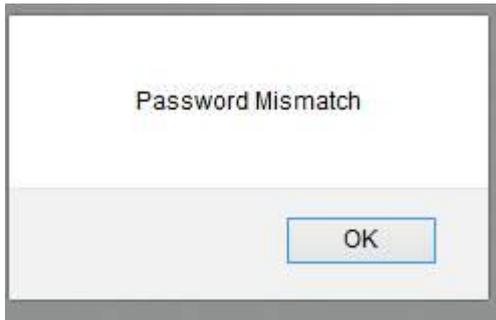


Figure5.3 Password Validation

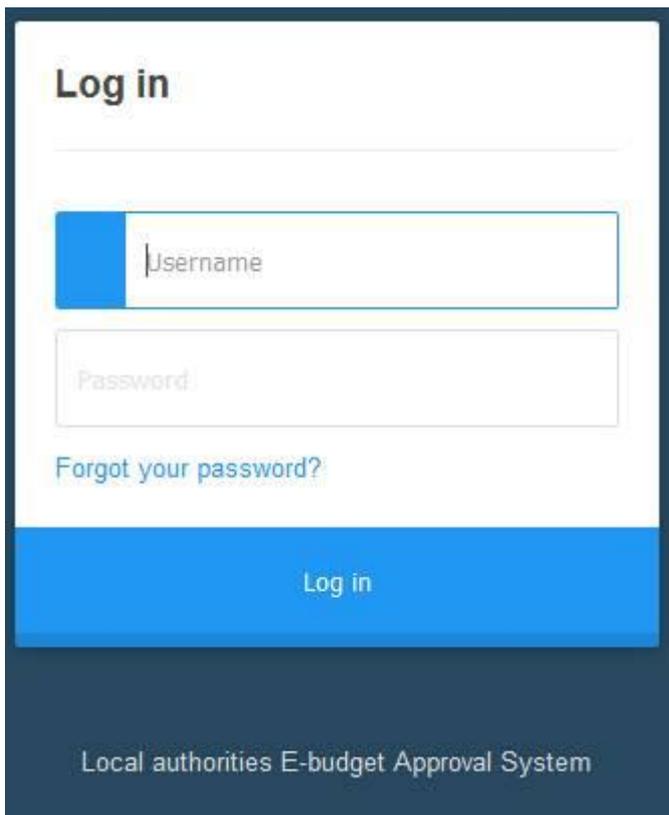


Figure 5.4 Validation Fields

All the texts fields which allow user input are going to be validated to avoid duplication of data, data inconsistency and to ensure data integrity this may include radio buttons, text fields and check boxes.

- Numeric values will not accepted in fields where texts are supposed to be entered.
- Texts are not allowed in fields that are designed to accept numeric values.
- All fields in the form must be field before submission.
- Minimum of eight characters and letters will not be accepted in the password.

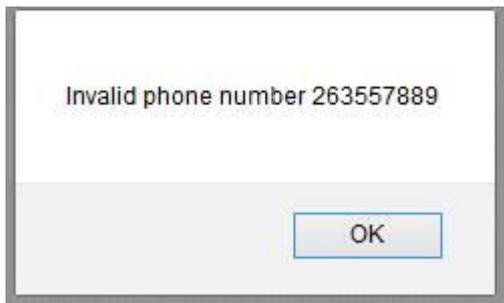


Figure 5.5 Validation Form

5.4 INSTALLATIONS

After the development, testing, verification and validation of the system the system is then taken to the client's machine for installation. The system will be installed using the best changeover strategy after all the evaluation of changeover strategies are carried out.

5.4.1 TRAINING

Training refers to the process by which the intended system users are being oriented or trained so that they have knowledge on how to use the system. Cannon (2011) goes further to say that anyone who is new to the system must undergo training.

5.4.2 DATA MIGRATION AND CHANGEOVER

Data migration is the process of changing from old system to new system. Cannon (2011) said changeover is the process of going live, that is implementing the proposed system over the current system. The proposed system undergo various tests and it was proven that it is meeting the requirements of the users hence the proposed system must be taken to the live environment which means all the organizational data will be transferred to the new system. There are a number of changeover strategies that are going to be discussed below and the most suitable given the conditions will be chosen.

5.4.2.1 DIRECT CHANGEOVER

Rodriguez et al (2014) described this as the changeover strategy where there is complete system overhaul which means that the current system will removed completely. The installation of the proposed system will commence for it to take the position of the old system. This strategy have less costs in the sense that there is no duplication of systems, but it is not suitable when there is a risk of proposed system failure this is so because the

organization will lose all its data. All system users needs to go under system training as the system to be used will be new to everyone.

Advantages of direct changeover

- Avoids data or work repetition.
- Reduction in operation costs as one system will be utilized.

Disadvantages

- Needs high concentration during testing and planning.
- There will be risk of failure after the system installation.

5.4.2.2 PARALLEL CHANGEOVER

Parallel conversion is when the old system and the new system are being utilized concurrently Angel (2010). This strategy gives the system users enough time to make all necessary backups on their data given that the new system failed to perform as expected. Parallel changeover is of less risk as it is easy to switch back to old system in case the new system fails.

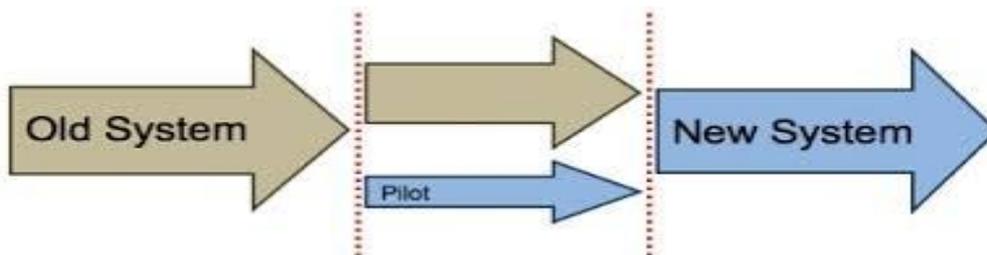


Figure5.6 Parallel Changeovers

Advantages

- Back up availability which means there is no or there is less risk of data loss.
- If the proposed system failed there is easy switch to old system.

Disadvantages

- High costs as two systems will be in operation.
- Not suitable in uniform system.

5.4.2.3 PILOT CHANGEOVER

Pilot changeover strategy was described by Cannon (2011) as prejudiced implementation way. This means that the developed system will be installed in the departments who only need to use the system. Due to the reason that the system will only be used in designated departments there will be fewer costs to be realized. There is less risk of system failure as the system will be utilized in a single department.

