

**MINISTRY OF WOMEN AFFAIRS GENDER BASED VIOLENCE MONITORING
SYSTEM**

MIDLANDS STATE UNIVERSITY



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GENDER BASED VIOLENCE MONITORING SYSTEM

BY

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ABSTRACT

The purpose of the gender based violence monitoring system is to have accumulative statistics on the cases reported in each province for the purpose of eradicating the challenges which cause the gender based violence. The objectives of the system are that there should be easy allocation of officers to the relevant provinces and to provide the sufficient funding for each program. The data collected is then aggregated to sum up the totals per province and have a collective figure of all the provinces. After the planning phase it was decided that it would be best to continue carrying out the project as it would provide excellent tangible and intangible business values. The feasibility study also showed that the project is economically feasible as well as technically feasible and so the organization has the capacity to carry on with the project. All the risks that the project might encounter have been identified and possible ways to manage the risks have been evaluated. Following the scope of the third stage, to acquire detailed information from the users about the current system. The preliminary investigations were carried out to decide whether to continue with the project and information gathering techniques were used and these included interviews, questionnaires and observation, the copies of the of these techniques are listed in the Appendix. The design phase enabled us to come with the way the new system is supposed to appear. PHP, Wamp web server and MySQL were used in designing the system. There was also design of the data flow, entity relationships and the database as a whole. All this was done to prepare for the implementation of the proposed system. In the implementation phase, the production system was installed, initial user training was also completed, end user documentation was delivered and the post implementation review meeting was held. The stage was reviewed to ensure that we met all the goals in the project plan for a satisfactory result. The implementation stage also dealt with issues of quality, performance, baselines, libraries and debugging. The end deliverable was the system itself.

DECLARATION

I Farai Maware hereby declare that I am the sole author of this dissertation. I authorize the Midlands State University to lend this thesis to other institutions or individuals for the purpose of scholarly research.

Signature.....

Date.....

APPROVAL

**This dissertation entitled “MINISTRY OF WOMEN AFFAIRS GENDER
BASED VIOLENCE MONITORING SYSTEM by FARAI MAWARE” meets
the regulations governing the award of the degree of INFORMATION
SYSTEMS of the MIDLANDS STATE UNIVERSITY and is approved for its
contribution to knowledge and literal presentation.**

Supervisor.....

Date.....

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DEDICATION

As so often before, I owe a debt to the patience and loving hearts of my parents and family alongside C. Layman who have supported me so much throughout my entire education. To my friends I say thank you. I dedicate this project to all of them.

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LIST OF ACRONYMS

MWA	Ministry of Women Affairs
GBV	Gender Based Violence
PDO	Provincial Development Officer
NPV	Net Present Value
ROI	Return On Investment
UML	Unified Modeling Language
Org	Organization
DFD	Data Flow Diagram
SSADM	Structured System Analysis and Design
SQL	Structured Query Language
HQ Admin	Head Quarters Administrator

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter gives an outline of what the current system is all about, what prompted the development the Gender Based Violence Information System, the benefits that are likely to be derived from the new system inclusive of the various development tools that the developer uses in coming up with the new system.

1.2 Organisational background

According to the ministry of women affairs handbook (2010) soon after independence in 1981, a ministry was formed which was mandated to look at issues that affect women, the ministry was known as the Ministry of Community Development and Women Affairs. This ministry operated until the formation of the Ministry of Community and Cooperative Development. The new ministry had the mandate of mobilizing communities to form cooperatives and work as a team so that every member of the community would benefit from the resources available. It was then noted that not all members of the community benefited and the ministry merged with the ministry of youth, sport and culture to become the ministry of political affairs.

From 1989 to 1993, the gender department was in the office of the president and cabinet and the women affairs department was in the ministry of political affairs. These two ministries did not fully address the needs of women in relation to personal and national development. The ministry of national affairs, employment creation and cooperatives was therefore formed. The ministry was put in place to encompass both men and women in national development.

In 2000, the ministry of youth, gender and employment creation was formed it later changed to the ministry of youth and employment creation. This ministry was put in place to enable youth to be self-sustainable and thereby cut the dependency cycle. It was later realized that there had to be a stand-alone ministry which focuses on the disparities that exist between men and women and also ensure the empowerment of women and communities. This saw the birth of the ministry of women affairs, gender and community development in 2005.

1.2.2 Organizational structure

The Ministry has three major departments which are the Gender Department, Women Affairs and Community Development. Within the structures of the ministry there is also the finance department which is responsible for all the administration of the ministry's finance, the administration department, an internal audit and human resources.

The Ministry has offices from national level down to ward level. At national level the Honourable Minister, Dr O.Muchinguri is on the top of the hierarchy. The Minister is responsible for overseeing all the ministry activities. Deputy Minister is next and it is her who takes the minister's place in her absence and she is also responsible for overseeing of all ministry activities and programmes. After the deputy minister follows the permanent secretary Dr Gumbo. The permanent secretary is responsible for coordinating the day to day activities of the ministry. Then the five directors and the General Manager come below her and are responsible for coordinating programmes and projects in their Departments. The Deputy Directors then come after the directors, followed by administration officers who do all the administrative work in their departments with the assistance of directors and deputy directors.

Organogram

Kaliski (2001) suggested that it is a diagram that describes the organization from top to bottom. It also shows the size of the organization and the bigger the organization the more complex is the organogram. There are different relations between departments and these relations may include managers to sub-workers, directors to managing directors, engineers to various departments and so forth. Below is an organogram showing the ministry of women affairs structure.

Organogram

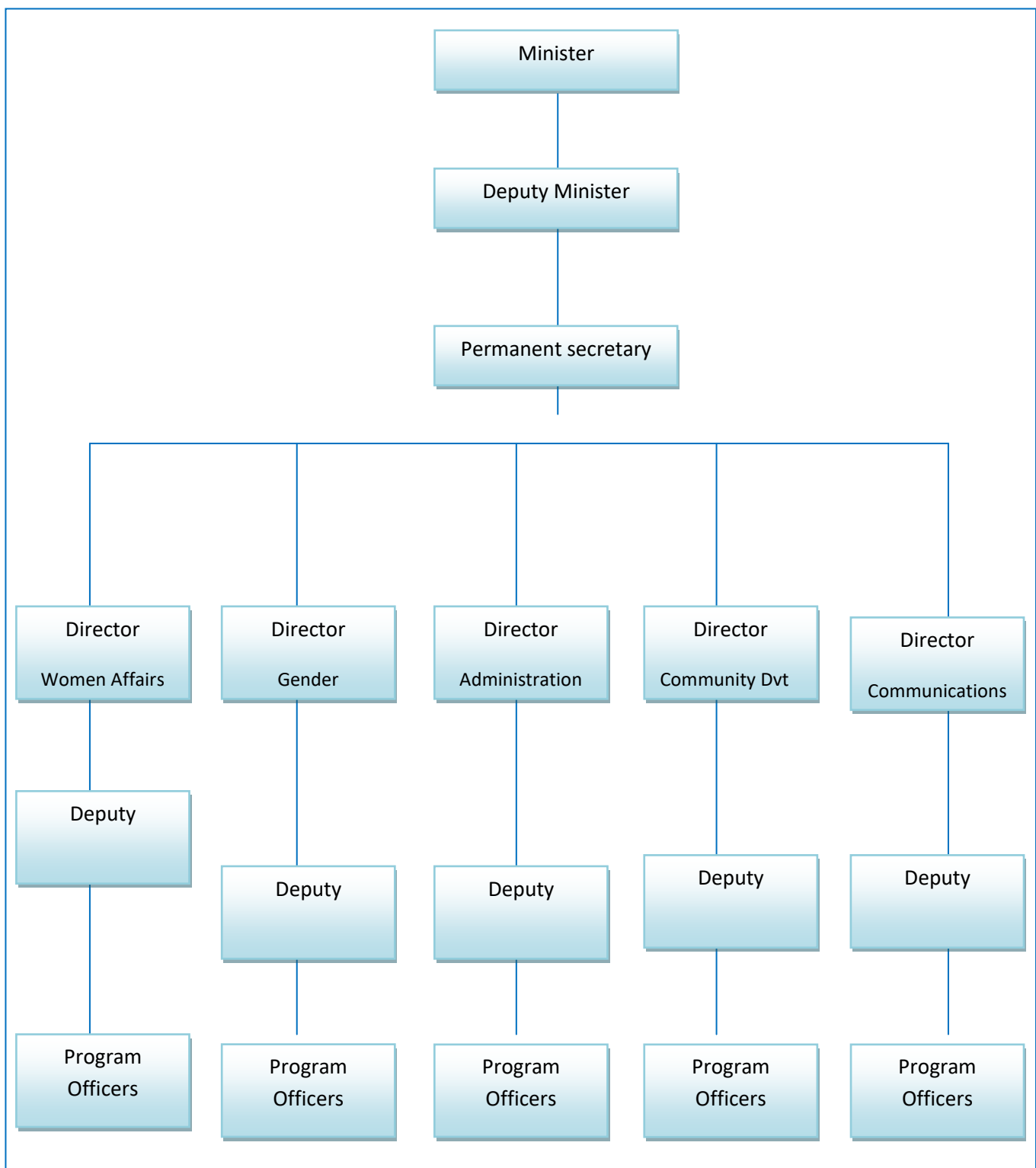


Fig: 1.1 Organogram Source: Ministry of women affairs hand book (2010)

1.2.3 Vision

The Ministry of Women Affairs, Gender and Community Development to spearhead the way towards Gender Equality and facilitate the promotion of well-being of o families , gender equity and equality and Empowerment of communities

1.2.4 Mission

To promote the empowerment of women, gender and equity and community development

1.2.5 Aim

To eradicate and empower women and communities as well as promoting gender equity and equality

1.2.6 Values

- Effective Communication
- Team work
- Commitment
- Integrity
- Vision
- Family Unity

1.3 Problem definition

The programs coordinator is having problems in monitoring and evaluating the different programs, capturing of gender based violence statistics that are being collected nationwide. Information generation, analysis and feedback from the data collected is not effective this is because the reports and feedback is submitted in different formats and therefore difficult for the coordinator to monitor, evaluate and analyze the different data. There are also problems in the calculation of allowances for field officers and retrieval of data. The manual system is prone to errors. It is time consuming. The ministry is failing to establish trends in gender based violence thus relying on statistics from other institutions.

1.4 Aim of study

The aim of the research is to create a gender based violence information system that captures gender based violence cases in all ten provinces in Zimbabwe.

1.5 Objectives of the proposed system:

These are the objectives of the new system:

- To register a new program
- To allocate program officers to different programs.
- To allocate field allowances for program officers.
- To capture gender based violence cases in all provinces.
- To summarize the gender based violence data and send it as e- mails to all donors
- To establish trends in gender based violence.

1.6 Instruments

According to Sheldon (1998) an instrument is software that communicates and manipulates another device to reach the desired outcome. These are the software instruments that will be used in developing the software system.

- PHP- It is a powerful tool for making highly interactive, dynamic web pages. It is the hypertext pre-processor. It is very efficient, free and easy to use software.
- Apache web server- The Apache Web server is the most popular Web server there is. It, like Linux, PHP, and MySQL, is an open-source project Apache makes use of third-party modules. Because it is open source, anyone with the skill can write code that extends the full operation of Apache.
- My SQL database server- allows you to access my SQL server sites. It is easy to install and is easy to understand. This can be used efficiently by anyone who understands the database servers
- Windows 8 or later version- it has user friendly interfaces that can be compatible with any user. Windows platforms make it easy to administer installation of other software thus making it universal software.

1.7 Justification

Manual reporting and feedback is very slow and also ineffective as mistakes are easily made. The speed of monitoring and evaluation of statistic will be improved and therefore time is saved. The communication between the administrator and officers is improved. Decision making is made easier when using the system. Generation of reports is crucial for

management purposes. The new system will make it possible to establish trends in the gender based violence cases.

1.8 Conclusion

Most organizations are advised to always move along with the rapid change in technology. The manual reporting at the ministry tends to slow down the whole process and thus the need for the new system. With the new system the speed of monitoring and evaluation of programs and statistics is improved therefore a lot of valuable time is saved. On part of management it will be much easier to make decisions based on accurate and reliable statistics. The next chapter will explore the existing systems, their limitations and the benefits of the gender based violence monitoring system over these systems.

CHAPTER 2: PLANNING PHASE

2.1 Introduction

In this section which is the planning stage of the proposed system will look at the major components which are the costs of carrying out the respective project. We will also look at forecasting techniques in measuring feasibility of the proposed system. All the requirements of the new system will be put together and come up with a quantifiable cost benefit analysis. If the project is deemed fit and benefits of undertaking the project outweigh the costs of the new project then the building of the new system will commence. Basically the planning stage will mainly focus on the feasibility of the proposed system and the proposed work plans.

Reasons for developing the system

- An automated system has many advantages in that it is less expensive to maintain and also reliable cost wise in the reduction of workers efforts.
- Developing the gender based violence system will entail that the costs in paper work that is stationery will be minimized and thus a reduction in the initial storage costs.
- In actual fact the organization relies heavily on data from other organizations so building the system will enable them to generate their own statistics
- Due to lack of viability in the distribution of funds, the new system will allocate funds accordingly

2.3 Business Value

Sward, (2008) expresses that one has to imagine how the business would operate without new technologies to aid the increase in business value and the areas which the project is likely to impact. Not all projects are viable to business and thus have to answer questions like will the new system increase stakeholder participation and will it decrease total expenses. Using general terminology associated with business value the major aspect of the subject is to automate all the processes in the monitoring system. In this case business value will outline its major points in relation to worker productivity, value of correct information not leaving out fulfilment of the staff as a whole. The building of the new system will have foremost benefits to the organization and these encompass the subsequent aspects:

Enhanced competence and precision

Data will be extracted quickly and thus dissemination of information will be very much faster enabling officers to focus on other important tasks

- System will have the ability to handle very large volume of data.
- System will ensure faster and more accurate provision of services and information thus greatly reduces the time for making inquiries and waiting period.
- The system will have a higher accuracy of information entered or captured into the database.

Security and privacy

- There would be no access to unauthorized persons as the use of passwords and user names would improve the security of the system. The system shall greatly minimize the manipulation of data by officers for personal benefit as there is increased accountability.

2.4 Feasibility Study

Young (2006) expresses that the study of feasibility seeks to make subjective evaluations about the project and summaries the information from the calculations to aid decision making. There must be guarantee that maximization of total expected exposure will lead to maximization of profit. Certainly the effect of the feasibility study should be measurable and will help in making the go ahead decision or abort project. Feasibility also helps in the identification of potential risks which will need to be taken into account if the project is approved. The effectiveness of the system to the organization should come first and must be clearly highlighted in this important study. In analyzing feasibility we have to look at the following which constitute the whole study of feasibility that is:

- Technical
- Economic
- Social
- Operational

2.4.1 Technical feasibility

Kreigsmann (2000) suggests that practical evaluation of the latest system looks to evaluate mostly requisite operations aligned with the software, technological skill and hardware resources accessible. Accessibility of Hardware and Software specified software and hardware is required for the full development of the system. These are some of the software and hardware that is needed for the system. The following requested software is available at the organization's information technology department

Software	Version Required	Software Available
Operating System	Windows 7, Windows 8	Windows 7
SQL-Server Database Package	8.0	7.0
Microsoft Office	Office 2010	Office 2007
Dream Weaver	CS5 or higher	Dreamweaver CS3
Photoshop	CS5	CS3
Component	Minimum	Recommended
Central processing unit	1.5Ghz	2.5Ghz
Reserve Processor	256Kb	512Kb
Main Memory	1MB	2GB
Hard Drive	40GB	320GB
UPS	500VA	1000VA
Printer	LaserJet	LaserJet
Network Card	10/100mbps	10/100mbps
CD Rom Drive	48x	52x

Table 2.1: Required hardware and software specification

The proposed PHP programming language and SQL-Server database technologies are mature and proven technologies that have been used to create other various Information Systems that are currently being used in many organizations. This involves the monitoring and evaluation systems that are operational in many Non-governmental organizations and government ministries.

2.4.2 Economic Feasibility

Young (2006) insists that economic feasibility seeks to evaluate the financial proposition of the new project. The study will help in coming up with the decision whether to build the system of not basing on the financial focus. The financial analysis is usually referred to as the cost benefit analysis. As long as the monetary values of payoffs stay within a range that is considered reasonable to the decision maker, expected monetary value is a good decision criterion.

2.4.2.1 Tangible benefits and intangible benefits

Juergen (2002) suggested that substantial profits are those benefits that undoubtedly are capable of being measured or articulated in monetary expressions. The opposite of the above mentioned are the intangible profits which cannot be articulated in monetary values. Benefits which are cannot be quantifiable can be in the form of goodwill which the organization will not realize its impact directly but it is fully present in the day to day operations of the organization.

