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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Firstly I would like to give all the Glory to the Lord for granting me the most precious gift of life up to this day. Also, I would like to thank my mom and dad for giving me love and financial support which gave me strength to carry on.

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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

Minister

Deputy Minister

Permanent secretary

- Director
  - Women Affairs
  - Gender
  - Administration
  - Community Dvt
  - Communications

- Deputy
  - Program Officers
  - Program Officers
  - Program Officers
  - Program Officers

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.

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central processing unit</td>
<td>1.5Ghz</td>
<td>2.5Ghz</td>
</tr>
<tr>
<td>Reserve Processor</td>
<td>256Kb</td>
<td>512Kb</td>
</tr>
<tr>
<td>Main Memory</td>
<td>1MB</td>
<td>2GB</td>
</tr>
<tr>
<td>Hard Drive</td>
<td>40GB</td>
<td>320GB</td>
</tr>
<tr>
<td>UPS</td>
<td>500VA</td>
<td>1000VA</td>
</tr>
<tr>
<td>Printer</td>
<td>LaserJet</td>
<td>LaserJet</td>
</tr>
<tr>
<td>Network Card</td>
<td>10/100mbps</td>
<td>10/100mbps</td>
</tr>
<tr>
<td>CD Rom Drive</td>
<td>48x</td>
<td>52x</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tangible</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected increase in savings</td>
<td>1000</td>
<td>1200</td>
<td>2000</td>
<td>4200</td>
</tr>
<tr>
<td>Reduced stationery costs</td>
<td>1200</td>
<td>1000</td>
<td>700</td>
<td>2900</td>
</tr>
<tr>
<td>Reduced telephone costs</td>
<td>1300</td>
<td>1000</td>
<td>500</td>
<td>2800</td>
</tr>
<tr>
<td>Reduced overtime costs</td>
<td>2500</td>
<td>2000</td>
<td>1000</td>
<td>5500</td>
</tr>
<tr>
<td>Reduced labour costs</td>
<td>3000</td>
<td>2500</td>
<td>2000</td>
<td>7500</td>
</tr>
<tr>
<td><strong>Total tangible benefits</strong></td>
<td>9000</td>
<td>7700</td>
<td>6200</td>
<td>22900</td>
</tr>
<tr>
<td><strong>Intangible benefits</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error reduction</td>
<td>1000</td>
<td>500</td>
<td>500</td>
<td>2000</td>
</tr>
<tr>
<td>Efficiency</td>
<td>1200</td>
<td>700</td>
<td>500</td>
<td>2400</td>
</tr>
<tr>
<td><strong>Total benefits</strong></td>
<td>2200</td>
<td>1200</td>
<td>1000</td>
<td>4400</td>
</tr>
</tbody>
</table>

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.

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

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.

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Hardware Maintenance</td>
<td>1200</td>
<td>1000</td>
<td>700</td>
<td>2900</td>
</tr>
<tr>
<td>Software Maintenance</td>
<td>1000</td>
<td>1200</td>
<td>1500</td>
<td>3700</td>
</tr>
<tr>
<td>Expertise / training</td>
<td>2000</td>
<td>1500</td>
<td>1000</td>
<td>4500</td>
</tr>
<tr>
<td>Stationery</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>1500</td>
</tr>
<tr>
<td><strong>Total operational costs</strong></td>
<td><strong>4700</strong></td>
<td><strong>4200</strong></td>
<td><strong>3700</strong></td>
<td><strong>12600</strong></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Narration</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Total benefits</td>
<td>11200</td>
<td>8900</td>
<td>7200</td>
<td>27300</td>
</tr>
<tr>
<td><strong>Less costs:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational costs</td>
<td>4700</td>
<td>4200</td>
<td>3700</td>
<td>12600</td>
</tr>
<tr>
<td><strong>Net Benefits</strong></td>
<td>6500</td>
<td>4700</td>
<td>3500</td>
<td>14700</td>
</tr>
</tbody>
</table>

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’.

\[
ROI = \frac{Total\, Benefits - Total\, Costs}{total\, Costs} \times 100
\]

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 $\frac{1}{(1+r)^t}$

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Net cash flows</th>
<th>Discount Factor %</th>
<th>Present Value (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>(4750)</td>
<td>1</td>
<td>(4750)</td>
</tr>
<tr>
<td>1</td>
<td>4300</td>
<td>0.90901</td>
<td>5900</td>
</tr>
<tr>
<td>2</td>
<td>3500</td>
<td>0.82644</td>
<td>3884</td>
</tr>
<tr>
<td>3</td>
<td>2500</td>
<td>0.75131</td>
<td>2629</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Phase</th>
<th>Start Date</th>
<th>End Date</th>
<th>Duration (weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposal</td>
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<td>Planning</td>
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<td>1</td>
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<td>21/03/2014</td>
<td>2</td>
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<tr>
<td>Design</td>
<td>22/03/2014</td>
<td>04/04/2014</td>
<td>3</td>
</tr>
<tr>
<td>Implementation</td>
<td>04/04/2014</td>
<td>18/04/2014</td>
<td>2</td>
</tr>
<tr>
<td>Maintenance</td>
<td>18/04/2014</td>
<td>26/04/2014</td>
<td>1</td>
</tr>
<tr>
<td>Documentation</td>
<td>On going</td>
<td>On going</td>
<td>On going</td>
</tr>
</tbody>
</table>