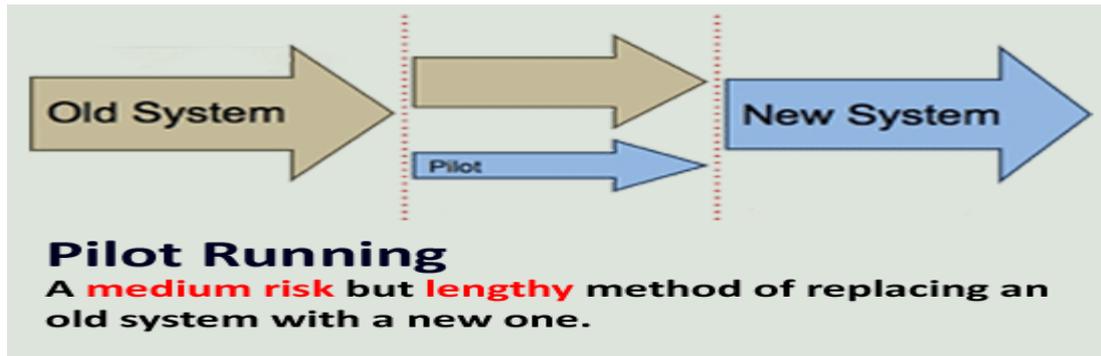


Figure5.7 Pilot Changeover

Advantages of pilot changeover

- There will be fewer costs
- Testing will be done thoroughly before the system implementation.

5.4.2.4 PHASED CHANGEOVER

According to Angel (2010), this changed over strategy utilizes different phase's implementation. This means that the old system will be slowly phased out which gives enough time to the system users to be adapted to the developed system. Risk of data by using this technique will be less as there is an old system which works as a backup at the same time there are low costs.

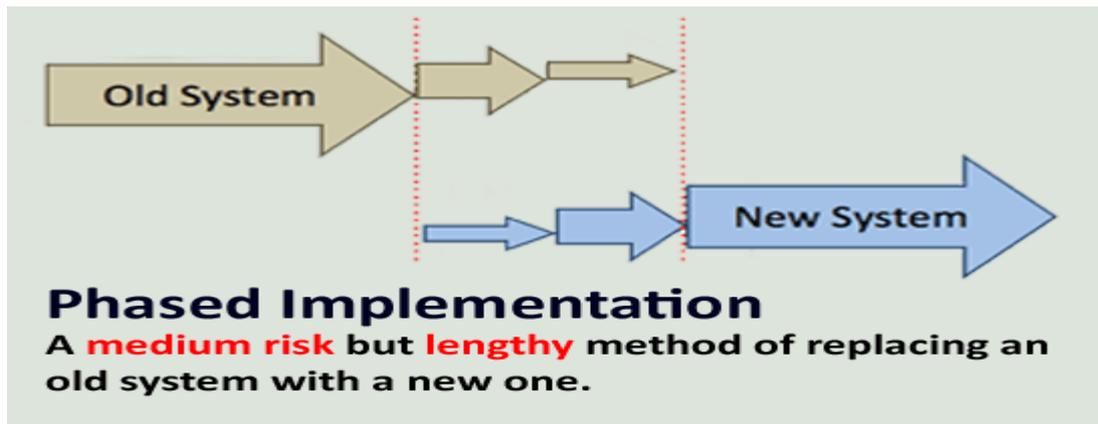


Figure 5.8 Phased Changeover

5.5. MAINTENANCE

Oxford dictionary explained maintenance as the process of keeping the unchanged stage of the system operation that is the standard of operation will be constantly maintained. Technology dynamically changes which calls for the user requirements to also change and thus the system must be developed to match new requirements. E-budget system will go to keep abreast with all necessary changes that will accumulate; this will be possible through using different maintenance strategies.

5.5.1 CORRECTIVE MAINTENANCE

This maintenance system deals with the arising errors, which means whenever there is an error it calls for corrective maintenance Cannon (2011). There will be no new improvements that will be made during this process but rather dealing with the errors within the current system. When an error has been discovered within the system stakeholders and developers of the system will conduct a meeting discussing about the error and then put solutions to the error.

5.5.2 PREVENTATIVE MAINTENANCE

Rodriguez et al (2014) stated that this maintenance system is a pre defence measure which is put in place before the occurrence of the error. Forecasting of future errors will be done constantly by the system administrator to prevent the occurrence of errors.

5.5.3 ADAPTIVE MAINTENANCE

As the name suggests this technique is done to make sure that the system is adaptive to dynamic atmosphere. Technology dynamically changes and have influence in or affects the

behaviour of the system. The changes will be influenced by various bods which includes government regulations, departmental policies changes and lastly technological advancement.

5.5.4 PERFECTIVE MAINTENANCE

Perfective maintenance is the process of making perfection to the system before it is implemented for it to be perfect Rodriguez et al (2014). The system developer is the one who perform this maintenance process this is so because is the one who possesses traits and knowledge on the area to be perfected.

5.6 RECOMMENDATIONS

E-budget satisfies the users of the system and fulfils or the user requirements and the objectives so it is declared efficient. It is recommended that the organization must do the following.

- Computer technicians must be employed to cater for the maintenance of the system and computers.
- Continuous security checks must be done by professional hackers to make sure that there are no intruders or sniffers.
- Technology is advancing to extreme levels so due to that the same system must be developed using android system.

5.7 CONCLUSION

This phase (implementation phase) narrates how E-budget system was developed, it was tested using various methods, how it is going to be installed, verification and validation were all done and lastly how data is going to be migrated and changeover strategy. Given all these facets e-budget system will stand as the organization's system until there is need to change

REFERENCE

- Alleyne, S 2018, step by step on how to do a background study, accessed 12 April 2018, <<http://www.education.seattlepi.com/stepbystep-background-study-thesis-1626.html>>
- Baltzan, P. and Phillips, A. (2015) Business-Driven Information Systems, 5th Edition, McGraw-Hill: New York
- Braharu, G. (2017) Course of Programming for Children and Beginners: Learn Programming from Scratch with Pseudocode Language, available at www.amazon.co.uk (accessed on 11/08/2017)
- Date, J. C. (2012) Database Design and Relational Theory, O'Reilly Media Inc: Washington.
- Dennis, A., Wixom, B. H. and Roth, R. M (2015) System analysis and Design, 6th Edition, IGI Global: Washington.
- Forouzan, B. A. (2012), Data Communications and Networking: 5th edition, McGraw-Hill: New York
- Gandlin, P. (2014) Business Studies, VK Global Publications: Washington.
- Kendall, J.E. and Kendall, K.E. (2014) System Analysis and Design, 8th edition, Prentice Hall: New Jersey
- Koumpis, A. (2012) Management Information Systems for Enterprise Applications: Business Issues, Research and Solutions, IGI Global: Hershey
- Kumar, R. (2014) Research methodology: A Step-by-Step Guide for Beginners, Sage publication: London.
- Law, J., and Owen, G., 2010 A dictionary of accounting, 4th edition, new york: oxford university press inc.
- Manual, M. (2012) Research Methodologies, Innovations and Philosophies in Software System Engineering and Information Systems, IGI Global: Washington.
- McClure, S., Scambray, J. and Kurtz, G. (2012) Hacking Exposed 7: Network Security Secrets and Solutions, McGraw-Hill: New York

method123 n.d.Project planning phase, Method123 Inc, accessed 29 march 2018, <<http://www.method123.com/project-planning-phase.php>>

Ministry of local Government 2013, Ministry of local Government, public works and national housing, accessed 14 March 2018, <http://www.mlg.gov.zw/vision-mission>

Quah, E. and Toh, R., 2012 Cost-benefit analyses,USA: Routledge

Schneider, G. M., and Gersting, J., 2018 Invitation to computer science, United Kingdom: cengage learning

Rosenblatt, J. H. (2014) System Analysis and Design, 10th Edition, Pre Media Global: Boston

Rosenblatt, J. H. and Tilley, S. (2016) System Analysis and Design, 11th Edition, Currio Press: Boston.