Benefits	2015	2016	2017	Total
Tangible	Us\$	Us\$	Us\$	Us\$
Expected increase in savings	1000	1200	2000	4200
Reduced stationery costs	1200	1000	700	2900
Reduced telephone costs	1300	1000	500	2800
Reduced overtime costs	2500	2000	1000	5500
Reduced labour costs	3000	2500	2000	7500
Total tangible benefits	9000	7700	6200	22900
Intangible benefits				
Error reduction	1000	500	500	2000
Efficiency	1200	700	500	2400
	2200	1200	1000	4400
Total benefits	<u>11200</u>	<u>8900</u>	<u>7200</u>	<u>27300</u>

Table 2.2: tangible & intangible benefits

2.4.2.2 Development costs: Gabriel (2000) suggests that these are the costs incurred in the development of the new system and various components which may be included and differ from project to project. Below is a table showing development costs

Narration	Quantity	Amount
<u>Development costs</u>		Us\$
HP desktop machines	5	2650
Printer	4	660
System software	1	250
Switch	1	310
Eset antivirus 2013	1	50
Consultants		200
Labour		400
Application software	1	230
Total development costs		<u>4750</u>

Table 2.3: Development costs

2.4.2.3 Operational costs: Gabriel (2000) insists that each project has its useful life. In its allotted time which can be a number of years that means that it will have operational costs. These are the costs incurred on a project over a period of time in its life span. The table below shows operational costs for the three years the project will be operational.

Year	2015	2016	2017	Total
	\$	\$	\$	\$
Hardware Maintenance	1200	1000	700	2900
Software Maintenance	1000	1200	1500	3700
Expertise / training	2000	1500	1000	4500
Stationery	500	500	500	1500
Total operational costs	<u>4700</u>	<u>4200</u>	<u>3700</u>	<u>12600</u>

Table 2.4: Operational costs

2.4.2.4 Cost benefit analysis

Gabriel (2000) suggests that the cost benefit analysis evaluates the net worth of positives which the project gives to the organization as a whole. This analysis sums up all the total

benefits or the profits obtained from implementing the system. After these have been put together we then subtract the total costs of the entire project from the net benefits. The difference between these values will determine which course of action will be taken and this includes decisions whether to go with the project or shelve it if it does not benefit the organisation.

Narration	2015	2016	2017	Total
	\$	\$	\$	\$
Total benefits	11200	8900	7200	27300
Less costs:				
Operational costs	4700	4200	3700	12600
Net Benefits	<u>6500</u>	<u>4700</u>	<u>3500</u>	<u>14700</u>

Table 2.5 Cost benefit analysis

Return of Investment, (ROI)

In calculating ROI Gabriel (2000:133) states that ‘A performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. To calculate ROI, the benefit (return) of an investment is divided by the cost of the investment; the result is expressed as a percentage or a ratio’.

$$ROI = \frac{\text{Total Benefits} - \text{Total Costs}}{\text{total Costs}} \times 100$$

$$\text{Therefore } ROI = \frac{27300 - 17350}{17350} \times 100$$

Total = 57%

Demerits of ROI

- The changes which happen early on in the project are not considered by this method.
- The timing of the costs of the overall project is not put into account thus it is better to use the next method.

Comment

The return on investment is positive thus it can be adopted for the project.

Net Present Value

In calculating NPV Gabriel (2000: 122) states that ‘It is calculated as the discrepancy between present value of cash inflows and the present value of cash out flows. It is sensitive to the reliability of future cash flows that the project will yield’. The formula is $1 / (1+r)^t$

In this case r represents the discount rate and t is for the time in years

Year	Net cash flows	Discount Factor %	Present Value (USD)
0	(4750)	1	(4750)
1	4300	0.90901	5900
2	3500	0.82644	3884
3	2500	0.75131	2629

Table 2.6 Net present value

Comment

Net present value is positive so the organisation can go ahead in the development of the system.

2.4.3 Social feasibility

Berrie (2009) insists that this study will determine if the project will be satisfactory to the people or not. This assumption would in general examine the probability that the project will have to be accepted by the people directly affected by it. This includes the stakeholders like the donor community and other organizations directly working with the ministry.

- An increase in employment opportunities with the growth of the organization. As the organization’s monitoring actions amplify, the ministry will have to engage new donors who can assist this organization with field allowances thus more employment.
- Encourage relations for the workers with outside parties. The amount of work to be carried out by the workers is minimized, thus making them able to spend more valuable time with their loved ones
- More interaction between the provincial development officers(PDO) and the community at large enhancing a platform for social discussions
- Areas with highest gender based violence cases will get more special attention in being sensitized in gender based violence issues.

2.4.4 Operational feasibility

Fabrycky (2010) suggests that this focuses on the ability of the ministry staff and directors in the operation of the new system. It also looks at the projects potential for success over its failures. This study is an overall assessment of how well the new system will solve the ministries problems with regard to gender based violence monitoring.

- The new system must be very accurate and present information as requested.
- System queries must answer the questions being asked by the user that is availing the data requested by the user within a short specified time.
- Business wise the new system must incorporate with the ministries organizational goals
- The use of passwords and authentication procedures must be part of the system so as to ensure adequate security and cut down on counterfeit behaviour.

The proposed system is pronounced operationally feasible if:

- Instruction intended for the system use can be done as both parties are communicating to each other
- The labour force has been cropped from the ministry so they will find it easy to cope with the new system.
- Allows future adjustments and developments.
- Friendly user interfaces and a easy to use system should be developed to help the user to work much faster and efficiently

2.5 Project plan

Kallis (1998) suggests that the solution to a project scheduling problem enables the developer to establish time saving schedules for each stage for a period of time such as weeks, months and days. For the project to be a success the developer should make sure that he adds' to the stipulated schedule on the sequence of occurrence in the proposed development phases. The table below shows the schedule to be used in the development of the gender based violence monitoring system.

2.5.1 Project Schedule

Phase	Start	End	Duration(weeks)
Proposal	21/03/2014	27/02/2014	1
Planning	28/02/2014	06/03/2014	1
Analysis	07/03/2014	21/03/2014	2
Design	22/03/2014	04/04/2014	3
Implementation	04/04/2014	18/04/2014	2
Maintenance	18/04/2014	26/04/2014	1
Documentation	On going	On going	On going

Table 2.7: Time line for duration of the project development

2.5.2 Gantt chart

Activity	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9	WK10
Proposal	■									
Planning		■								
Analysis			■	■						
Design					■	■	■			
Implementation								■	■	
Maintenance										■
Documentation	■	■	■	■	■	■	■	■	■	■

Figure 2.1: Gantt chart

2.6 Conclusion

By evaluating the alternatives that is the costs and profits of the new system we are able to ascertain the actual value of the project to the ministry as a whole. Some problems are repetitive and the developer saves time and effort by relying more on quantitative procedures to make the routine decision recommendations. The benefits of implementing a new system outweighed the total costs for the system and thus the green light to go ahead with the development of the monitoring system. The next chapter will look in detail at the analysis phase.

CHAPTER 3: ANALYSIS PHASE

3.1 Introduction

This is a detailed Analysis of the systems in place at the ministry of women affairs. This will include work flow, data flow, procedures and control of the current system. The main focus will be on how the system is being used, the personnel responsible for each process and the data being used in the current system. System analysis is more of a problem solving process in which most employees will have to take part in. Analysis helps solve problems which maybe long-term, short term or even midterm so as to come up with the best solution. Major objective of this phase is to evaluate, analyse and scrutinise the problems that exist with the current system.

3.2 Information gathering methodologies

According to Leung (2000) suggests that it is a process of measuring and gathering information on variables of interest in a conventional systematic approach that enables one to answer stated questions, test hypothesis and evaluate outcomes. Methods in data collection may vary but emphasis is put on accurate and honest information. We are going to focus on three main methodologies that are deemed suitable in gathering data for the new system and these include:

- Observations
- Interviews
- Questionnaires

The use of these data gathering methodologies the analyst should be able to come up with information that is of paramount importance to the analysis. Each of the methodologies has its own strengths and weaknesses thus the need to use all the methodologies relevant for this process. Distorted findings will result in wasted resources and may make the researcher to peruse fruitless avenues of investigation. The investigations will help the analyst to come up with a brighter view of current system operations and also evaluate possible ways to upgrade the system.

3.2.1 Interviews

Foddy (1993) insists that this is entitled as a conversation between one or more persons with the interviewer asking the interviewee the questions in relation to a particular subject.

Interviews can be conducted in many forms which can be via telephone or even face to face communication. The major goal is to gather as much information from the interviewee as possible. Questions are prepared by the interviewer on the particular subject. The provincial development officers and the ministry staff focusing on gender issues were interviewed giving their views on the functionality of the current system and its advantages and drawbacks. Special questionnaires were made for the system administrator at the head office since he has a different view of the operations of the current system.

Merits of interviews

- All the interviewees responded quickly to the questions asked and thus a lot of time was saved during this process.
- The interviews allowed for non verbal communication and this made the interviewer to be able to identify areas for the system which the officers were not able to adjust to well.
- The interviews conducted were more flexible and thus a major motivation to both the interviewer and interviewee
- End users of the system were happy and were made to feel part of the whole system development process.
- As a way of making the environment conducive some interviews were made in secluded areas and some publicly for discretion.

Demerits of interviews

- High-quality questions were complicated to put together.
- Information gathered may just have been subjective towards the interviewer.
- Secretive and confidential information could not be released to the interviewer thus hindering the importance of much needed information.
- The conducted interviews were costly in terms of man hours lost during interviews.

3.2.2 Observations

Peshkin (1993) expresses that this is direct interaction with the workers while they operate and go on with their daily routine and observes ongoing behaviour. For the observations to yield the best results the researcher must not change, control, adjust or influence the setting of the environment. The behaviour of the observer must be neutral in that he does not have to be noticed. The observations carried out showed the actual operations of the current system and the huge amounts of paper work involved in the data collection. The system administrator was mostly occupied compiling all the statistics received from the provinces. The systems procedures and operations were duly noted by the observer.

Merits of observations

- Information collected by this process was deemed reliable and accurate
- The observations should show how the current system works and how the officers function.
- There was an allowance for the observer to have his own view of the functionality of the system without views from third parties.
- Collection of data and information is much easier to understand.
- Observations do not obstruct with the work of the employees.

Demerits of Observation

- Some operations were difficult to understand since there were no questions to be asked.
- A small number of officers felt that they were being observed and thus did not feel secure.
- Some personnel were missing so those standing in for them were not efficient as the normal staff thus some results were distorted.

3.2.3 Questionnaire

Burns (2010) a questionnaire is a succession of questions asked to individuals to obtain statistically useful information about a certain subject. The process of using questionnaires involves drafting the questionnaires and distributing them to the current system users for them to input their responses. Questionnaires involved asking the users on drawbacks of the system and other major changes they would want to be done to the functionality of the system. Facts were collected from a sizable number of employees and other stakeholders concerned with the collection, sifting and publication of gender based violence statistics.

Merits of questionnaires

- These save money and generally inexpensive.
- Less time is consumed while filling the questioners because they were straight to the point and precise.
- Answers from questioners do not differ that much so the analyst has an easy task in putting together the information received.
- Questioners are easy to administer measuring them against other data collection methodologies.

Demerits of questionnaires

- Some respondents ignored sections of the questioner which require specific explanation to system functionality.
- Other questioners had deficient answers and worthless information.
- The questioner as an information gathering technique had a minimum response from the system users.

Overview of information gathering:

All the three methodologies brought about sufficient results for the analyst to have a proper insight of how the current system operates. The questioners were least effective but then their use together with interviews and observations helped the analyst gather sufficient data. Quantitative data can be used to create new theories and also help in testing hypothesis. Large amounts of information were collected within a short period of time and at a low cost.

3.3 Current system analysis

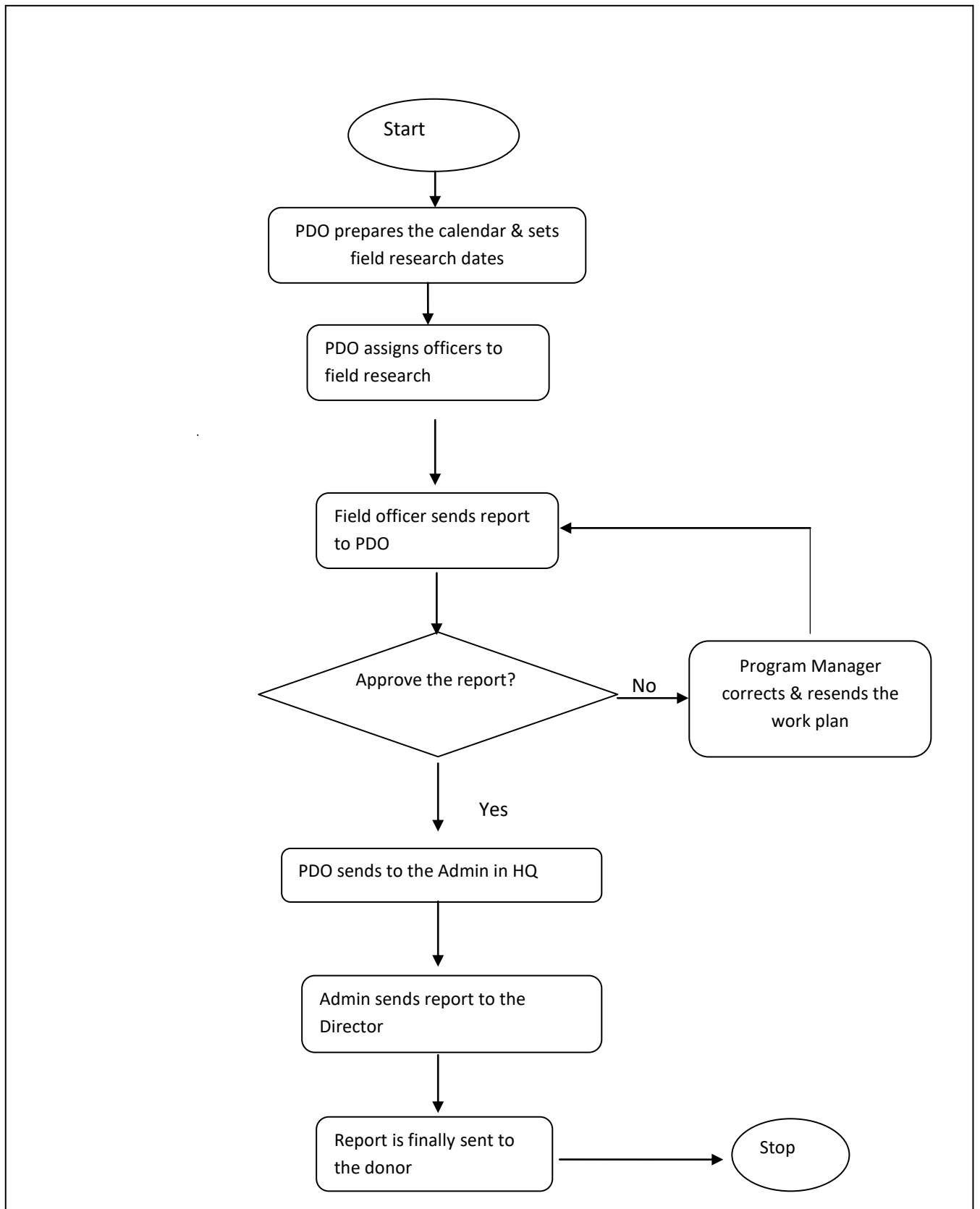
In the ministry of women affairs there is no software developed to capture the statistics on the cases reported. Information is sent from the provinces to the administrator at the head office and he does the data aggregation manually. After the compilation of the data the administrator then gives forwards the information to the directors via e-mail and presentation of hard copies. The final document is then presented to the donor through a manual reporting system which includes physical representation of the parties involved. The e-mails are achieved and the hard copied documents are filed for records retrieval when needed.

3.4 Process Analysis

3.4.1 Activity Diagram

Turban (2002) describes the dynamic aspects of the system and it is used to highlight the sequence in the occurrence of activities. It can help to describe the flow of command of the objective system such as exploring business regulations and procedures. An activity diagram may include people, software, hardware and networks.