Tomsho, G. (2016) Guide to Operating Systems, 5th Edition, Cengage Learning: Boston

<https://msdn.microsoft.com/en-us/library/dd409432.aspx> (accessed on 12/07/2017)

W3computing 2017, Technical feasibility – ascertaining hardware and software needs,

w3computing, accessed 14 April 2018,

<<http://www.w3computing.com/systemsanalysis/ascertaining-hardware-software-needs/>>

Whitman, E. M., and Mattord J. H., 2017 Principles of information security,United Kingdom:cengage learning

<http://www.cisco.com> (accessed 05/07/2017)

<http://www.tutorialride.com/dbms/enhanced-entity-relationship-model-eer-model.html>

(accessed on 01/07/2017)

<https://msdn.microsoft.com/en-us/library/dd409432.aspx> (accessed on 12/07/2017)

APPENDICES

APPENDIX A: USER MANUAL

Introduction

This is a user manual which guides users on how to use E-Budget system, thereby giving a brief description on how the system operates so as to help them understand the main functions of the system. The manual provides a detailed explanation on how to navigate through the system from the point of logging into the system.

The New System Technology

- PHP programming language
- Adobe Dreamweaver CS 6
- MySQL database
- Google Chrome or Mozilla Firefox

Features of the new system

Log In Page

In order to log into the system, one has to use a browser of choice then type in this link <http://localhost/chabata/> on the url field readily available on the browser, then press enter. A new form will appear containing empty fields. On this page or form a user has to insert his or her credentials which were register into the system, on the empty field which is provided.

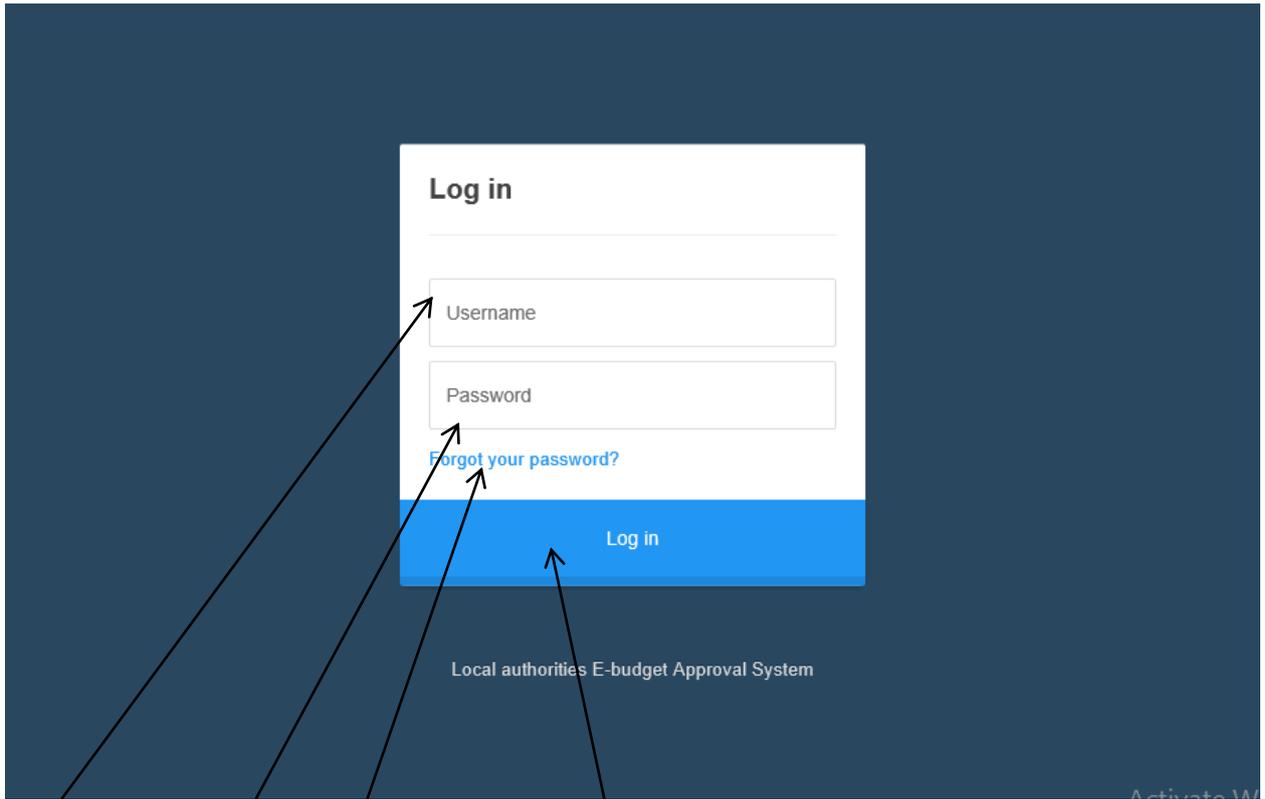


Figure A1: Main Menu

Enter username

Enter Password

Click here if you have forgotten your username or

Click here to log into the system

Administrator Home Page

The homepage of the administrator enables him or her to access other pages within the system through the use of navigation vertical menu bar



Figure A2: Admin Homepage

System User Account Creation

In order for the administrator to have access to this page, he or she will have to click on the add user link button on the menu. This page allows the administrator to add a new user account into the system. The system is developed in such a way that, it grants user privileges according to their access level.

Account Details

MINICIPALITY: Harare Metropolitan (dropdown) → Select the municipality

PHONE NUMBER: 263 → Enter user phone

EMAIL ADDRESS: chabata@gmail.com → Enter user email address

FIRST NAME: Nyaradzo → Enter user first name

LAST NAME: Chabata → Enter Last name

ADDRESS: Miniciality Add → Enter user address

USERNAME: Username → Enter username to be used by the use

PASSWORD: 8 digits → Enter password to be used by the use

CORNFIRM PASSWORD: Confirm Password → Enter password again to confirm with pre

MESSAGE: Tell the user whats important... → Enter a message which is to be told to the user.

Add User → Click this button to add a user

Figure A3: Add User

Upload budget

This page aids users to upload budgets which are yet to be approved. Below are the steps to upload a budget:

- On the log in page, enter your credential on the available fields
- On the home page, this is the first page that appears after logging in to the system.
- Click on a menu link labelled upload to open the page below, which contain an interface to

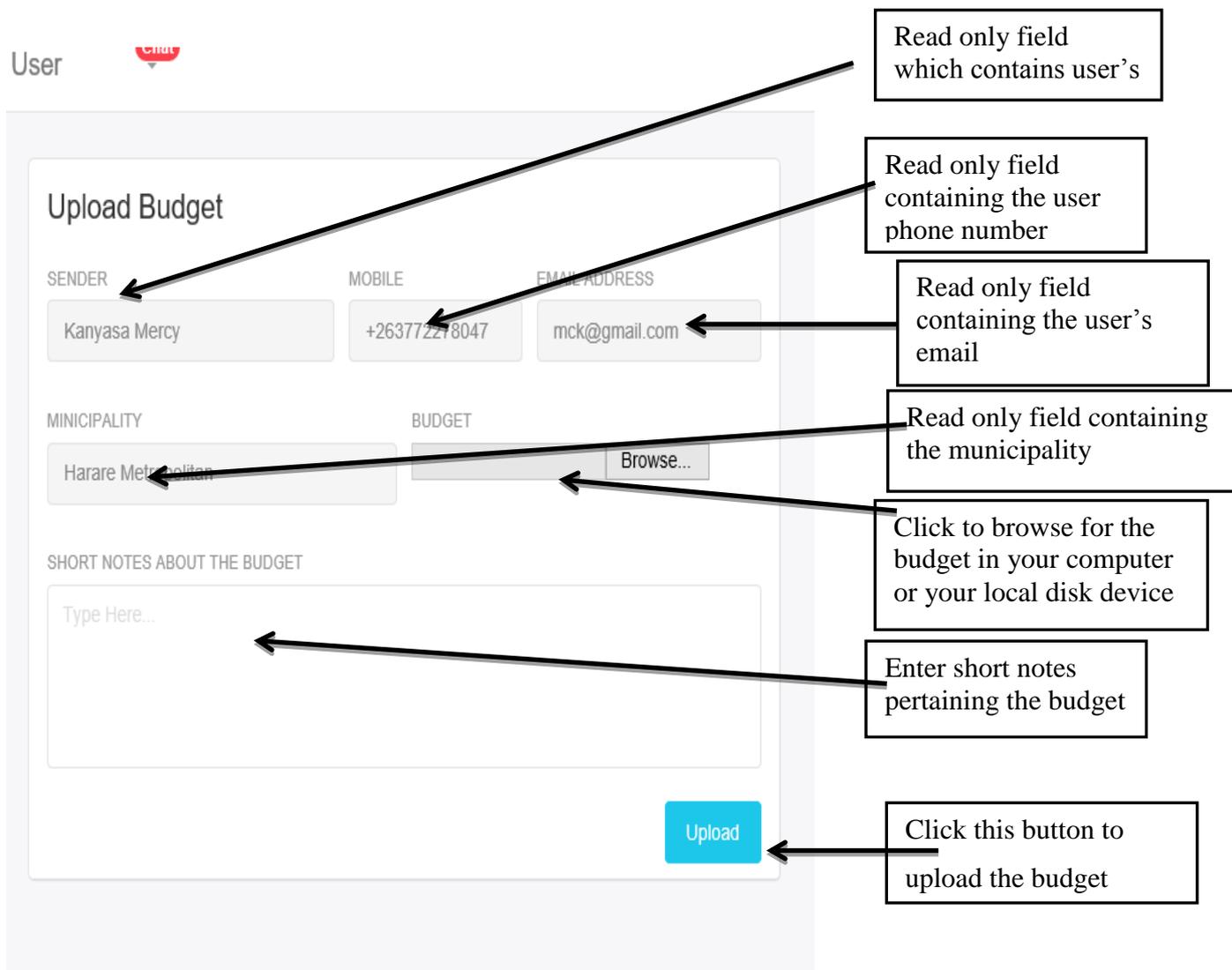


Figure A4: Upload budget

New budgets

This is a page accessed by the administrator so as to check on newly uploaded budgets, before approval. Please note that, this system is inter linked, thus the newly uploaded budget will be up for decision after a download is made, so in order to download click the blue download link as shown in the figure below. For the administrator to access, this page he has to follow the below steps:

- After logging in to the system
- Link a menu link labelled new budgets
- On the new budgets page, check on the budget which are available
- When you find a budget which is due for approval, click on the download link which is located on the far right column of your fields.

- After clicking, the download function of your internet browser will start responding showing the file you will be downloading
- When the download function, notifies you that the download is finished, click on the download and open it,
- Then browse through and make your decision.