Activity diagram of the current system



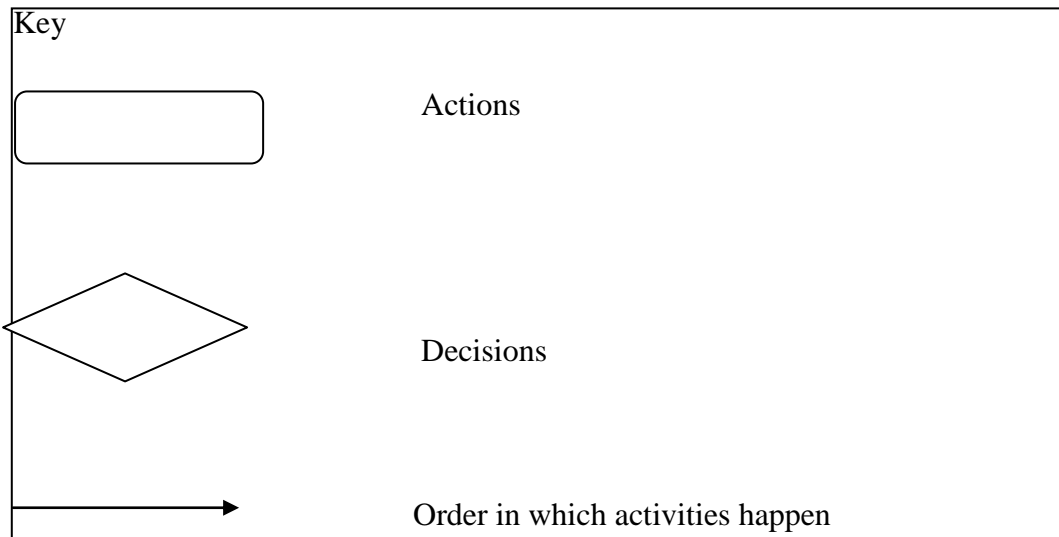


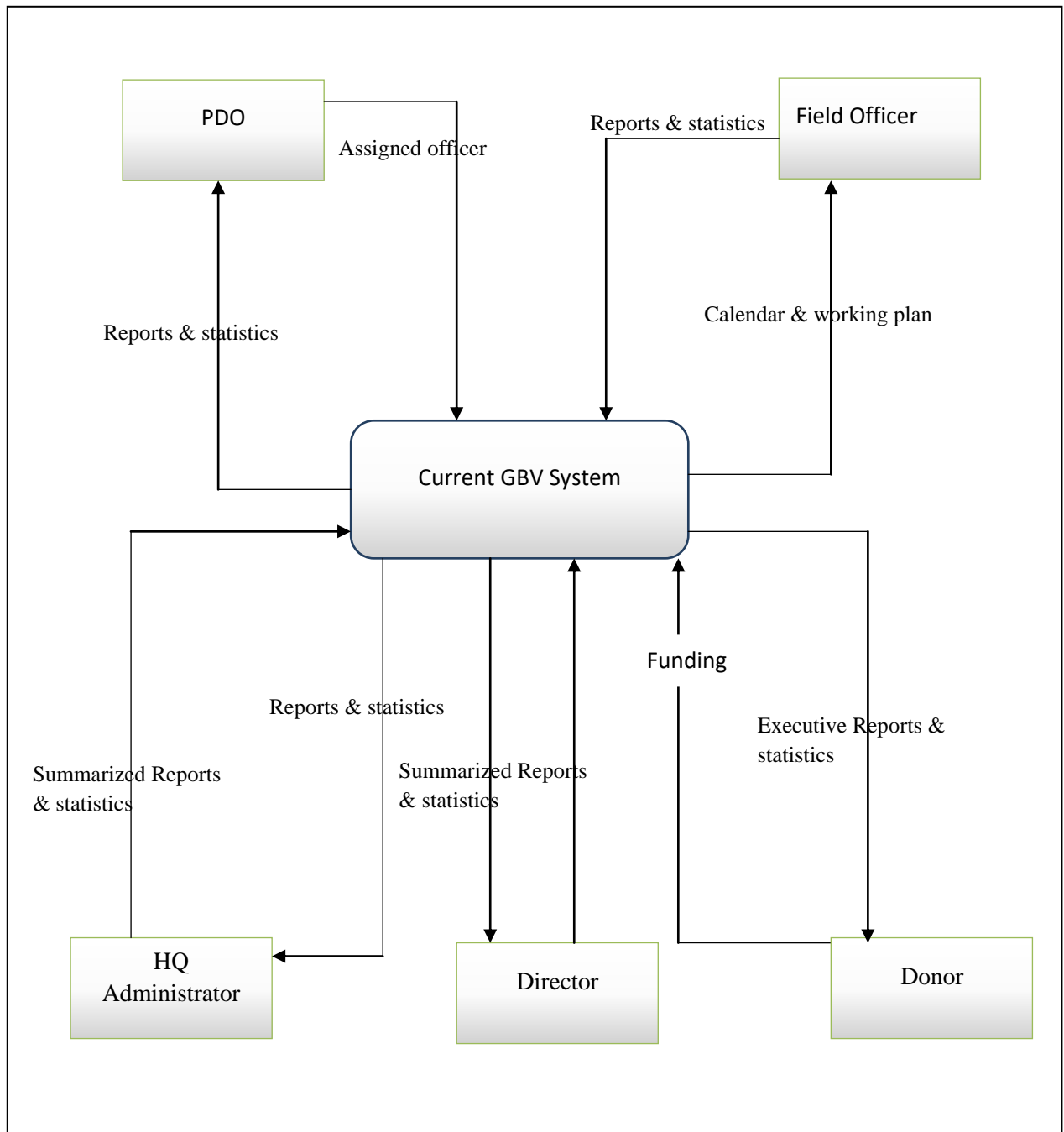
Figure 3.1 Activity Diagram of the current system

3.5 Data analysis

3.5.1 Context diagram

Scott (2008) suggests that this diagram shows the system under consideration as a single high level process and then shows the relations that the system has with other entities and these include stakeholders and other organisations. The main focus of the context diagram is to identify all other external factors that have to be included in the operation of the system. It provides information about the timing, sequencing or synchronisation of processes such as which occur in parallel or in sequence. The diagram should not be confused about the flow of data as it will splodge out the correct information.

Context diagram of the current system



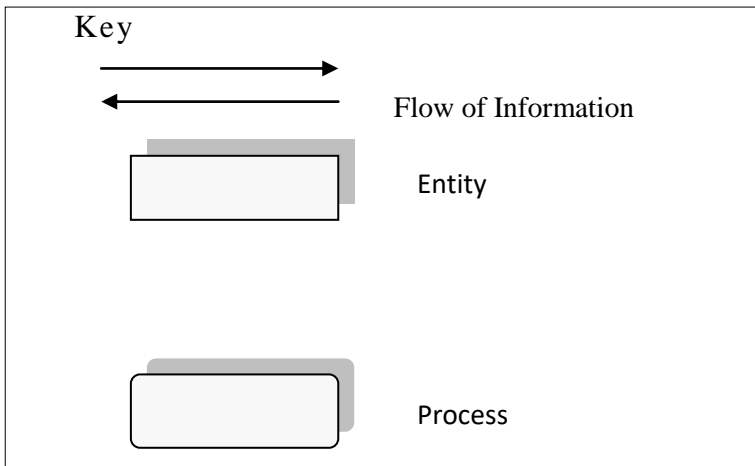
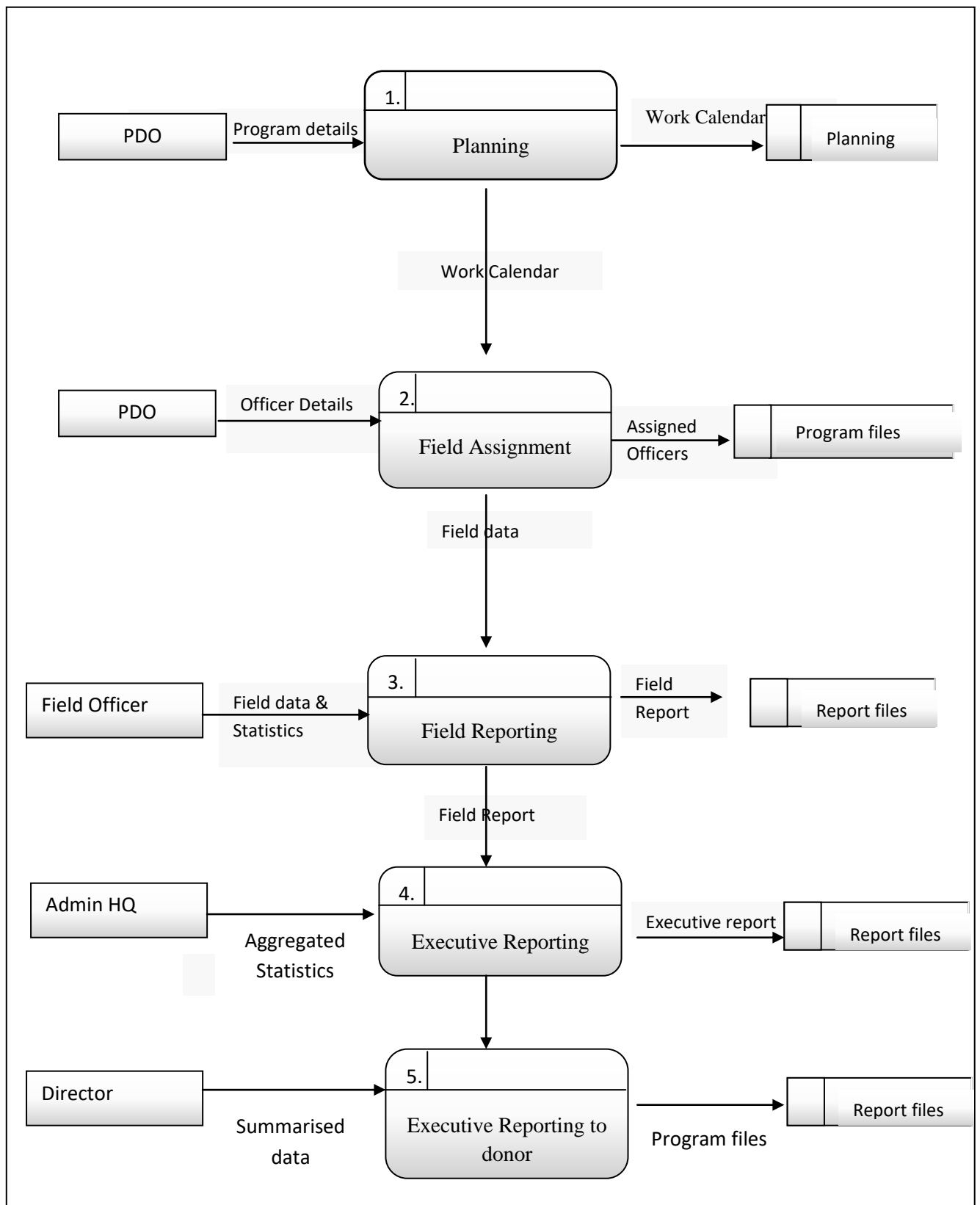


Fig 3.2: Context Diagram of the current system

3.5.1 Data flow diagram

Gerrity (1996) expresses that data flow diagrams reveal relationships between and among the various components within an information system. It mainly focuses on the flow of data within a system and how the various entities coordinate to present full functionality of the system. Information which is entered and retrieved from the system will be shown in the data flow diagram also showing storage of information. Data flow diagram is an essential component in the initial stages of analysis of a current system and visualise the necessary requirements to meet the new system.

Dataflow diagram of the current system



Key

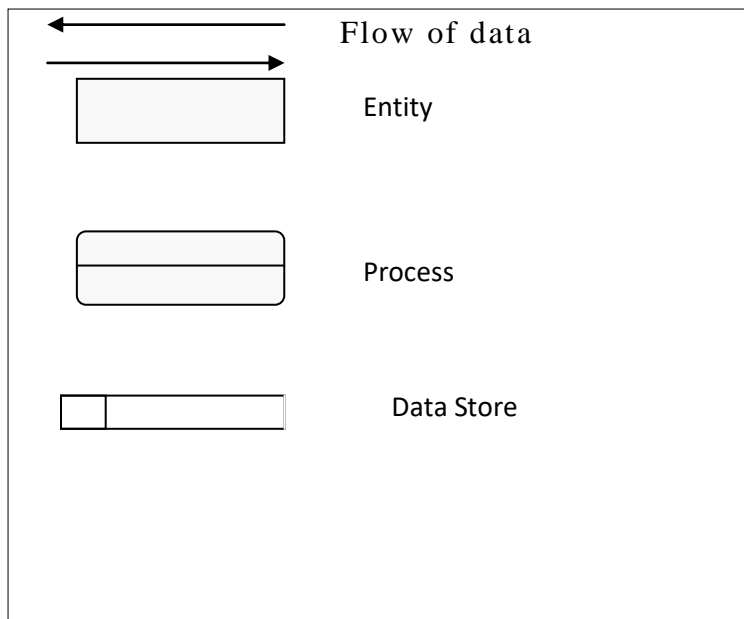


Fig 3.3: Dataflow Diagram of the Current System

3.6 Weakness of the current system

The current system under review had a number of major weaknesses and these include:

- Data gathered at provincial level takes lengthy time to be received at the head office due to the cumbersome freight logistics
- Manual reporting is prone to errors and thus some information will not be accurate.
- Large volumes of data and paper work take time to be analysed and converted into useful information
- In terms of security the system does not guarantee any secure measures against inscription of information that is anyone can access the information.
- Some files with valuable statistics are lost during storage and their retrieval is far much impossible at times due to the large quantities of files in storage.
- There is a tendency of releasing falsified statistics so as to please the minister and the donors.
- There are problems in the allocation of field officers allowances in line with the budget presented by the donor for monitoring

3.7 Evaluate alternatives

Evaluating alternatives assists us in choosing the best method that gives out the most suitable results. Referring to the feasibility study carried out in the planning phase the project was deemed to be cost effective and thus was given the green light to be pursued. The benefits of undertaking the project were much more than costs thus the justification which lead to the project being accepted as a viable investment. Other alternatives which could be explored include:

- Out sourcing
- In-house development
- Improvement of the current system

3.7.1 Outsourcing

Donovan (1998) insists that outsourcing is subcontracting an outside organisation to develop other aspects of the overall project under construction. It mainly works when the business lack in the expertise or do not have the capacity to unravel their problems. Outsourcing helps the organisation to keep cash in hand and free resources for other pressing needs. Out sourcing has its merits and these are:

- The organisation has less direct oversight on the software it is purchasing
- The software developed will require a reduced amount of time to be implemented since all the work is done by an outsider
- The ministry technical staff will focus more on other tasks thus there is minimum staff requirement since the outsourcing company will bring its own technical staff.

Insight of the above merits of outsourcing this alternative is deemed fruitless and does not apply directly to the requirements of the monitoring system and the reasons being:

- When development of a system is outsourced that means that there will be intensive training for the intended system users and thus being expensive.
- The ministry will have to approach the outsourcing organisation for retraining and this consumes time and resources
- Maintenance of the system may become cumbersome for the ministry staff as they may not be well vested with the technology used to develop the system.
- Much more support is required in hardware and software externally.

3.7.2 Improvement of the current system

This is the lesser expensive amongst all the alternatives. The cost of improving the current system is low because there are minimum development and operational costs as well. The current system does not meet the required standard for a monitoring system and hence it will not be able to match the ever changing requirements of the century. The current system will need to be redesigned and this will mean more hired labour and more time consumed while trying to improve the system. While evaluating this alternative is not the best there is.

3.7.3 In house development

Alter (2010) describes in house development as the ability of the organisation to develop the system on its own due to the availability of experts who are capable of undertaking the task at hand. This group includes programmers, system analysts and network specialists. The system should be developed in house because of the following reasons:

- The system to be developed will meet the requirements of a monitoring system to deal with large volumes of information.
- Tasks which are regarded as diminutive will be incorporated into the system and this in turn reduces the number of officers required.
- Resources will be completely utilised as the expertise is in abundance
- The users of the system will feel motivated to use it since they put their effort in the development of the system

Narration	Amount
	\$
Out sourcing	6000
In house development(table 2.6)	4750
Improvement of the current system	7000

Table 3.1: tabulation of alternatives

Comment

The total cost of developing the new system is very low and affordable to the organisation as illustrated in (table 3.3) above so in house development was chosen.

3.8 Requirements Analysis

Moore (2002) it is a process of determining user expectations on a new product or system. This include the criteria which the new system must meet to be declared as relevant and meeting its specifications. The functional requirements to be scrutinised are:

A central database

This will enable the system users to query the database and get lightning responses on the subject queried. With information available from one source then it makes it easy for aggregation of the gender based violence statistics.