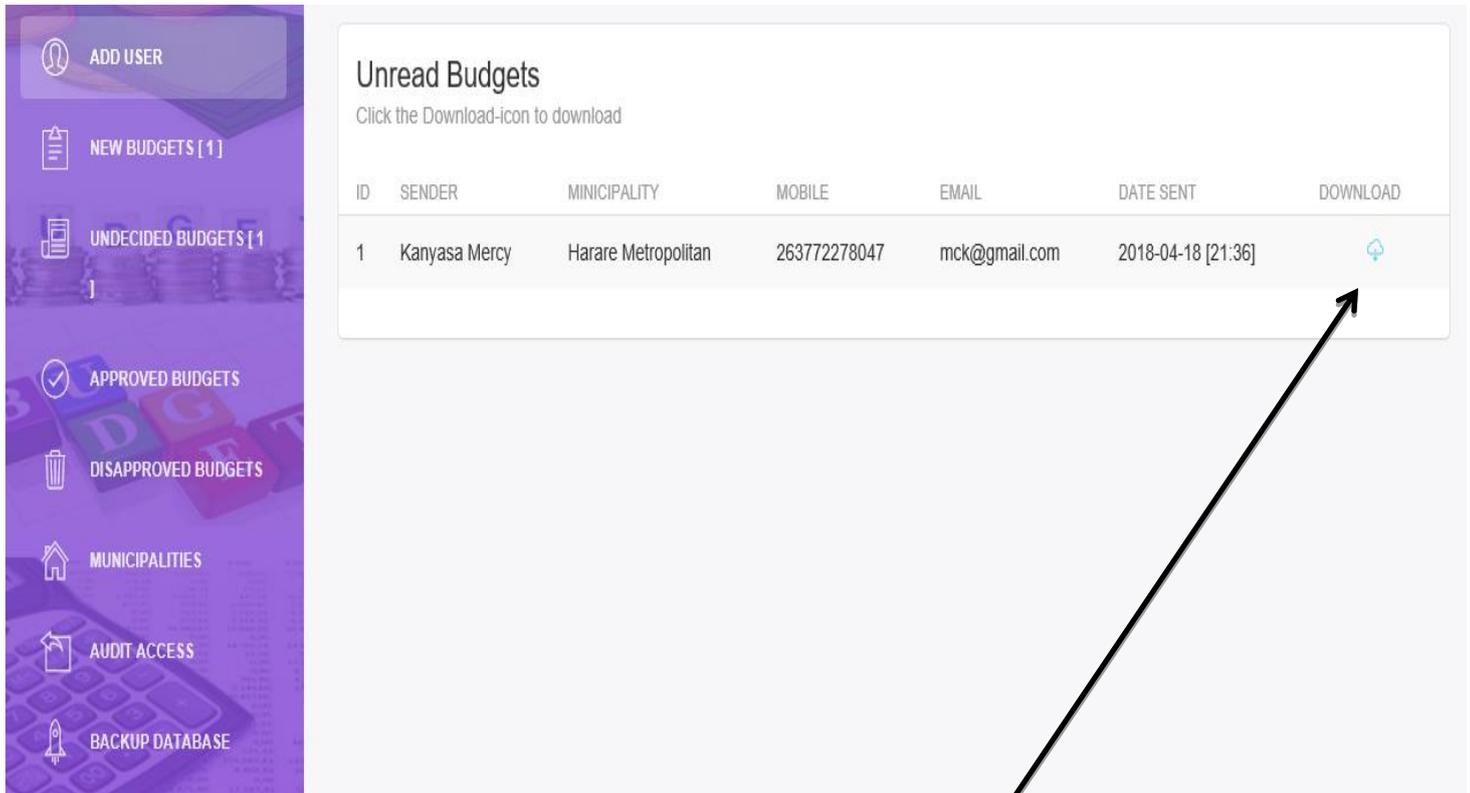


Figure A5: New budgets

Click this link in order to perform the transaction

Decision page

After the administrator has gone through the budget downloaded document, he will log back to the system, so as to implement the decision which was waited for by all users. On this page the administrator will either click the approval button link to approve the budget or disapproval button link so as to disapprove the budget, depending on the decision which he or she has made.

| ID | SENDER | MINICIPALITY | DATE SENT | APPROVE | DISAPPROVE |
|----|---------------|---------------------|--------------------|---------|------------|
| 1 | cmcmc mccjj | Harare Metropolitan | 2018-02-01 [13:07] | | |
| 2 | Kanyasa Mercy | Harare Metropolitan | 2018-04-18 [21:36] | | |

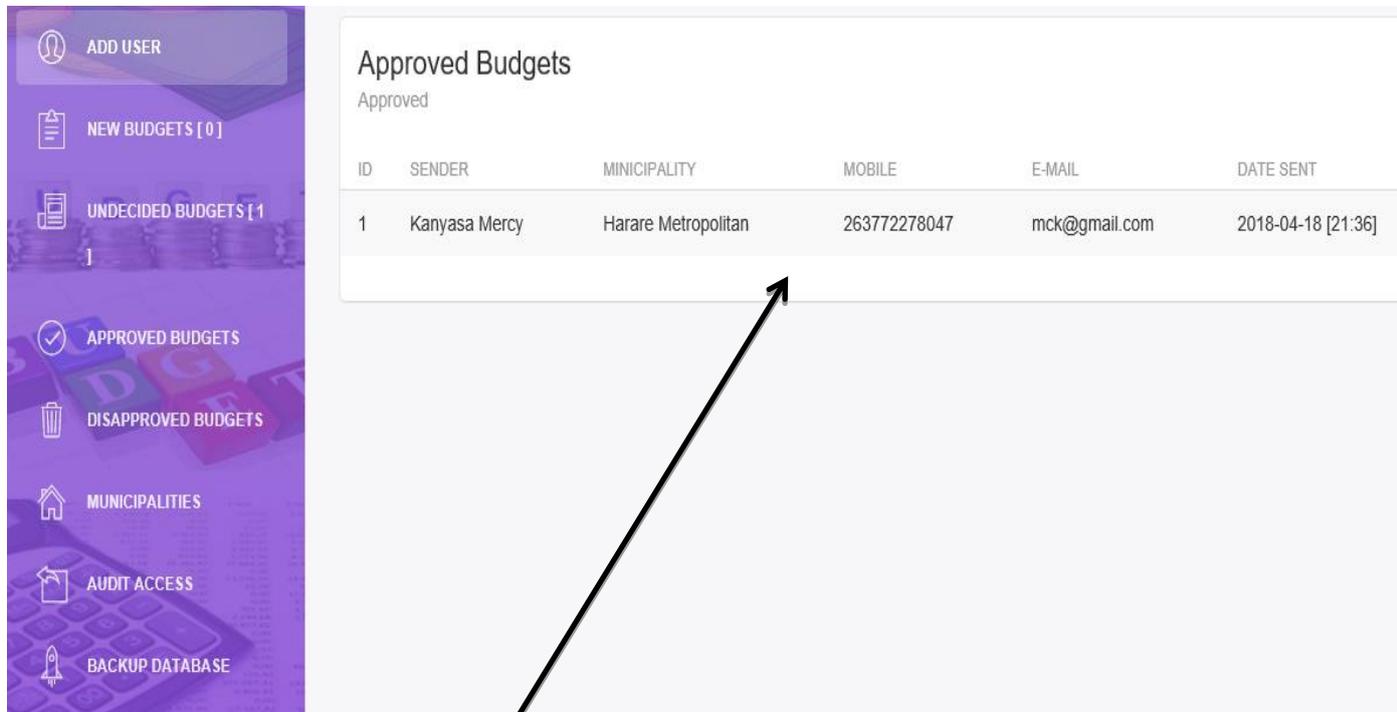
Figure A6: undecided budgets

Approval button link: click to approve the budget.

Disapproval button link: click to disapprove the budget.

View approved budget.

After approval the administrator will be able to check on the entire approved budget using this page. In order to access it, the administrator has to click on the menu item labeled approved budgets.



| ID | SENDER | MINICIPALITY | MOBILE | E-MAIL | DATE SENT |
|----|---------------|---------------------|--------------|---------------|--------------------|
| 1 | Kanyasa Mercy | Harare Metropolitan | 263772278047 | mck@gmail.com | 2018-04-18 [21:36] |

Figure A7: approved budgets

These are the approved Budget details.

View disapproved budget

After disapproval the administrator will be able to check on the entire disapproved budget using this page. In order to access it, the administrator has to click on the menu item labelled disapproved budgets.

The screenshot shows a web application interface. On the left is a purple sidebar menu with icons and labels: ADD USER, NEW BUDGETS [0], UNDECIDED BUDGETS [1], APPROVED BUDGETS, DISAPPROVED BUDGETS, MUNICIPALITIES, AUDIT ACCESS, and BACKUP DATABASE. The main content area is titled 'Disapproved Budgets' and contains a table with the following data:

| ID | SENDER | MINICIPALITY | MOBILE | E-MAIL | DATE SENT |
|----|-------------|---------------------|--------------|---------------|--------------------|
| 1 | cmcmc mccjj | Harare Metropolitan | 263778712244 | mcdcdi@me.com | 2018-02-01 [18:18] |

Figure A8: disapproved budgets

These are the disapproved Budget details.

Budget history

This page is accessed by, system users thus the finance team and also accounts clerk so as to view the budget approval history. This page also facilitates budget download, by simply clicking on the download link which is on the far right of the field columns. In order to access this page the clerk has to follow the below procedures.

- After logging in as a general user, a home page appears
- Click on the menu labelled budgets
- On this page look for the download link located on the far right corner of the columns.

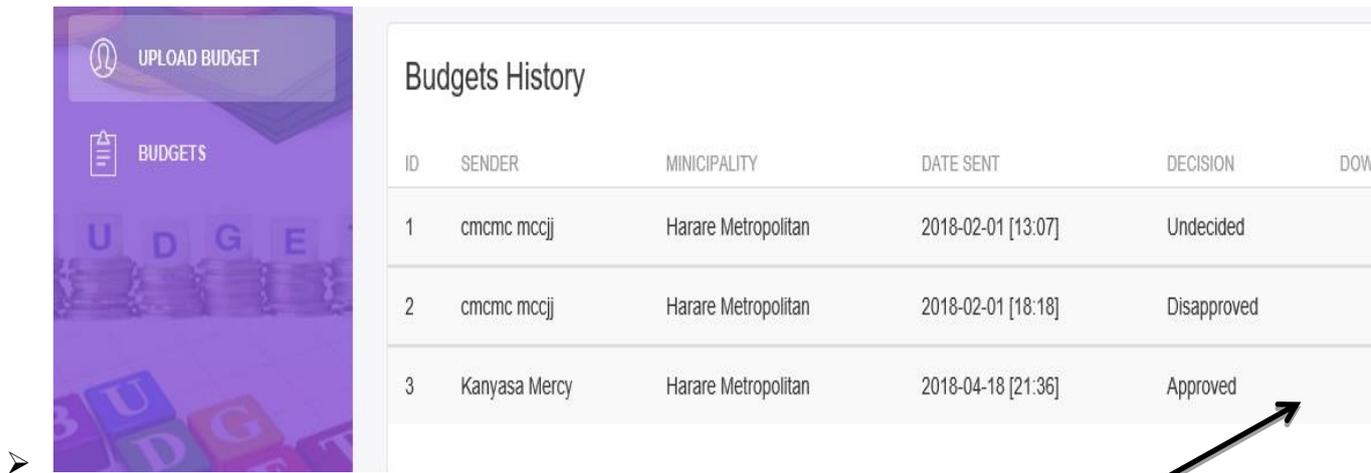


Figure A9: budgets history.

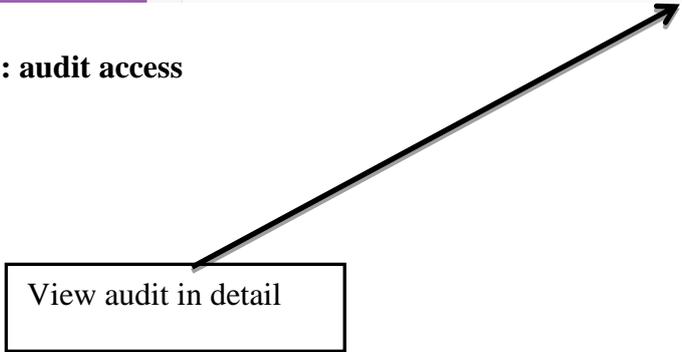
Click to download budget

Audit access

This page is used by the administrator so as to track log in and log out records done but all system users, so that no system changed can go unaudited.

| ID | USER | MINICIPALITY | TIME LOGGED IN | TIME LOGGED OUT |
|----|---------------|---------------------|---------------------|----------------------|
| 1 | cmcmc mccjj | Harare Metropolitan | 02-02-18 [22:08:46] | 02-02-2018 [22 : 09] |
| 2 | cmcmc mccjj | Harare Metropolitan | 02-02-18 [22:15:36] | 02-02-2018 [22 : 15] |
| 3 | cmcmc mccjj | Harare Metropolitan | 02-02-18 [22:56:44] | 03-02-2018 [07 : 32] |
| 4 | cmcmc mccjj | Harare Metropolitan | 03-02-18 [07:51:19] | 03-02-2018 [07 : 52] |
| 5 | Belton Matiza | Harare Metropolitan | 03-02-18 [07:54:50] | 03-02-2018 [07 : 55] |
| 6 | Belton Matiza | Harare Metropolitan | 03-02-18 [08:37:16] | 03-02-2018 [09 : 04] |
| 7 | Kanyasa Mercy | Harare Metropolitan | 18-04-18 [13:03:35] | |
| 8 | Kanyasa Mercy | Harare Metropolitan | 18-04-18 [21:29:25] | 18-04-2018 [21 : 29] |
| 9 | Kanyasa Mercy | Harare Metropolitan | 18-04-18 [21:34:56] | 18-04-2018 [21 : 38] |
| 10 | Kanyasa Mercy | Harare Metropolitan | 18-04-18 [22:13:02] | |

Figure A10: audit access



APPENDIX B: A LETTER OF REQUEST OF CONDUCTING RESEARCH



MIDLANDS STATE UNIVERSITY

P.Bag 9055
Gweru.
Zimbabwe

Tel (263) 54 26045/
260404/260525/260596
Fax : (263) 54 260 233

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION SYSTEMS

23 November 2017

REQUESTING FOR PERMISSION TO CONDUCT RESEARCH

The above subject matter refers.

On behalf of our student Nyaradzo Chabata (R156066M) I request for permission to conduct research in your organization. Our student has expressed that she wishes to consider your organization **MINISTRY OF LOCAL GOVERNMENT** in partial fulfilment of BSc Information systems management degree for her final year project. I am kindly requesting that you grant her access to the information that she will require to complete the project. Any information gathered treated with the utmost confidence

We hope to receive a favourable response from you.

If there is any further information you may require feel free to contact the undersigned,

Yours Sincerely

T.G Zhou (Mrs)

Acting Chairperson (Computer Science and Information System)

gwanzurat@msu.ac.zw+263 54 260450 ext 2162

APPENDIX C: LETTER OF CONDUCTING RESEARCH

MINISTRY OF LOCAL GOVERNMENT PUBLIC WORKS AND NATIONAL HOUSING



Bikita minerals road
P.O Box 168
Masvingo
TEL: (263) 39 – 263940

INFORMATION TECHNOLOGY SERVICES DEPARTMENT

23 November 2017

Dear Sir / Madam

It is my understanding that Nyaradzo Chabata (R156066M) will be conducting a research study at the Ministry of Local Government on the project titled “ LOCAL AUTHORITIES E – BUDGET SYSTEM”. The student has informed me of the study as well as the targeted population. I support this effort and will provide any assistance necessary for the successful implementation of this study.