Security and authorisation

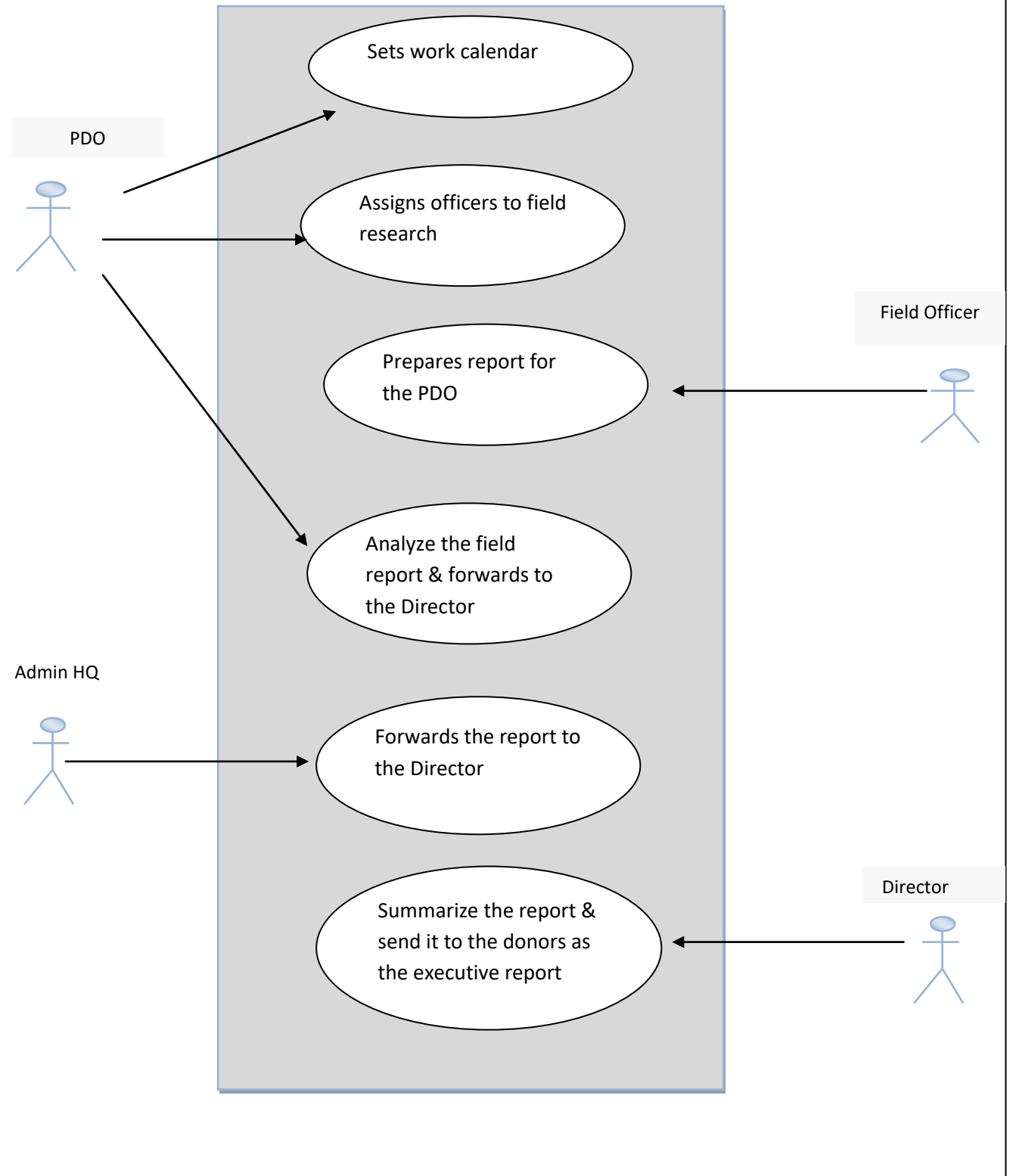
There should be restrictions to the access of data at each access level. Each member of the system users should have their limits and the system to ensure safety has to incorporate the use of passwords and usernames. If a system use has logged in and is not using the system then it should by design logout the user.

Validation and verification

There must be allowance for data to be authenticated before it is entered into the system to ensure accuracy of information. The funds donated by the implementing partners should be shown on the system interfaces so that they can be compared with advancement on work plans.

The use case diagram is used to illustrate the functional requirements.

Use case diagram



Key

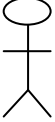

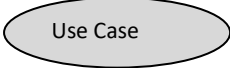
	Actor
	Communication between Actor and Use Case
	Describes User System interaction

Figure 3.4 use case diagram of the current system

3.8.2 Non functional requirements

Keen (2004) suggests that these must be measurable and should be precise. These requirements must not however change the full operation of the system.

The system should have the following features:

- User friendly interface(GUI)
- Error handling capabilities
- The implementation should support the Microsoft Windows family of operating systems with backward compatibility to Windows 7 for non-server components.
- The system should be able to identify and trap user input errors such as input of wrong data types.
- The system should reduce the workload and the amount of paper work that has to be filed.

Data backup: losing of information is totally unacceptable and thus the database should be continuously updated so that information is kept safe.

Interface: most interfaces are designed differently thus making them unique. The interfaces for the monitoring system should be user friendly so as to have better interaction between officers and the system administrator.

Error handling: in this case validation of the system is the main focus. The system should not accept wrong input from the user.

3.8.3 Constraints

Schmidt (2004) insists that these are the major limitations which will hinder the development of any project or software development process. Constraints come in different forms and their impact on the project can be rigorous thus making them a huge threat to the success of the overall project. These have to be carefully analysed, discussed and finally map a way forward in dealing with the constraints. The monitoring system has its constraints and they are:

Time factor: the developer of the new system may face challenges in meeting the deadline as there are other tasks on the schedules which may be stalled by other processes and may require approval from higher authority.

Budget: this is a government ministry and so the finance to develop the system will have to be sourced from the donor community since the ministry of finance has declared its coffers empty. The requirements of the development of the system may go beyond the allocated budget.

Other constraints: these may include the need for extra expertise in software development.

3.9 Conclusion

Analysis of the whole system has been done and this really highlighted the importance of evaluating the current system, its draw backs and what best can be done to solve the problems being faced by the ministry. The system will be developed in house and that will be the most ideal situation for the ministry. After all the issues have been resolved we can move on to the next chapter which is the design phase.

CHAPTER FOUR: SYSTEM DESIGN PHASE

4.1 Introduction

This phase is the execution of the system objectives outlined in the previous chapters. All the requirements of the new system will now be drafted and converted to the actual design of the system. Duties for each entity in the system will now be defined and well aided by the use of diagrams to support the structure of the system operations. The system to be designed should work efficiently with no errors and system failures. Timely outputs should be obtained to aid the decision makers at the ministry to be able to act on matters which need urgent attention quickly. This chapter will look into detail the architecture, database, interface and output designs.

4.2 System design

From the earlier chapter which is the analysis phase it was decided to completely replace the current system with the new system. The system to be developed was fully understood and the weakness of the current system were analysed thus coming up with a hypothesis of how the new system should work. The system design will show the system functionality and the needed requirements for the system to be fully operational.

4.2.1 Overview of the proposed system

The new system will have unique features for each entity which will use the system. The system will provide user friendly interfaces where the field officers will enter the data collected from the provinces. The system administrator will have the major role of making sure that the system is well coordinated and this includes summarisation of gender based violence data.

For information to be available always the system will use a centralised database and there are going to be measures taken so that the system is not redundant. Every user who uses the system will have a certain access level allocated for them and this includes the use of passwords and integrity checks to make sure the data entered in the system is accurate.

Detailed description of how the system will operate

There are different entities which will use the monitoring system and these are:

- Field officers

- Administrator
- Executive Director
- The donor

Field officers

These are mainly concerned with collection of data from all the provinces. After the data has been collected they then log in to the system and input their findings. This is raw data and will need to be processed so that it becomes useful information. The data collection forms will have the same features as the ones available on the system thus making the system user friendly.

System administrator

The administrator has the major role of making sure that the system is fully functional and the duties include:

- Formulation of a work plan with the calendar of events for the field officers
- Allocation of allowances for the field officers
- Summarisation of gender based violence data from the officers and converting it into reliable information
- Forwards the summarised data to the executive director

Executive director

The director's main use of the system is to analyse the reports which have been generated by the system and send a brief report via e-mail to the donor.

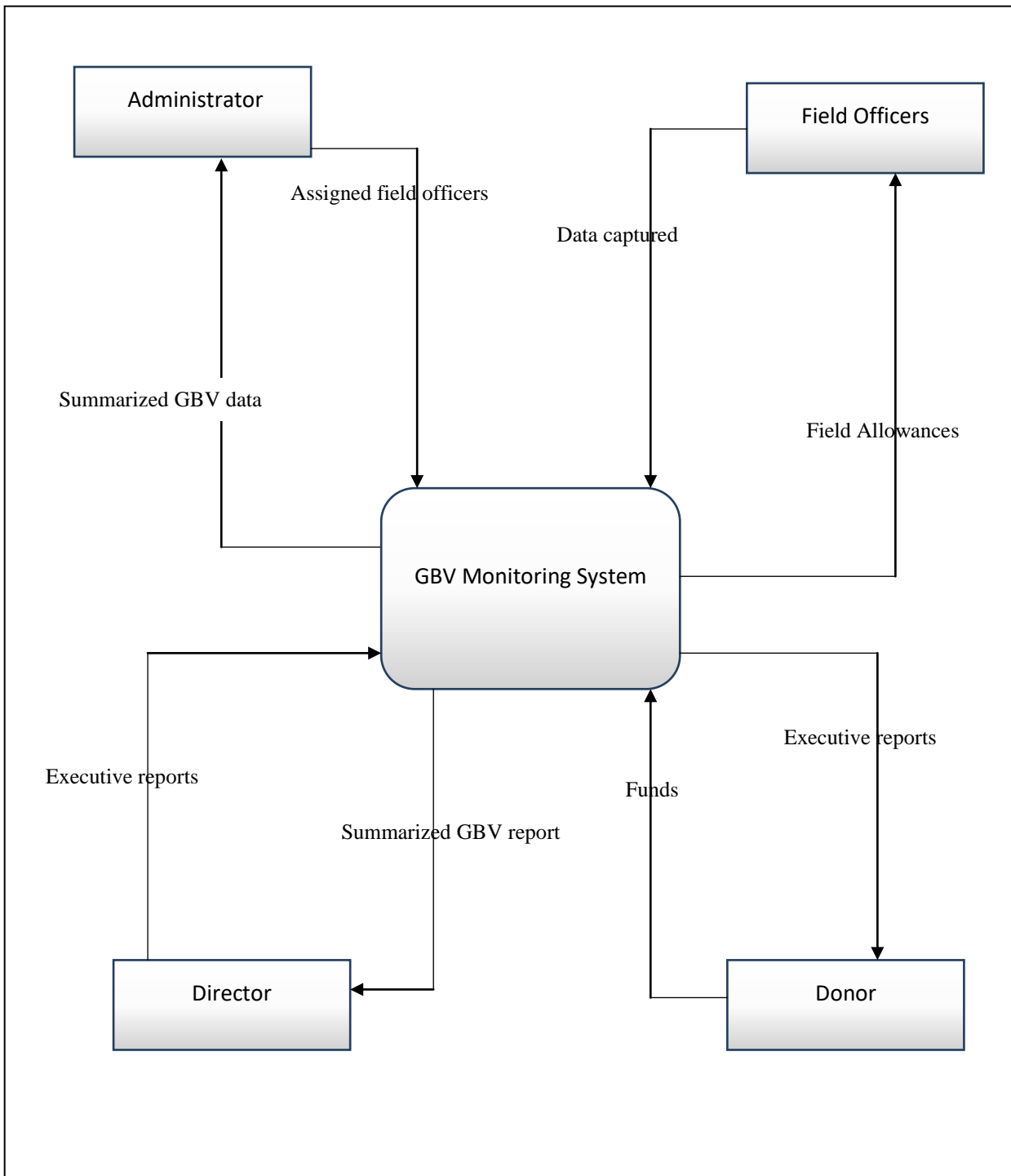
The donor

The implementing partner is responsible for allocating funds for the whole monitoring phase for the gender based violence and data collection. They also receive periodic reports from the executive director on the current trends in gender based violence.

4.2.2 Context diagram of the proposed system

Emshoff (2004) suggests that it is a diagram that shows the limits between the system and its intended environment and the various enterprises that combine with it. It also shows the duties which are carried out by each entity that is what the entity inputs into the system and what it gets out of the system. A context diagram is much easier to understand and is used to have an understanding of the scope of the project early and not deviating from the main objectives

Context diagram



Key

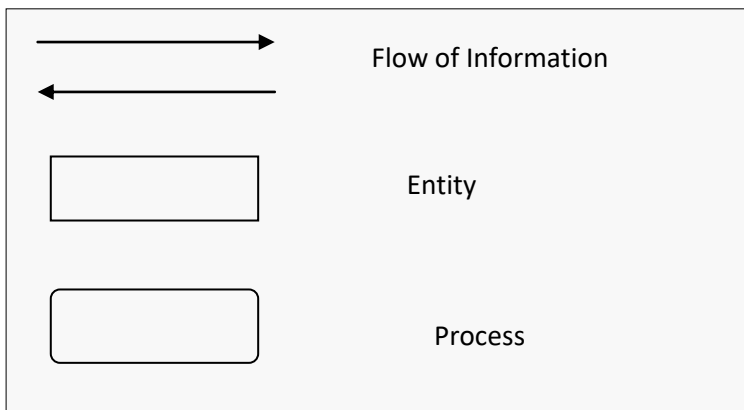
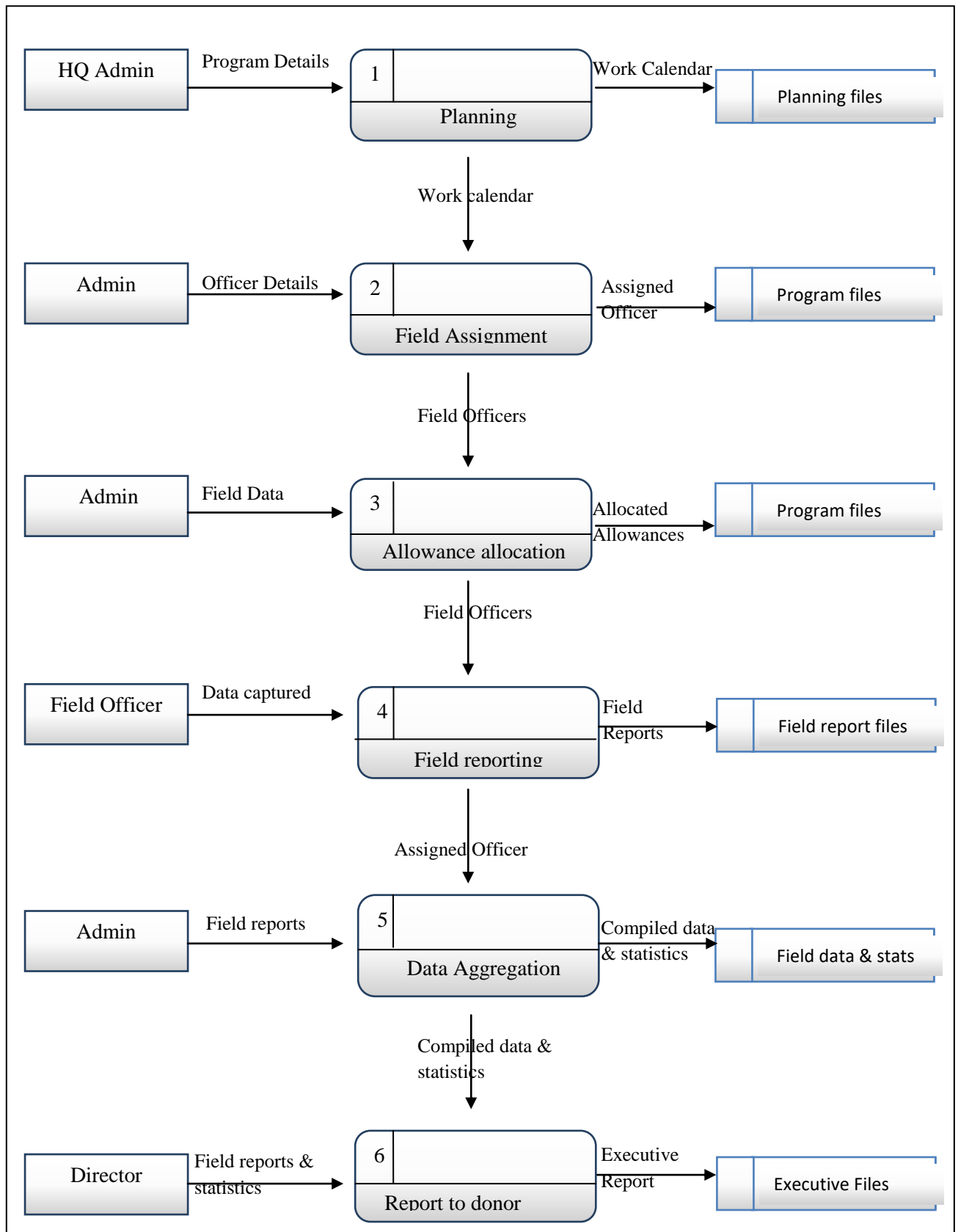


Fig 4.1: Context Diagram of the Proposed System

4.2.3: Dataflow diagram of the proposed system

Data Flow Diagram



Key

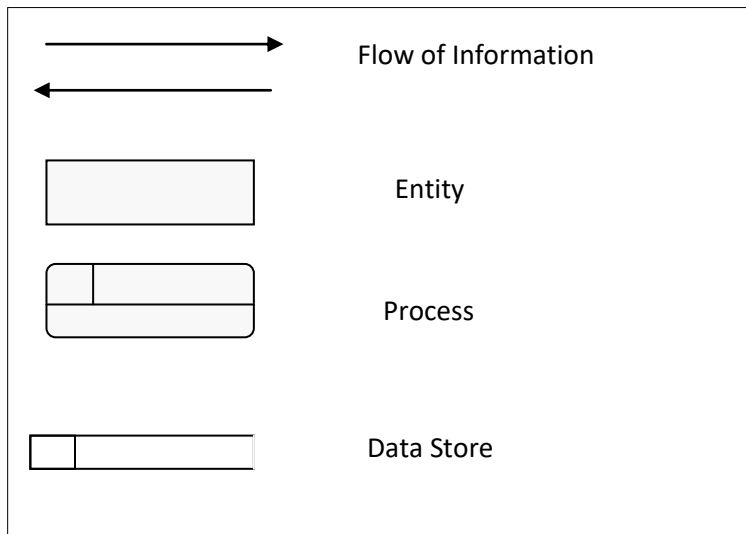


Fig 4.2: Data Flow Diagram

4.3 Architectural Design

Fishman (2010) insists that the architectural design covers the hardware, software and the initial architectural components of the system being developed. The system will be backed up by a central server which will enable all the users to view their interfaces. This design will show how the machines which will be used at the ministry will be connected.

Bottlenecks in the system should be dealt with effectively and that is the main objective of the architectural design. The system should operate on the specified hardware and the infrastructure needed to support the system operation.

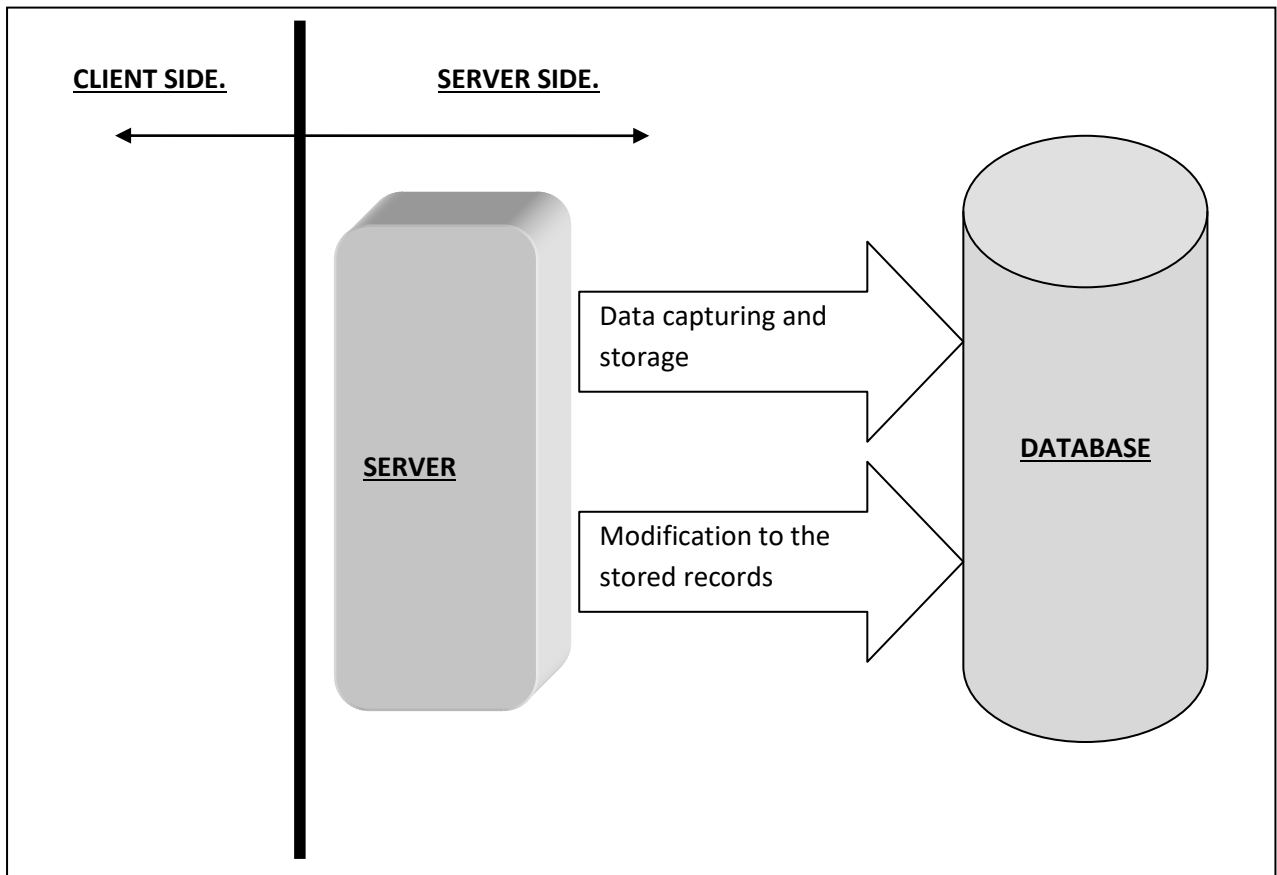


Figure 4.3: Architectural design

The user has to be well braised with the system functionality so that access to the server side is granted by use of passwords and different access levels. To ensure security there may be a firewall to safe guard the data.

4.4 Physical Design

Greenberg (2000) expresses that it is a fundamental procedure of outlining the modules, interfaces and the architecture which the system should meet the allotted specifications. This will show the platform on which the new system will run on. This will show how the physical components that include the machines at the ministry will be set out and the liaison process between the hardware components. Some of the hardware to be used will include:

- Switches
- Routers
- Ethernet adapters
- Network cables

➤ Printers

The ministry will not add the number of machines available as they are enough to cover the first phase of the monitoring process. Machines may be acquired just for the system administrator. The machines have to be laid out systematically on the network to ensure cohesion among the relevant entities.

The machines will be setup as follows:

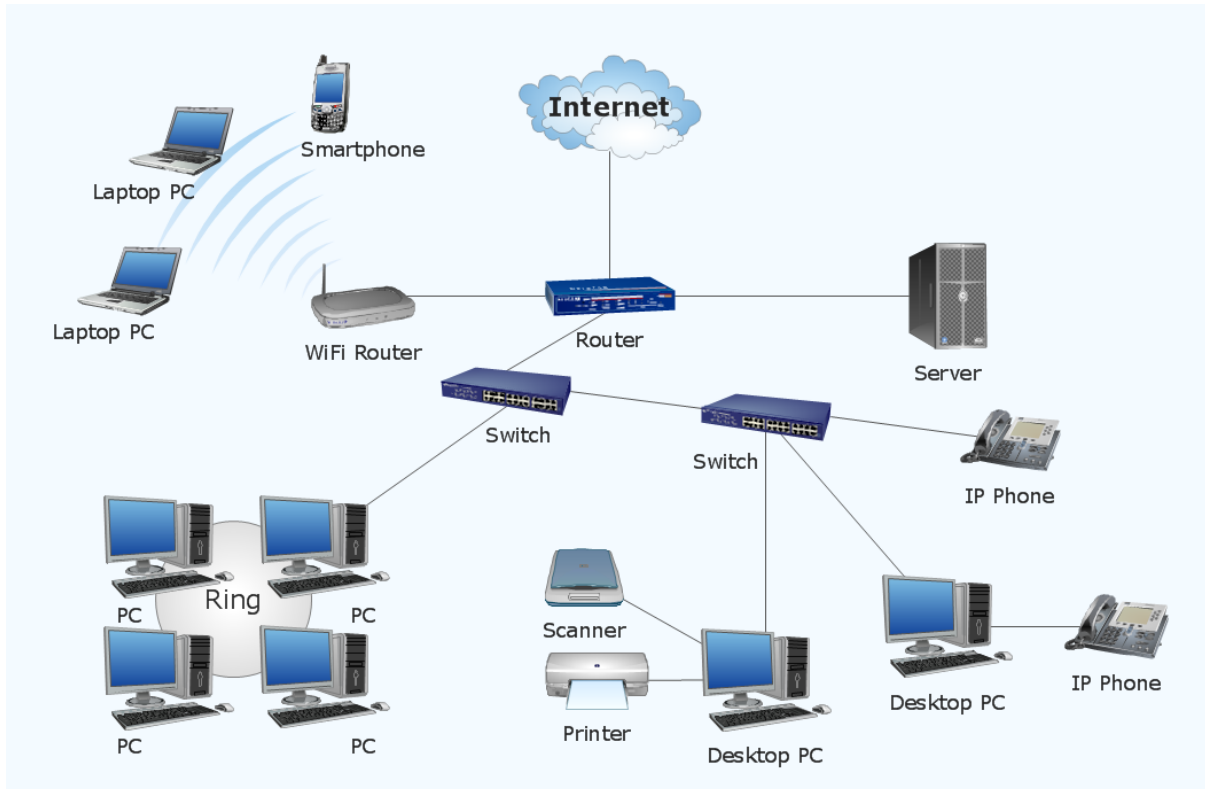


Figure 4.4: Network design

4.5 Physical Database Design

Naylor (2006) suggests that this is the use of column, entities and tables to construct the major component of the system data storage. A good database should have the following features:

- Data is readily available to the end-user
- Data being protected through database security
- Data being accurate and easy to manage
- Overall database performance being acceptable
- Having a minimized amount of redundant data stored

Database Architecture

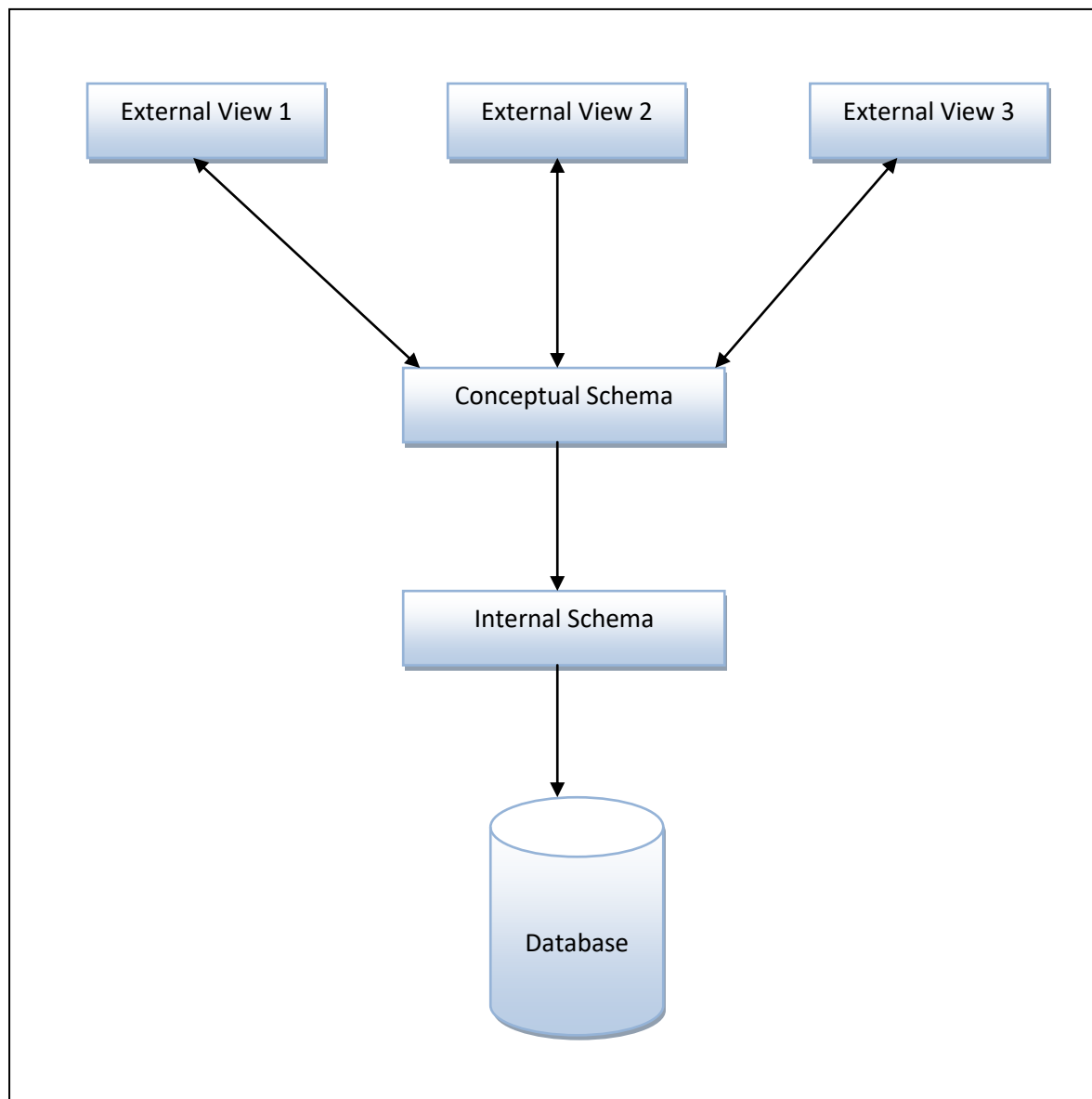


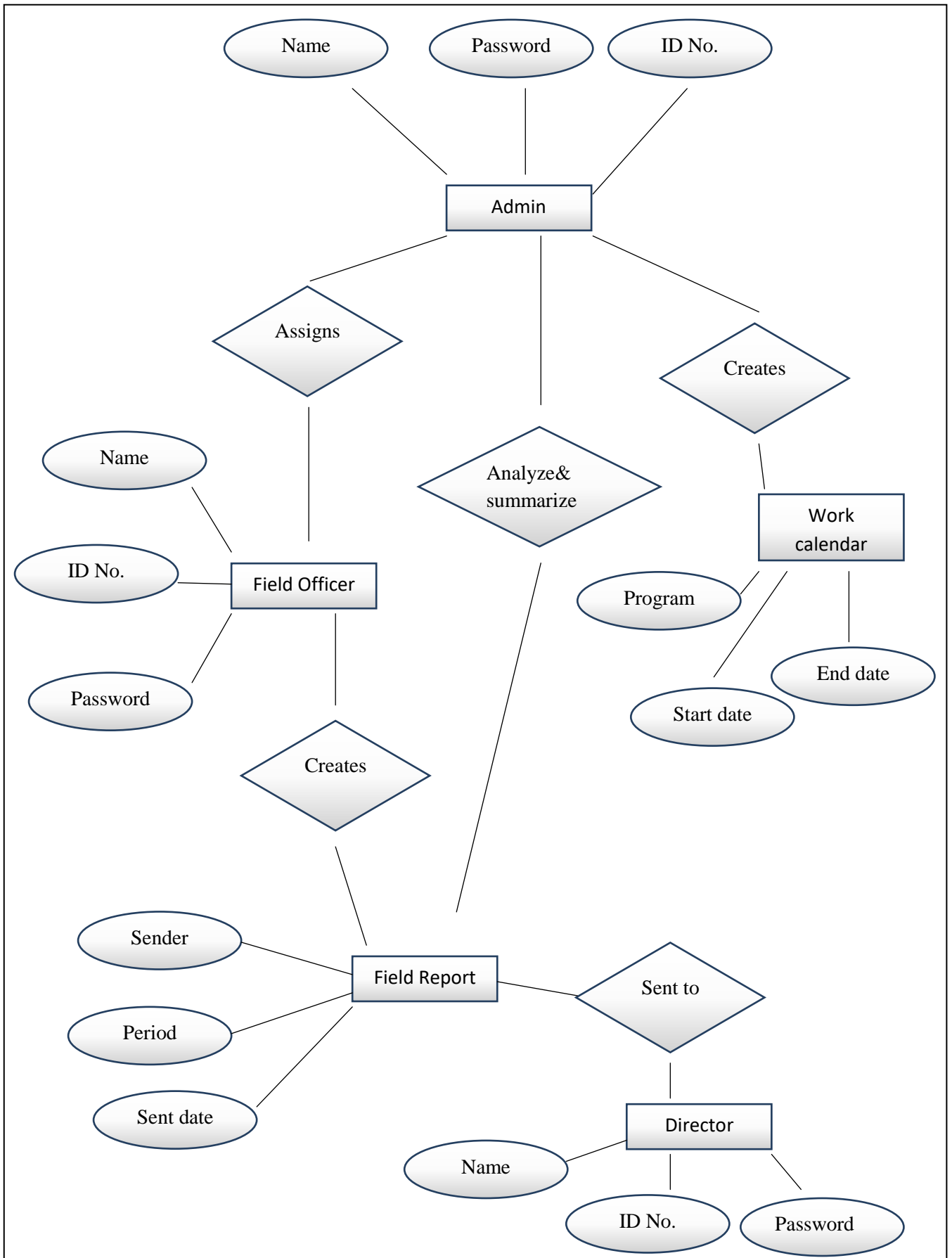
Fig 4.5 database architecture

Physical layer: it shows how the data is actually stored and the process involved. This is regarded as the lowest level of abstraction.