Sincerely

I.T Director

APPENDIX D: INTERVIEW

The list of interview questions asked at Ministry of local Government:

1. Briefly discuss how the existing manual budget approval system is done?
2. For how long would you wait for a budget approval to be processed?
3. To what extent would the manual system affect your productivity?
4. What are the main challenges of the current system?
5. How do you think the challenges can be minimized?
6. Do you think the new system will work efficiency?
7. How do you feel about the new proposed system?

APPENDIX E: QUESTIONNAIRE

My name is Nyaradzo Chabata (R156066M). I am a final year student at the Midlands State University studying BSC Information Systems Degree. In partial fulfilment of this degree, I have undertaken a computer project entitled **Local Authorities E-Budget System**. I am kindly requesting for your assistance through completing this questionnaire.

Please note: Your name is not required.

: The information provided will be only used for academic purpose only.

: Where applicable, please use a tick indicate your answer.

1. What system is used to facilitate the budget approvals at your organization?

Manual Automated Both

2. Who approves the budget?

.....

3. Are they any procedures required for the budget to be approved? Please specify if any....

.....

.....

.....

4. Which departments are responsible for approving or disapproving the budgets?.....

5. Is the current system efficient? Yes No

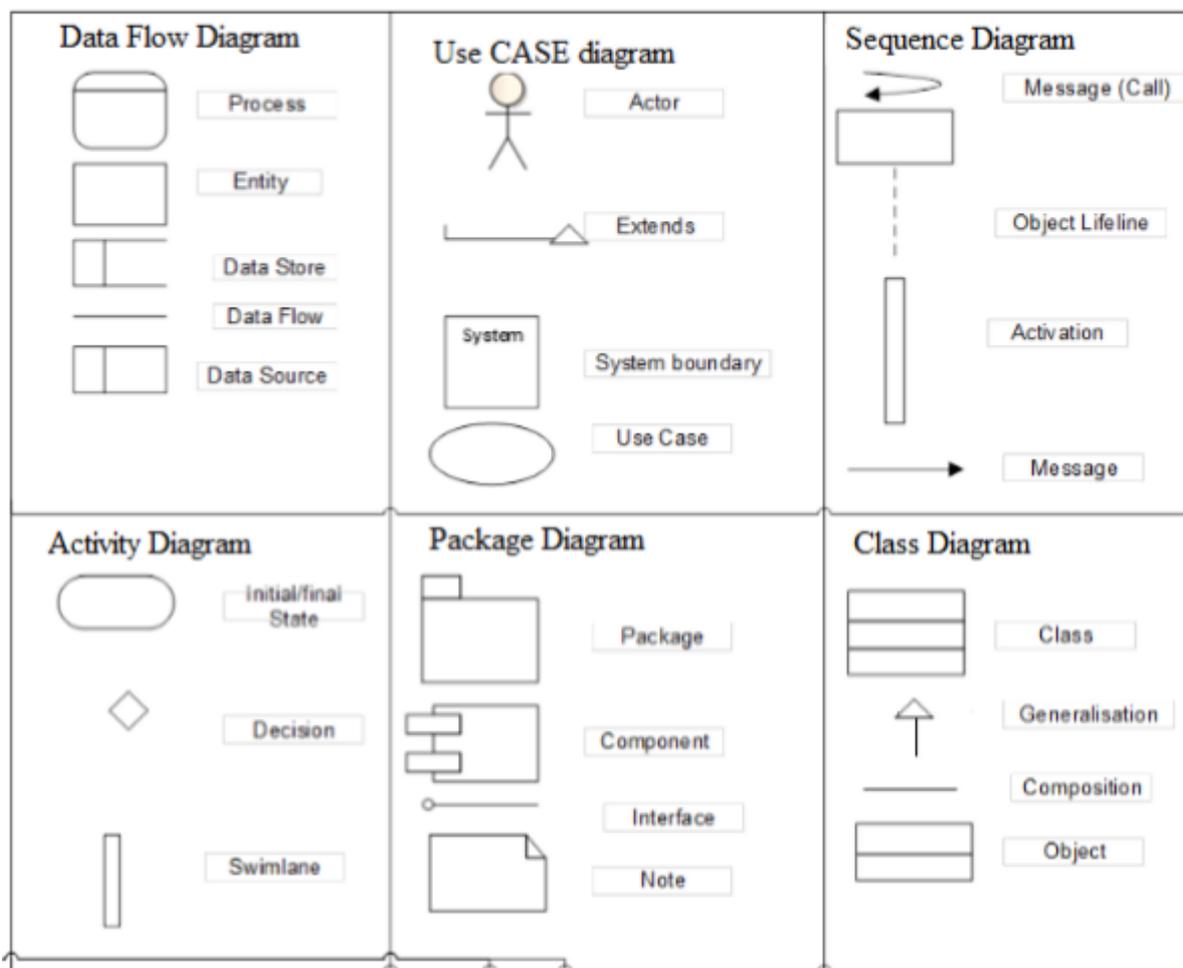
6. Is the Budget approval system time consuming? Yes No

7. Is the existing system associated with geographical barriers? Yes No

8. Is the tracking status of budgets easy with the existing system? Yes No

9. Do you think that automating the current system will easy up the budget approval process?
 Yes No

APPENDIX F: LIST OF SYMBOLS USED



APPENDIX G: CODE SNIPPET

Connection to database

```
<?php
$server = "localhost";
$username = "root";
$password = "";
$db = "e-budget";
$con = mysqli_connect($server,$username,$password,$db);
    if(mysqli_connect_error($con)){
        echo "FAILED TO CONNECT TO MYSQL: ".mysqli_connect_error();
    }
    function message($msg){
        die('<script>alert("'.$msg.'"); </script>');
    }
?>
```