Conceptual level: the data stored in the database is specified and is stored according to tables. These also show the relationships which exist among the data, attributes and entities. Database queries are also examined at this level.

View Level: this view gives the user the interface which the user can manipulate the data in the database. This level has the highest level of abstraction. Data in the database can be viewed in form of reports and the use of the structured query language.

EER Diagram



Key




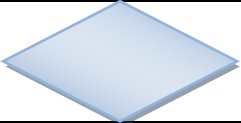
	Entity
	Attributes
	Relationship
	Associative

Figure 4.5: Enhanced Entity Relationship

Major Entities

- System Admin
- Field officer
- Work plan
- Executive director
- Justification

Entity – Attribute Table

ENTITY	ATTRIBUTES	DESCRIPTION	FORMAT
Admin	Admin number	Unique ID	Number
	Admin name	User name for admin	Text (30)
	Password	Private code for system access	Text (30)
Field officer	Officer Name	Name of province	Text (30)
	Email address	Local email	Text (30)
	Password	Officers private code for system access	Text (30)
Work plan	Program	Name of program	Text (30)
	Sent date	The date on which the work plan was set	Date
	Period	The period for which the work plan will cover	Text (30)
Executive director	Director number	Unique ID	Number
	Access name	User name	Text (30)
	Password	Private code for	Text (30)

Justification report	Program	Work plan	Text 30
	Sent date	Date which the plan was set	Date
	Period	The time period which the plan will cover	Text (30)

Table 4.1 entity relationship

Database queries

Maisel (2002) suggested that information is obtained from the database through transmission of a string of code that evokes the commands in the database and thus the retrieval of information or records. This is basically a way of obtaining saved information in the database. The monitoring tool will have quite a number of executable queries that will be used in the operation of the system. The queries can be used to find data on previous month's reports on gender based violence or even to analyse the data on which officers covered a certain province. Some of the queries may include the following:

- Reports on allocation of allowances
- Reports on officer allocation
- Summarised reports on gender based violence

4.6 Program design

Schriber (2010) expresses that for one to have a solid and well placed system the developer should have the output design as the entry point into system development. The system will have to be designed using an object oriented approach. The program design will encompass the major features of the system, components that affect system functionality and these include the modules, interfaces and the overall system functionality. There are three main diagrams which best illustrate the program design and these are:

- Class
- Package
- Sequence

4.6.1 Class diagram

Bhat (2006) insists that it is a diagram that looks into detail the assembly of a system that also shows the systems initial classes, attributes, operations and the relations among objects. This is the main diagram as it showcases the persistent state of the system also includes the behaviour of the system. The class diagrams are heavily relied upon especially in data modelling and translate the models into code. The classes which identified are put together in the class diagram and it determines the static relations among the objects. State diagrams complement the class diagrams as classes of the designs are bisected into a number of sub classes. The classes to be coded are clearly shown in the class diagram.

Class Diagram

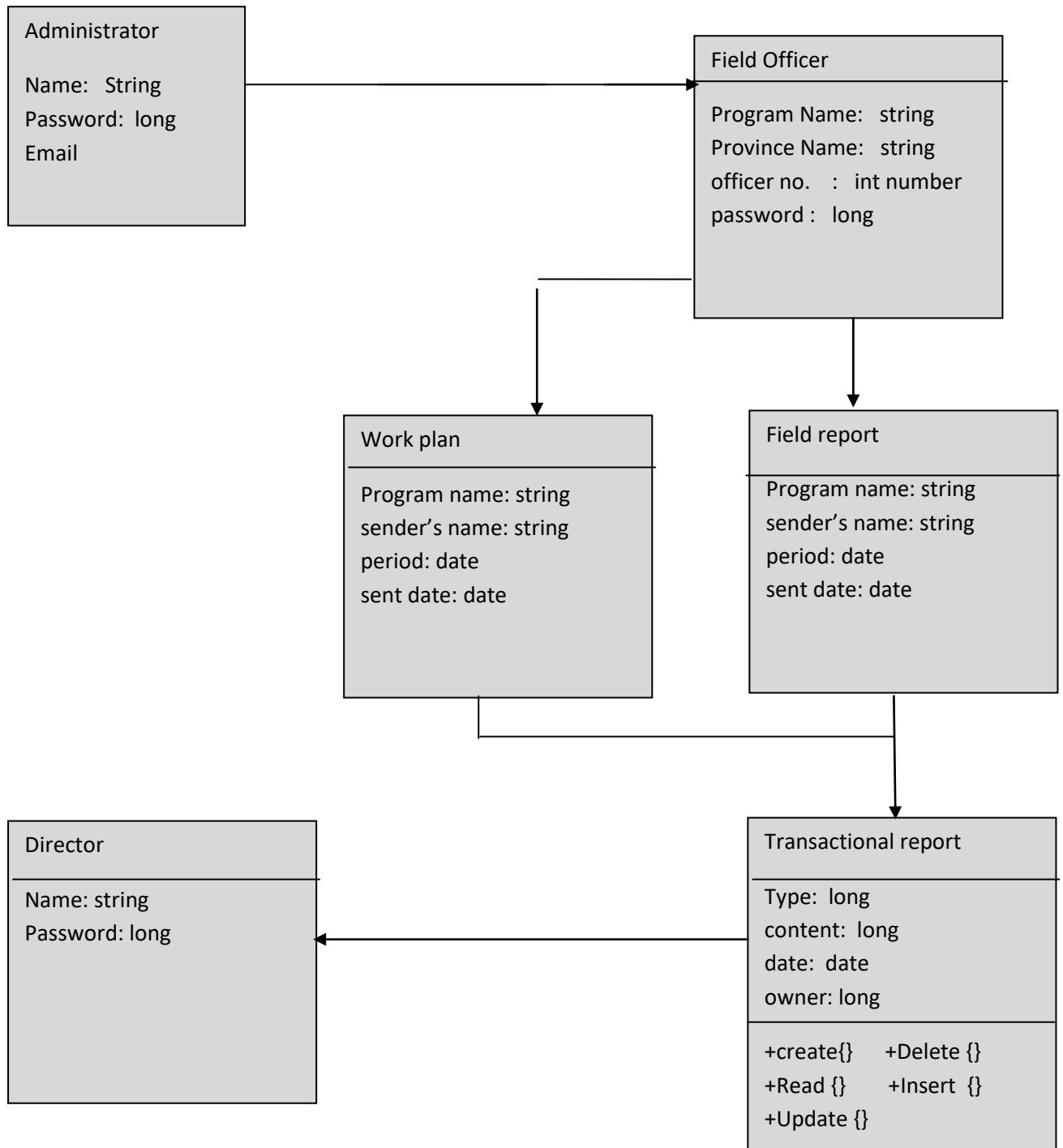


Figure 4.6 Class Diagram

4.6.2 Package diagram

Hillier (2010) expresses that the package diagram breaks down the modules of the system to be built and how these module interact among them. In its own way the package diagram shows the dependency between the packages that make up the system. For the proposed system to be understood the classes which exist are summed up together into packages and also use the use case drawings to better elaborate how the system will function. Package diagrams are very useful when making systems for very large organisations and the diagram below is the package diagram for the gender based violence monitoring tool.

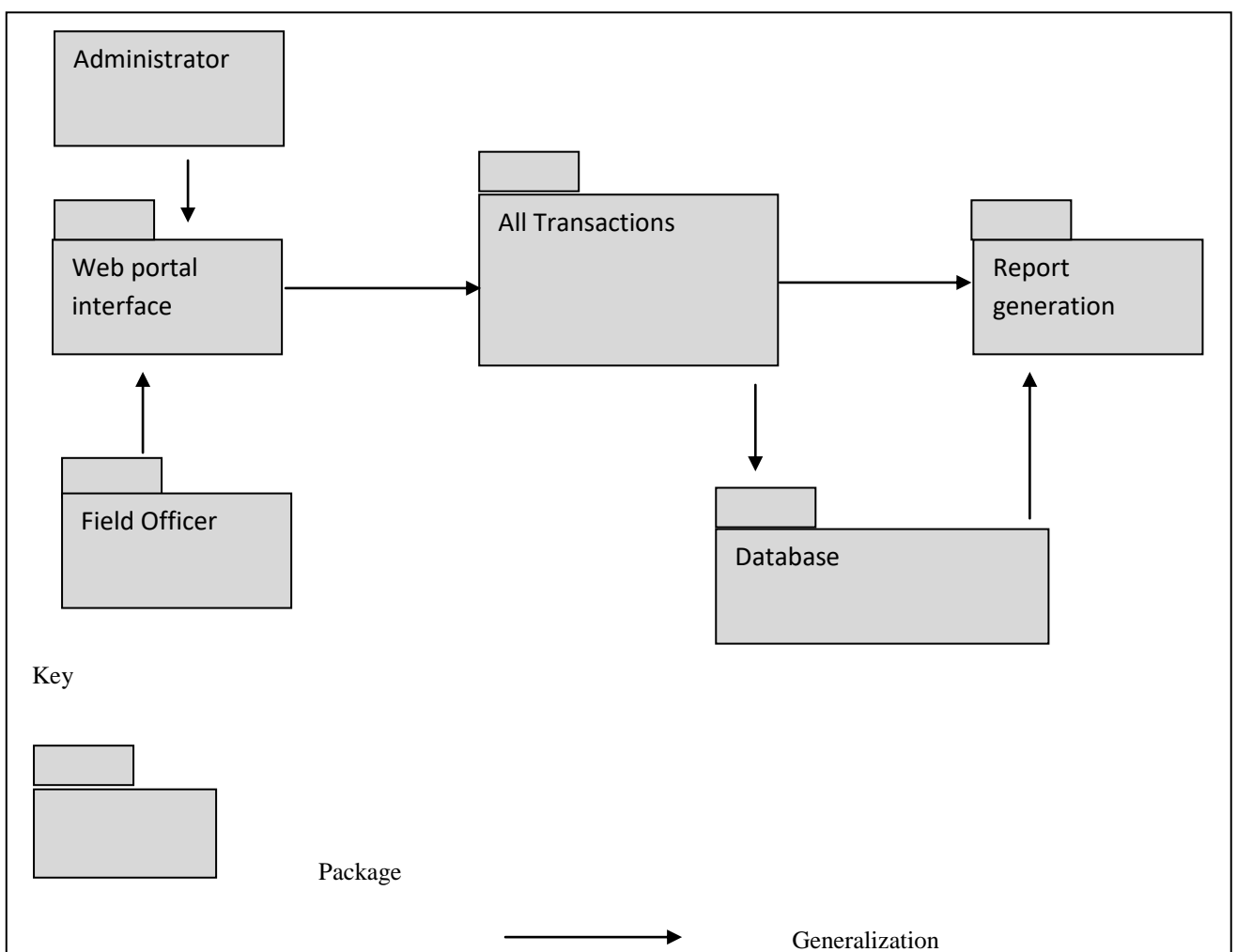
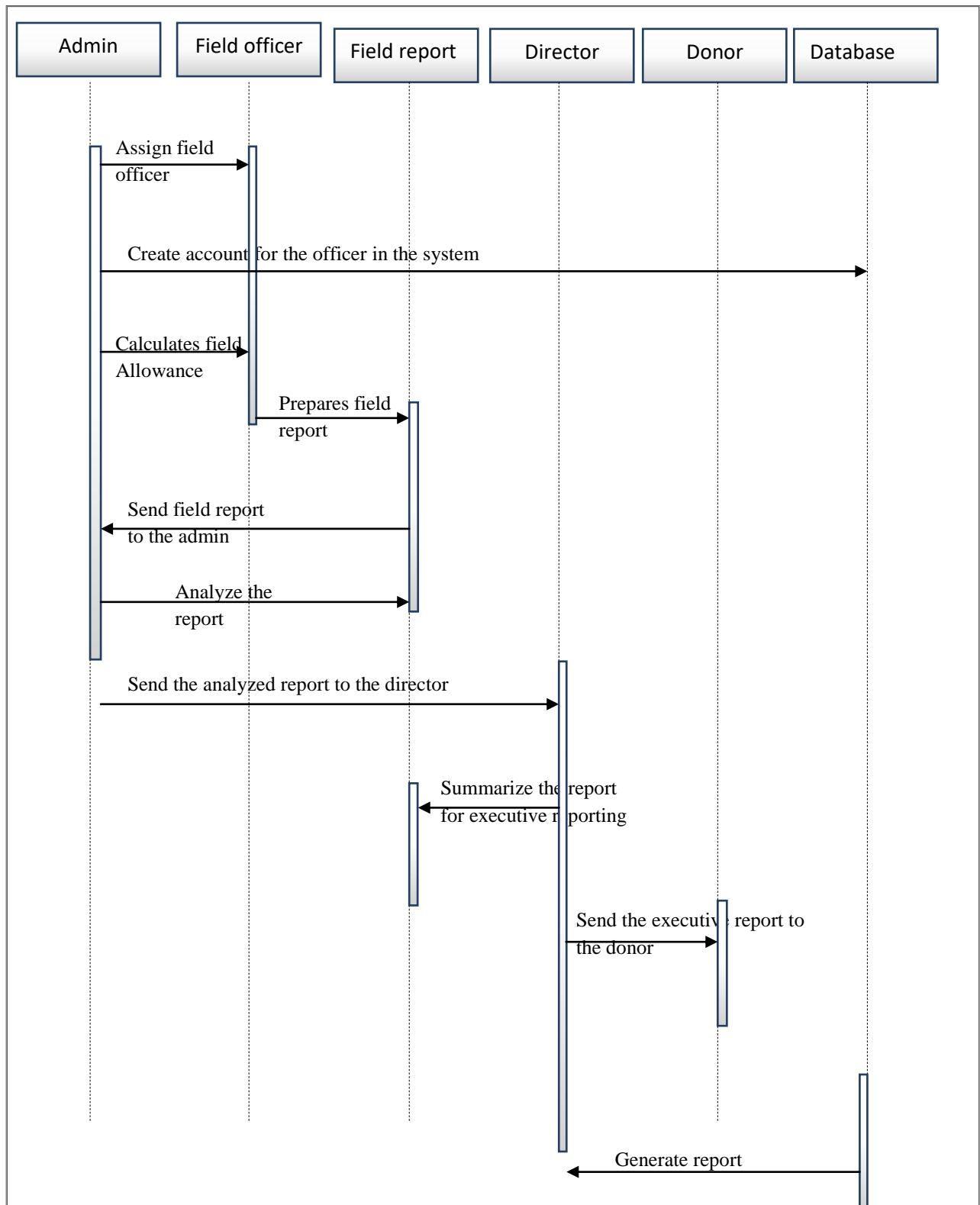


Figure 4.7: Package diagram

4.6.3 Sequence diagram

Amble (2009) suggested that the diagram shows the order of events and the synchronisation of processes which a particular system will undertake. The diagram below shows the processes which the monitoring system will encompass.

Sequence diagram



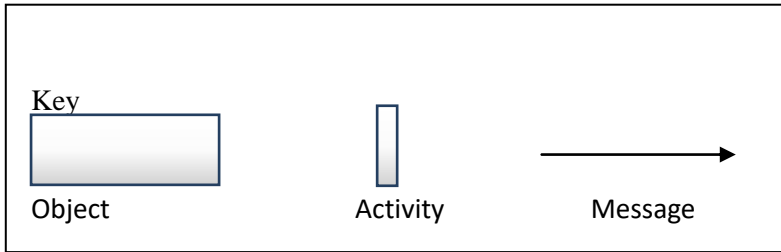


Fig 4.8: Sequence diagram

4.7 Interface design

Wiest (2006) suggests that without an interface there is no interaction between the user and the system. The interface is the communication medium and the user inputs the data into the system for processing thus coming up with output. Out puts may include online help and reports from the system. Interface design looks at the modelling of forms for each entity and also helps indexes for the user.