Log in

```
<?php
include_once('dbcon.php');
//variables
$username = mysqli_real_escape_string($con,$_POST['username']);
$password = mysqli_real_escape_string($con,$_POST['password']);
$query = "SELECT * FROM users WHERE username = '$username' AND password = '$password'";
$result = mysqli_query($con,$query)or die (mysqli_error());
$num = mysqli_num_rows($result);
//checkers
if($num = 1){
    $obj = mysqli_fetch_object($result);
    //fetching objects
    $name = $obj->username;
    $municipality = $obj->municipality;
    $id = $obj->id;
    $email = $obj->email;
```

```

$mobile = $obj->mobile;
$access_level = $obj->access_level;
//start session
session_start();
//switching access_level
switch($access_level){
    case 'User':
        $_SESSION['name'] = $name;
        $_SESSION['min'] = $min;
        $_SESSION['mobile'] = $mobile;
        $_SESSION['email'] = $email;
        $qry = "UPDATE users SET online = 'Online' WHERE id = '$id'";
        $result = mysqli_query($con,$qry)or die(mysqli_error());
        if($result == true){
            $date = date("d-m-y [H:i:s]");
            $q = "INSERT INTO loggers(user,min,timin)
VALUES('$name','$min','$date)";
            mysqli_query($con,$q)or die(mysqli_error());
            $qr = "SELECT id FROM loggers WHERE timin =
'$date'";

            $rst = mysqli_query($con,$qr);
            $obj = mysqli_fetch_object($rst);
            $_SESSION['id'] = $obj->id;
        }
        echo ("<script>>window.location='minicipalities/user.php';</script>");
        break;

    case 'Admin':
        $_SESSION['name'] = $name;
        echo ("<script>>window,location='admin/user.php';</script>");
        break;

    default:
        echo "hakunazvakadaro";

```

```

        }
    }
    else{    message("Invalid Login");
            exit();
        }
?>

```

Log out

```

<?php
include_once('dbcon.php');
error_reporting(0);
session_start();
$offTime = date("d-m-Y [H : i]");
$id = $_SESSION['id'];
$qry = "UPDATE loggers SET timeout = '$offTime' WHERE id = '$id'";
mysqli_query($con,$qry);
session_destroy();
header('location:index.php');
?>

```

Upload a budget

```

<?php
error_reporting(0);
?>
<!doctype html>
<html lang="en">
<head>
<meta charset="utf-8" />
<link rel="icon" type="image/png" href="assets/img/favicon.ico">
<meta http-equiv="X-UA-Compatible" content="IE=edge,chrome=1" />
<title>E-budget</title>
</head>

```

```

<body>
<div class="wrapper">
<div class="sidebar" data-color="purple" data-image="assets/img/sidebar-5.jpg">
<!-- you can change the color of the sidebar using: data-color="blue | azure | green | orange |
red | purple" -->
<div class="sidebar-wrapper">
<div class="logo">
<a href="http://www.creative-tim.com" class="simple-text">
    E-Budget
</a>
</div>
<ul class="nav">
<li class="active">
<a href="user.php">
<i class="pe-7s-user"></i>
<p>Upload Budget</p>
</a>
</li>
<li>
<a href="budgets.php">
<i class="pe-7s-note2"></i>
<p>Budgets </p>
</a>
</li>
</ul>
</div>
</div>

<div class="main-panel">
<nav class="navbarnavbar-default navbar-fixed">
<div class="container-fluid">
<div class="navbar-header">
<button type="button" class="navbar-toggle" data-toggle="collapse" data-
target="#navigation-example-2">

```

```

<span class="sr-only">Toggle navigation</span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
</button>
<a class="navbar-brand" href="#">Budgets</a>
</div>
<div class="collapse navbar-collapse">
<ul class="nav navbar-nav navbar-left">
<li>
<a href="#" class="dropdown-toggle" data-toggle="dropdown">
<i class="fafa-dashboard"></i>
<p class="hidden-lg hidden-md">Dashboard</p>
</a>
</li>
<li>
<a href="">
<i class="fafa-search"></i>
<p class="hidden-lg hidden-md">Search</p>
</a>
</li>
</ul><ul class="nav navbar-nav navbar-right">
<li>
<a href="../logout.php">
<p>Log out</p>
</a>
</li>
<li class="separator hidden-lg hidden-md"></li>
</ul>
</div>
</div>
</nav>
<div class="content">

```

```

<div class="container-fluid">
<div class="row">
<div class="col-md-12">
<div class="card">
<div class="header">
<h4 class="title">Budgets History</h4>
</div>

```

```

<div class="content table-responsive table-full-width">
<table class="table table-hover table-striped">
<thead>
<th>ID</th>
<th>Sender</th>
<th>Minicipality</th>
<th>Date Sent</th>
<th>Decision</th>
<th>Download</th>
</thead>

```

```

<?php
include_once('../dbcon.php');
    $num = 1;
session_start();
    @$min = $_SESSION['min'];
    $qry = "SELECT * FROM budgets WHERE min = '$min'";
    $rst = mysqli_query($con,$qry)or die(mysqli_error());
while($row = mysqli_fetch_array($rst)){ ?>
<tbody>
<tr>
<td><?php echo $num;?></td>
<td><?php echo $row['sender']; ?></td>
<td><?php echo $row['min']; ?></td>
<td><?php echo $row['date'];?></td>
<td>
<?php

```

```

        $switcher = $row['status'];
switch($switcher){
case 0:
echo "New";
break;

case 1:
echo "Undecided";
break;

case 2:
echo "Approved";
break;

case 3:
echo "Disapproved";
break;

default:
echo "unknown";
        }

        ?>
</td>

<td align="center"><a href="table.php?page=down.php&id=<?php echo @$row['id']; ?>"
><i class="pe-7s-cloud-download"></i></a></td>
</tr>

</tbody>

<?php
    $num++;
}

```

```
?>
</table>

</div>

</div>
</div>
</div>
</form>

<footer class="footer">
<div class="container-fluid">
<nav class="pull-left">
<ul>
<li>
<a href="#">
                Home
            </a>
</li>
<li>
<a href="#">
                Company
            </a>
</li>
<li>
<a href="#">
                Portfolio
            </a>
</li>
<li>
<a href="#">
                Blog
            </a>
</li>
</ul>
</div>
</div>
</div>
```

```

</ul>
</nav>
<p class="copyright pull-right">
&copy;      <script>document.write(new      Date().getFullYear())</script><a
href="#">ChabataNyaradzo</a></p>
</div>
</footer>

</div>
</div>

</body>

</html>

```

Approval code

```

<table class="table table-hover table-striped">
<thead>
<th>ID</th>
      <th>Sender</th>
      <th>Minicipality</th>
<th>Date Sent</th>
<th>Approve</th>
<th>Disapprove</th>
</thead>
<?php
include_once('../dbcon.php');
    $num = 1;
    $qry = "SELECT * FROM budgets WHERE status = 1";
    $rst = mysqli_query($con,$qry)or die(mysqli_error());
while($row = mysqli_fetch_array($rst)){ ?>
<tbody>

```

```

<tr>
<td><?php echo $num;?></td>
<td><?php echo $row['sender']; ?></td>
<td><?php echo $row['min']; ?></td>
<td><?php echo $row['date'];?></td>
<td><a href="decide.php?page=approve.php&id=<?php echo @$row['id']; ?>" ><i
class="pe-7s-like2"></i></a></td>
<td><a href="decide.php?page=disapprove.php&id=<?php echo @$row['id']; ?>" ><i
class="pe-7s-trash"></i></a></td>
</tr>

</tbody>

<?php
    $num++;
}
?>
</table>

```