4.7.1 The user interface

A good interface is user friendly and easy to understand for the end user. Below is a sample of the graphical user interface for the new system.

The screenshot shows a login form with the following elements:

- Header: Ministry portal page home
- System Name: Gender Based Violence Monitoring System
- Form Fields:
 - Name: [input field]
 - Password: [input field]
- Buttons:
 - Save: [button]
 - Exit: [button]

Figure 4.9: System login form for all users

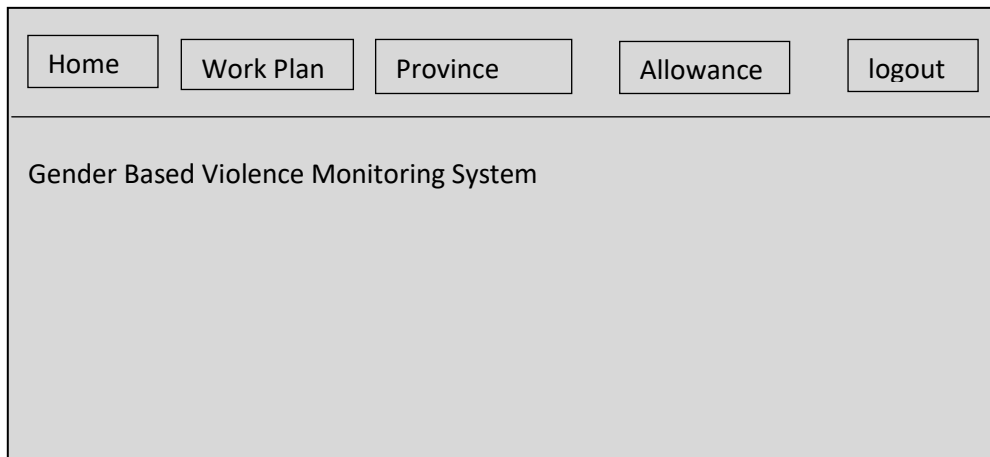


Figure 4.10: Field officer Main form

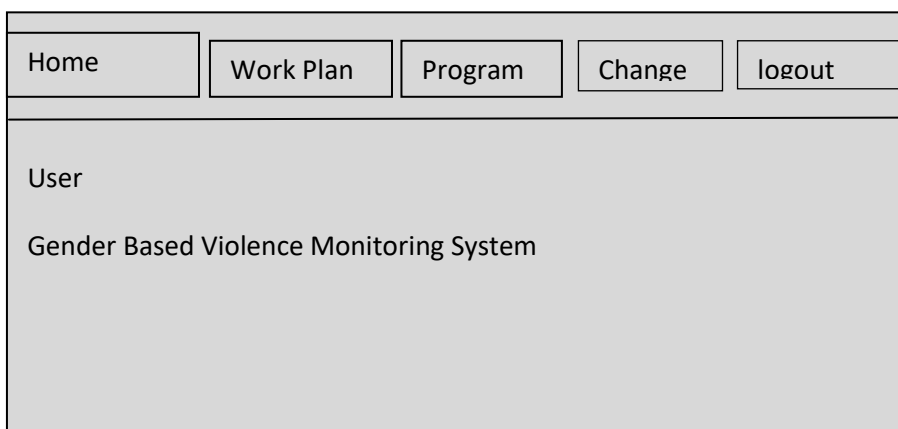


Figure 4.11: Administrator main form

4.7.2 Operating environment

The gender based violence monitoring system will be able to full function on any platform that has a windows operating system from XP going upwards to windows 8. The system will have a central database monitored by the administrator so as to ensure fast retrieval if information. The system administrator should be in a position to use the system from any location.

4.7.3 Interface design tools

The interfaces will be designed using Dreamweaver html pages which are the software used to design web pages. Connection to the database is made much easier by use of these tools and interaction of the user and the system is enhanced thus making the user more comfortable in using a user friendly interface. Since the system will be operating on windows based platforms it will use the graphical user interface that makes it possible for the user to use a mouse and other enabled devices.

4.8 Conclusion

System functionality, structure and execution procedures have been exhausted and the development of the system commencing. The system will operate as allotted in this chapter and the next chapter will focus on the implementation of the system.

CHAPTER FIVE: IMPLEMENTATION PHASE

5.1 Introduction

After the system has been designed and ready for installation it is important to make sure that the developed system meets the objectives which it was intended for. Every system developed should be tested for errors and at most to perfect it for the final users thus ensuring quality. Procedures for system testing will be done repeatedly until the errors which are identified are properly rectified. The implementation stage will have the following components that are:

- System coding and construction
- System testing
- System installation
- System maintenance

5.2 Coding and Construction

Drummond (2006) suggests that the basic program logic is transformed into executable programs which the users can execute their queries. The code is what the computer system will execute and makes the system to be functional. The system was developed using PHP and on the database side My SQL was used. All the tables in the database were mapped with elements in the data dictionary and system functionality was developed in form of modules. Each module represented a certain part of the system and they were later put together to make a fully functional system. The development of the system was so complex and thus exposed the programmers to new challenges they had not encountered before. After the development of each for a review would be conducted to ensure that the system is in conformity with the scope and objectives.

5.2.1: Pseudo code

Dauids (2006) suggests that it is an artificial and informal language that helps programmers develop algorithms. Pseudo code is a "text-based" detail (algorithmic) design tool. An algorithm is a procedure for solving a problem in terms of the actions to be executed and the order in which those actions are to be executed. An algorithm is merely the sequence of steps taken to solve a problem. The steps are normally "sequence," "selection," "iteration," and a case-type statement.

Connecting to the database

Check if connection has been made

 If not yet set then

 Set the connection

 Else

 Ignore

Login

Enter username and password

 If correct then

 Go to officer main menu

 Else

Try again

End if

Creating a new record

Validate all the information

If invalid input is entered

 Report error

 Else

Using the established connection, save details

Updating data in the database

Get the key fields

Check if record does exist

 If not then

 Report error

 Else

Validate all the information
If some of the input is invalid
 Report error
Else
 Using the established connection, save record

Adhoc reporting

If Reports _Click Then
 Reports show
 Enter reports details
End If

Administration data capture

If Data capture-Click Then
 Data Capture show
 Enter Capture detail
 End If

5.3 System testing

Drummond (2006) insists that the main objective of system testing is to detect the defects on the system and put corrective measures so as to rectify the anomalies. The risks associated with the errors have to be completely mitigated though there is no testing procedure which guarantees a zero error result. Testing of the system is in line with the black box testing and this may require no knowledge of the code used to develop the system.

The system testing for the monitoring tool was done systematically stage by stage so that all loop holes were covered. The system was then tested against the intended objectives of developing the system. In testing the system the following procedures were used:

- Unit Testing.
- Module Testing.
- Sub-System Testing.
- System Testing.

➤ Acceptance Testing

5.3.1 Unit testing

Drummond (2006) insists that the main objective of this test is to ensure that the individual components of the system are working correctly. The component to be tested is separated for all other system components and testing is usually done during development. In actual fact this test is done by the system developer on the individual modules.

5.3.2 Module testing

Drummond (2006) expresses that this test involves the testing of individual modules. The modules show the system functionality and the procedures undertaken to reach a certain level. As an example the system was tested to see if the records deleted in the database would still appear. The results obtained where that the records where no longer available and this showed that the system modules where fully functional.

5.3.3 Sub system testing

Drummond (2006) suggests that this involves two or modules that work together to perform a particular task. These modules are tested to perceive if their output is in line with what is expected as in the results must conform to the expectations. The modules which had passed the unit testing phase were put together to form a sub system and thus how the tests were conducted on the sub structure.

5.3.4 Acceptance testing

Drummond (2006) insists that this major phase is mainly concerned with the end users of the system and they do the final testing. This brings us to the end of simulated data and the use of actual information to be entered in the system is adopted. The data entered by the actual system users may be sufficient enough to highlight omissions which were not detected in the initial stages.

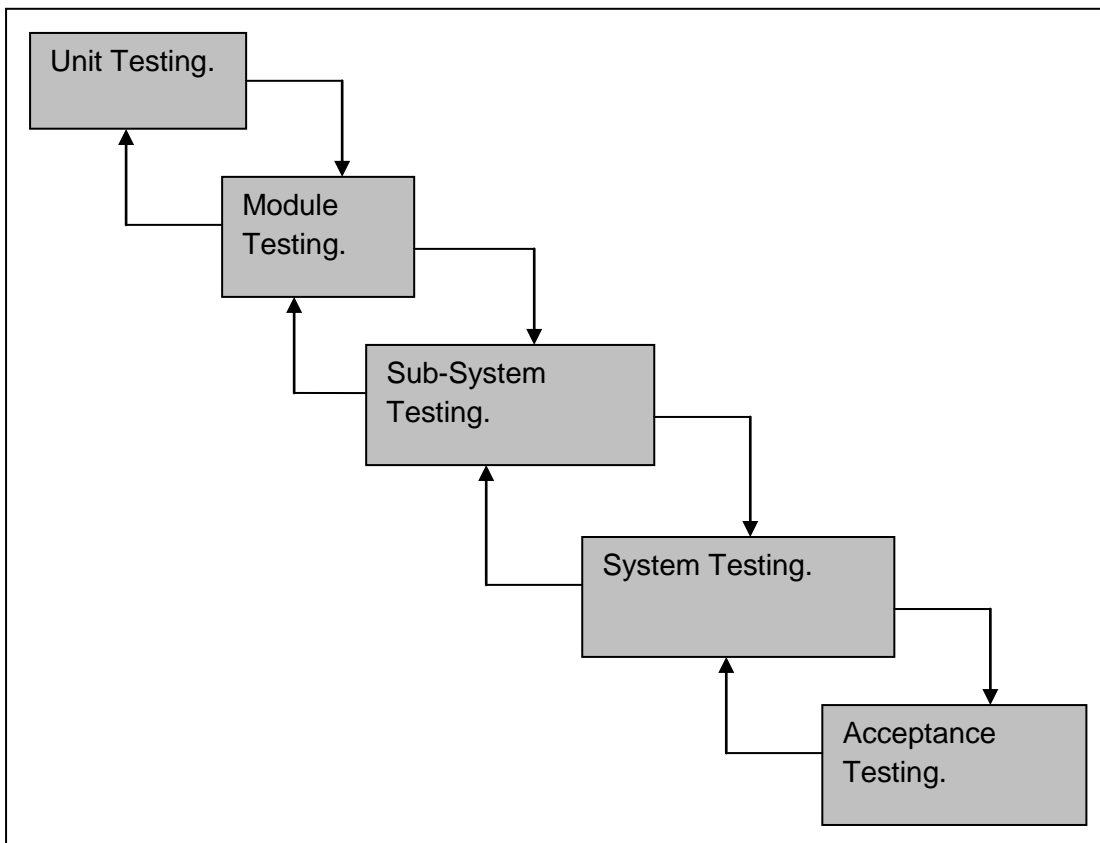


Fig 5.1: Testing procedures Source: Black (2002)

5.3.5 Testing Methods

These are divided into three main areas and where used in the testing of the system:

- Black box testing
- White box testing
- Defect testing

Black box testing (functionality tests)

The functionality of system software is the major objective to be analysed. This test makes sure that the inputs are converted to the correct output as expected. Black box tests may also reveal incorrect functionalities, routine errors and also interface errors.



Fig 5.2 black box testing

White box testing

This is mainly concerned with the interior functionality of the system code. The errors in the code which are not identified in the black box tests where clearly visible under the white box tests and thus needed correction. The white box tests needed the full knowledge of the structure of the code which was used thus the programmer had to undertake the tests.

Defect testing

The system should be delivered without any defects thus this test was to make sure that final user of the system will find it in a perfect state.

5.3.6 Validation

Grasiyano (2004) suggested that it is the comparison of the actual data entered into the system to the actual outputs of the system. It may also show the expected values to be entered at certain log in levels and to find out if the system will accept wrong input from the user.

The following tests were carried out:

Test One

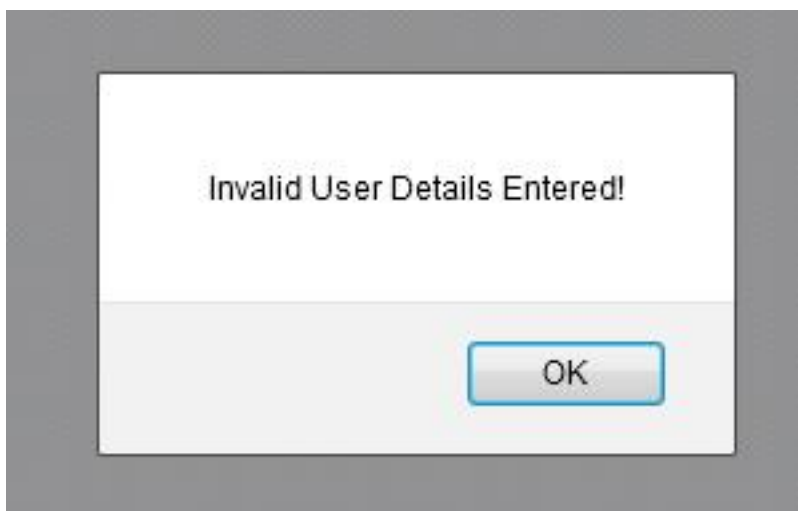


Fig 5.3: Invalid user details

This error message was generated after the field officer had entered wrong details on the officer's log in form.

Test Two

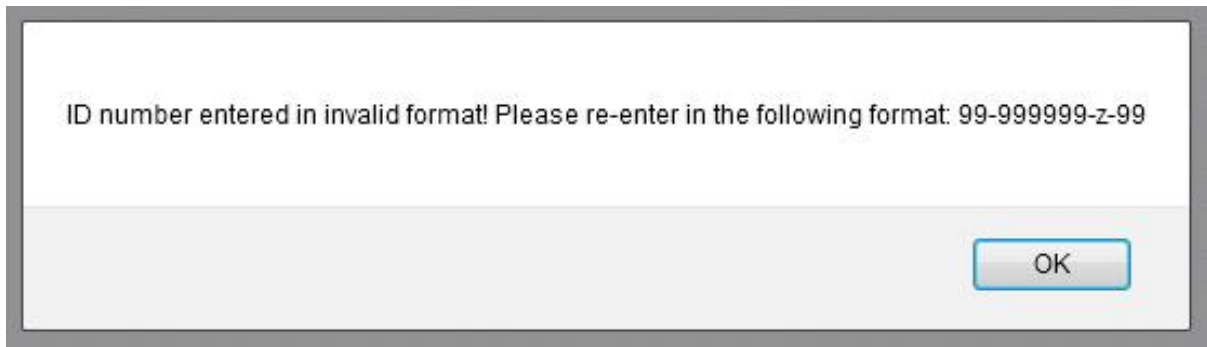


Fig 5.4: Invalid format

The error message is displayed when a user enters id number in an invalid format and is prompted to enter in a specified format.

Test Three

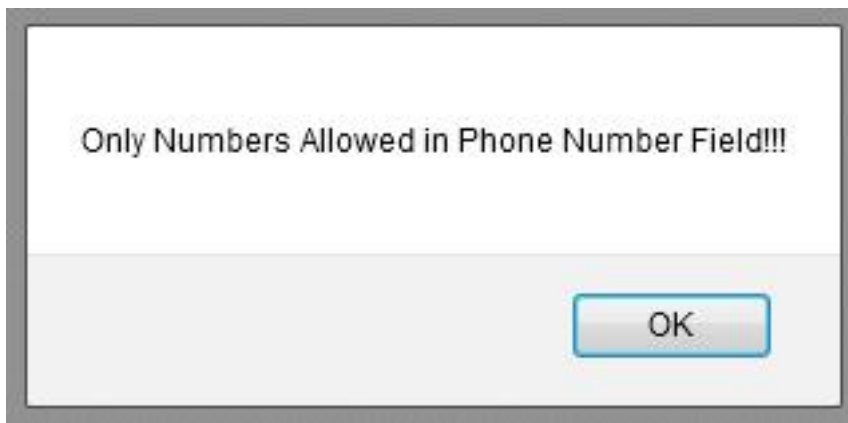


Fig 5.5: Invalid number

The error message above is displayed when a user enters invalid phone number.

5.4 Installation

The system which has been developed for the ministry of women affairs will now be put to use. The system is now to be installed on the hardware which is compatible with the software developed. This stage will include processes like user training, file conversion and change over methodologies.

Process installation

The new system will be installed for an external hard drive. Other software to be installed will include My SQL manager and the exam web server.

5.4.1 User training

All the system users will be trained on how to use the system and these users are listed below:

System administrator: will be trained on how to log in to the system, allocation of allowances and also the dispatch of the field officers to their respective provinces for data collection.

Field officer: will be mainly concerned with the entering of the data collected from the provinces and receiving work plans from the system

Executive director: will be trained on how to send the e-mails with summarised gender based violence statistics to the donor

5.4.2 Conversion and System Change Over

Drummond (2006) expresses that after the training of the users of a new system the process of conversion takes place when the new system replaces the old one. The main objective here is to make sure that the end users are comfortable with using the new system and that they accept it. Old data will have to be analysed and formatted so as to suit the new system. The methods considered for system conversion are:

Direct changeover: this is the carrying out of all old activities to the new system. The old system is totally discarded.

Merits

- There is no duplication of work
- It is less costly

Demerits

- The new system developed may still have errors

Parallel: the old system and the new system will operate together for a stipulated period of time until there is satisfaction among all users

Merits

- If the new system fails the old system can back up the new system

Demerits

- The systems in operation should have common features and functionality
- Extremely costly as the organisation will have to administer two systems at the same time

Phased changeover: the modules of the new system will be introduced in stages replacing those of the old system

Merits

- A component of the new system is installed at a single site thus minimising the risk

Demerits

- Time consuming

Recommendations: after evaluating the above measures with the directors it was agreed that a direct change over to the new system be done. The old system had plenty loopholes which could not be plugged by any other way but jus to implement a new system.

5.5 Maintenance

Drummond (2006) suggests that the system should be properly maintained so that it continuous to meet its objectives. If the system environment changes that means that the system should be upgraded to a better version and this makes the process of maintenance to be a continuous process. The following are the main types of maintenance:

5.5.1 Corrective maintenance

It involves regular monitoring of the system and includes the patch up and replacement of system components which no longer function according to specifications. When an error is identified, measures are put in place to find the origin of the error. Weekly reviews will have

to be done to ensure that the same problems do not emanate to affect system functionality thus they have to be recorded.

5.5.2 Perfective maintenance

This type of maintenance is done at intervals and continuously to enhance system performance. Maintenance will be done so as to prevent the system from possible errors and have measures put in place to deal with occurrence of any failures. Changes can be called for by the stakeholders that are the users of the system thus the maintenance aspect comes in. This entails that the system should be upgraded to a better version which factors in all the suggested changes which are not catered for during development.

5.5.3 Adaptive maintenance

The system environment is ever changing and new features will be required to factor in the changes to the environment. For the maintenance to be regarded as relevant the system should be updated in line with the changes in its environment and adapt to the requirements therefore.

Recommendation

For the monitoring system corrective maintenance will be the best since there are periodic reviews to the requirements to be adjusted on the system.

5.5.4 System security

Implementation of the system took into account security concerns that were raised during the analysis phase.

Physical security

It focused on these main issues:

- **Physical locks:** The main server is located in a server room that is only accessible to IT staff only. Access to the server room can be gained using a valid access tag. The access tag system restricts employees from entering certain areas like the server room.

- **Fire control equipment:** The building is equipped with smoke detectors and overhead sprinklers that safe guard against fire. Fire extinguishers are available in all floors.

Security on software

These measures are critical in the security of the system and will include the following scope:

Operating system based access control: database has adequate access restriction controls.

System user tracking: every user logged in the system will be monitored and the times they use the system, what operations they undertake and the possible trials on access levels.

Counter measures in place:

- The use of Eset Virus Scan Enterprise to prevent viruses from attacking the system
- The use of a firewall to protect the local area network from hackers
- The use of uninterruptible power supply (UPS) and surge protectors to prevent electricity related catastrophes
- The use of tape drives to backup data in case of equipment failure. The tapes are stored in a safe

Recommendations to system users

It is to the developers' satisfaction that the system has been tested and found to be working reasonably well, hence the following recommendations have been suggested to all applicable users of the system:

- To have the system functioning properly, there is need to stay in touch with the developer, since he is the one who has a clear understanding system better than anyone and can solve problems much faster hence saving the much needed funds.
- Maintenance procedures should be adhered to by the respectable members of IT so as to ensure smooth running of the system.
- Users should be responsible for use the system should not disclose their passwords to any unauthorized personnel or let anyone temper around with the system. In other words the password should remain known only to them.

- To have a good functioning system the organisation should be consistent in maintenance of the system because since it is the only integral process in as far as the performance of the system is concerned.
- Security should be frequently revised especially in virus controls, as viruses are constantly changing
- When implementing a related systems development the developer recommends also that enough time be allocated so that processes are not done under-pressure as this reduces the quality of the final product

5.6 Conclusion

After the system has been fully installed this entails that the system users will have to be educated on the use of the system. The system is deemed a success and will be of great benefit to the ministry of women affairs.

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APPENDICES

APPENDIX A: USER MANUAL

The user manual is there to show the system user how to operate the monitoring system.

Every new thing comes with a manual for the special purpose mentioned above.

First the administrator logs in the system with the username: admin and the password: admin as well but both may be changed upon request.

Administrator log in

At start up the administrator should enter his or her user name and password to gain access to the system.

The image shows a screenshot of the GBV-IS (Gender Based Violence Information System) login interface. The page has a dark header with the GBV-IS logo and a light gray main content area. The login form is titled "Secure Login" and includes a "Remember me" checkbox and a "Log In" button. Three callout boxes with arrows point to specific elements: "Enter your password here" points to the password field, "Click to enter your user name" points to the username field, and "Click to log in to the system" points to the "Log In" button. The footer contains copyright information for the Ministry of Women Affairs and development details.

GBV - IS

Secure Login

Username
admin

Password
.....

Remember me

Log In

Enter your password here

Click to enter your user name

Click to log in to the system

©2014 MINISTRY OF WOMEN AFFAIRS - GENDER BASED VIOLENCE INFORMATION SYSTEM

Developed by FARAJ MAWARE Reg : R101167Z

Adding a new field officer

The administrator adds the field officers and thus creating user accounts for them. The administrator clicks on the icon field officers and the form below will appear then fill in the details.

The screenshot shows the 'Add New Field Officer' form in the GBV-IS system. The form is titled 'MINISTRY OF WOMEN AFFAIRS - GENDER BASED VIOLENCE INFORMATION SYSTEM System Administration Portal'. The form includes the following fields and annotations:

- Officer ID:** A text input field containing 'GBV5'.
- User Name:** A text input field containing 'admin'. An annotation 'Enter username for officer' points to this field.
- Password:** A password input field containing '.....'. An annotation 'Enter password and re enter again' points to this field.
- Confirm Password:** A text input field for re-entering the password. An annotation 'Enter password and re enter again' points to this field.
- First Name:** A text input field. An annotation 'Click to add first name' points to this field.
- Surname:** A text input field. An annotation 'Click to add surname' points to this field.

The left sidebar contains a 'Main Menu' with the following items:

- Field Officers
- Programs
- Organisations
- Priority Pillars
- Statistics
- Utilities
- Data Backup
- User Accounts
- Reports
- Programs

The browser address bar shows 'localhost/gbvis/index.html'.

To register new program

The system administrator goes on the menu and select program and a form as shown below will appear.

The screenshot displays the 'System Administration Portal' for 'GBV - IS'. The left sidebar contains a navigation menu with categories: Field Officers, Programs, Organisations, Priority Pillars, Statistics, Utilities, and Reports. The main content area is titled 'Add New Program | View Programs' and contains the following form fields:

- Program ID: PRG6
- Name: [Text input field]
- Organisation: dddd [Dropdown menu]
- Province: HARARE [Dropdown menu]
- District: [Text input field]
- Field Officer ID: [Text input field]
- Month: JANUARY [Dropdown menu]

Annotations with arrows point to the following fields:

- Name: Enter name of officer
- Organisation: Click to choose from the drop down menu
- Field Officer ID: Click to enter officer ID
- Month: Click to choose month

After entering the details of the program the administrator will have to save the program.

Adding Priority pillars

So as monitor the development of the program against the work plans, indicators are important. The system administrator can add indicators by going on the menu and clicking indicators and the form will appear as shown below:

The screenshot displays the 'MINISTRY OF WOMEN AFFAIRS - GENDER BASED VIOLENCE INFORMATION SYSTEM' System Administration Portal. The left sidebar contains a 'Main Menu' with categories like 'Field Officers', 'Programs', 'Organisations', 'Priority Pillars', 'Statistics', 'Utilities', and 'Reports'. The main content area is titled 'Add New Priority Pillar | View Priority Pillars'. It features a form with two text input fields: 'Name of Pillar' and 'Description'. Below the form are two buttons: 'Submit' (highlighted in blue) and 'Reset'. Four callout boxes with arrows provide instructions: 'Click to enter priority pillar' points to the 'Name of Pillar' field, 'Click to enter description' points to the 'Description' field, 'Click to submit data' points to the 'Submit' button, and 'Click to reset the data' points to the 'Reset' button. The browser address bar at the bottom left shows 'localhost/gbvis/index.html'.

Type in the indicator or indicators to be included in the programs and click save to create the indicator.

Data capturing

The field officer will have to select the priority pillar and the code and enter the relevant data. After entering the data then save. The form below shows the procedure:

The screenshot displays the 'MINISTRY OF WOMEN AFFAIRS - GENDER BASED VIOLENCE INFORMATION SYSTEM' System Administration Portal. The main content area is titled 'Add Program Statistics | Program Statistics'. The form includes the following fields and annotations:

- Program Name:** A text input field containing 'Program p1'. A callout bubble points to this field with the text 'Select code for cases'.
- Code:** A dropdown menu showing 'GBVS1'. A callout bubble points to this dropdown with the text 'Select code for cases'.
- Priority Pillar:** A dropdown menu showing 'Services'. A callout bubble points to this dropdown with the text 'Select priority pillar'.
- Male Under 18 Years:** A numeric input field. A callout bubble points to this field with the text 'Enter numeric values only'.
- Male Over 18 Years:** A numeric input field. A callout bubble points to this field with the text 'Enter numeric values only'.
- Female Under 18 Years:** A numeric input field.

On the left sidebar, the 'Program Statistics' menu item is highlighted, with a callout bubble pointing to it that says 'Click to view statistics'.

Appendix B

Interview checklist

1. What is the scope of this organization

.....
.....

2. What are the transactions that you do daily

.....
.....

3. Currently what is the system being used at the Ministry of Women Affairs to cater for those transactions

.....
.....

4. What re the duties of the system administrator and of field officers

.....
.....

5. How does the system administrator and the officers interact

.....
.....

6. How do Provincial development officers create their work plans and justifications

.....
.....

7. What problems do you encounter when preparing work plans and justifications?

.....
.....

8. What problems are you encountering when using the current manual system as a whole?

.....
.....

9. Do you feel that the current system is secure from potential external and internal intruders?

.....

10. Are there any restrictions to access data in the ministry?

.....

11. How does the executive director access the reports of the transactions that have been done?

.....
.....

12. How often are these reports produced?

.....

13. Do you manage to meet your deadlines on time with the current system?

.....

14. What are the problems that you are facing with the system

.....

.....

15. Do you think a new system should be introduced to overcome the problems currently being faced?

.....

.....

16. If you were to specify the requirements for an improved computer system to solve the problems you highlighted, what you think should be included?

.....

.....

Appendix C

SAMPLE QUESTIONNAIRE

What do you think are the problems with the system?

.....
.....
.....
.....
.....

What do you think should be done to improve the system?

.....
.....
.....
.....
.....

What problems, if any, have you experienced in storing or accessing this information?

.....
.....
.....
.....

What opportunities for further utilization of the information would you want explored?.....

.....
.....
.....
.....

Are the existing control mechanisms you specified adequate?

.....
.....
....

If you were to specify the requirements for an improved computer system to solve the problems you highlighted, what would you include?

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

Appendix D

Observation score sheet

Observation guide schedule.

Date:

Time:

Observation.....
.....
.....
.....
.....
.....
.....
.....
.....

How quickly is data capturing?

Fast

Medium

Slow

Data aggregation is

Cumbersome

Moderate

Easy

Conclusion.....
.....
.....
.....
.....
.....
.....
.....

Appendix E: Snippet of code

Login

?php

```
if(isset($_POST['Submit'])){
```

```
include "opendb.php";
```

```
$date = date('m/d/Y');
```

```
$name = $_POST['name'];
```

```
$surname = $_POST['surname'];
```

```
$username = $_SESSION['username'];
```

```
$rs1 = mysql_query("select * from clients_login where username = '$_POST[username]'");
```

```
$rw = mysql_num_rows($rs1);
```

```
if($rw == 1){
```

```
?>
```

```
<script language="javascript">
```

```
alert("Username already in use");
```

```
location = 'logindetails.php?clientid=$_GET[clientid]'
```

```
</script>
```

```
<?php
```

```
exit;
```

```
}
```

```
if($_POST['password']!= $_POST['cpass']){
```

```
?>
```

Registering a new user

```
<?php

if(isset($_POST['button']))

{

    include '../opendb.php';

    if($_POST['password'] != $_POST['cpass'])

    {

        ?>

<script language="javascript">

        alert("Password did not match");

    </script>

<?php

        exit;

    }

    if (strlen($_POST['password']) < 8)

    {

        ?>

<script language="javascript">

        alert("Password length should be 8 characters and above");

    </script>

<?php

        exit;

    }

    if($_POST['access'] == '0')
```

```

        {
            ?>

<script language="javascript">
            alert("Please select user rights for user <?php echo $firstnames."
".$surname; ?>");

        </script>

<?php
            exit;
        }

        $rs_username = mysql_query("select * from user_login where username
='$_POST[username]");

        if($row_username = mysql_fetch_array($rs_username))
        {
            ?>

<script language="javascript">
            alert("Username <?php echo $_POST['username'] ?> already in
use.");

        </script>

<?php
            exit;
        }
        else
        {
            $date = date('m/d/Y');

```



```

        $firstnames = strtoupper(ucwords($_POST['firstnames']));

        $surname = strtoupper(ucwords($_POST['surname']));

        mysql_query("insert into user VALUES
(NULL, '$firstnames', '$surname', '$date', '$_POST[email]')") or die(mysql_error());

        $rs_lastid = mysql_query("select id as lastid from user order by id
desc LIMIT 1");

        $row_lastid = mysql_fetch_array($rs_lastid);

        mysql_query("insert into user_login
VALUES('$row_lastid[lastid]', '$_POST[username]', '$_POST[password]')");

        mysql_query("insert into user_access
VALUES('$row_lastid[lastid]', '$_POST[access]')");

        ?>

<script language="javascript">

        alert("USER <?php echo $firstnames." ".$surname; ?> SAVED
SUCCESSFULLY");

        parent.location = 'index.php?page=search_user.php'

</script>

<?php
} }?>

```

Change password

```

<?php
session_start();
include ('aut.php');

?>

<?php

```

```

if(isset($_POST['Submit'])) //for submit data
{
    include './opendb.php';

    $sender = $_SESSION['username'];

    $password = $_POST['password'];

    $cpass=$_POST['cpass'];

    $oldpass=$_POST['oldpass'];

    $query = mysql_query("select * from user_login where username = '$sender'");

    while($row = mysql_fetch_array($query)){

        $passwords = $row['password'];

    }

    if (strcmp($password,$cpass)!= 0 )
    {
        echo ("<SCRIPT LANGUAGE=JavaScript> window.alert('Password did not match')

                javascript:history.go(-1)

                </SCRIPT>");

        exit; }

    if (strcmp($passwords,$oldpass)!= 0 )
    {
        echo ("<SCRIPT LANGUAGE=JavaScript> window.alert('Old password is
incorrect')

                javascript:history.go(-1)

```

```

        </SCRIPT>"); exit;    }

    if (strlen($password) < 8)    {

        echo    ("<SCRIPT    LANGUAGE='JavaScript'>
window.alert('Password too short')

        javascript:history.go(-1)

        </SCRIPT>");

        exit;    }

$result = mysql_query("Update user_login set password = '$password' where username = '$sender'")
or die (mysql_error());

if ($result )    {

    ?>

    <script language="javascript">

        alert("Password Changed");

        location = 'index.php?page=changepass.php'

    </script>

    <?php

        }

    else

    {

        $msg= "Error occured";

    }    }

//}

?>

```

Logout

```
<?php
```

```
session_start();
```

```
unset($_SESSION['username']);
```

```
header("location:index.php");?
```