Table 2.7: Time line for duration of the project development

2.5.2 Gantt chart

<table>
<thead>
<tr>
<th>Activity</th>
<th>WK1</th>
<th>WK2</th>
<th>WK3</th>
<th>WK4</th>
<th>WK5</th>
<th>WK6</th>
<th>WK7</th>
<th>WK8</th>
<th>WK9</th>
<th>WK10</th>
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<td>Planning</td>
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<td>Analysis</td>
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<tr>
<td>Design</td>
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<tr>
<td>Implementation</td>
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<tr>
<td>Maintenance</td>
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</tbody>
</table>

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 workflow, 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 stuff focusing on gender issues where interviewed giving their views on the functionality of the current system and it advantages and drawbacks. Special questioners 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 interview 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 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 there were being observed and thus did not feel secure.
- Some personnel were missing so those standing in for them where 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 questioners involves drafting the questioners and distributing them to the current system users for them to input their responses. Questioners 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 where 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

1. Start
2. PDO prepares the calendar & sets field research dates
3. PDO assigns officers to field research
4. Field officer sends report to PDO
5. Approve the report?
   - No: Program Manager corrects & resends the work plan
   - Yes: PDO sends to the Admin in HQ
6. Admin sends report to the Director
7. Report is finally sent to the donor
8. Stop
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

PDO

Assigned officer

Reports & statistics

Field Officer

Calendar & working plan

Reports & statistics

Current GBV System

PDO

HQ Administrator

Director

Donor

Reports & statistics

Summarized Reports & statistics

Funding

Summarized Reports & statistics

Executive Reports & statistics
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.

Fig 3.2: Context Diagram of the current system
Dataflow diagram of the current system

1. **Planning**
   - PDO: Program details
   - Work Calendar

2. **Field Assignment**
   - PDO: Officer Details
   - Field data
   - Assigned Officers
   - Program files

3. **Field Reporting**
   - Field Officer: Field data & Statistics
   - Field Report
   - Report files

4. **Executive Reporting**
   - Admin HQ: Aggregated Statistics
   - Executive report
   - Report files

5. **Executive Reporting to donor**
   - Director: Summarised data
   - Program files
   - Report files
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. Outsourcing 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

<table>
<thead>
<tr>
<th>Narration</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out sourcing</td>
<td>$6000</td>
</tr>
<tr>
<td>In house development</td>
<td>$4750</td>
</tr>
<tr>
<td>Improvement of the current system</td>
<td>$7000</td>
</tr>
</tbody>
</table>

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.
Admin HQ

PDO

Sets work calendar

Assigns officers to field research

Prepares report for the PDO

Analyze the field report & forwards to the Director

Forwards the report to the Director

Summarize the report & send it to the donors as the executive report

Field Officer

PDO

Forwards the report to the Director

Director
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

Administrator

Assigned field officers

Summarized GBV data

GBV Monitoring System

Field Officers

Data captured

Field Allowances

Director

Executive reports

Summarized GBV report

Donor

Executive reports

Funds
4.2.3: Dataflow diagram of the proposed system

Fig 4.1: Context Diagram of the Proposed System
Data Flow Diagram

1. Planning
   - Work Calendar
   - HQ Admin
   - Officer Details

2. Field Assignment
   - Assigned Officer
   - Program files
   - Admin
   - Officer Details

3. Allowance allocation
   - Allocated Allowances
   - Program files
   - Admin
   - Field Data

4. Field reporting
   - Field reports
   - Field report files
   - Field Officer
   - Data captured

5. Data Aggregation
   - Field reports
   - Compiled data & statistics
   - Field data & stats
   - Admin
   - Field reports

6. Report to donor
   - Executive files
   - Director
   - Field reports & statistics

Program Details

Field Data

Officer Details

Data captured

Field reports & statistics

Work calendar

Compiled data & statistics

Field Officers

Assigned Officer

Executive Report
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.
The user has to be well trained 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 safeguard 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:

![Network Design Diagram](image)

**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

**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

Admin

Assigns

Creates

Analyze & summarize

Field Officer

Name
ID No.
Password

Creates

Work calendar

Program

End date
Start date

Field Report

Sent to

Sender
Period
Sent date

Director

Name
ID No.
Password
### Key

<table>
<thead>
<tr>
<th>Entity</th>
<th>Attributes</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Figure 4.5: Enhanced Entity Relationship

**Major Entities**

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

#### Entity – Attribute Table

<table>
<thead>
<tr>
<th>ENTITY</th>
<th>ATTRIBUTES</th>
<th>DESCRIPTION</th>
<th>FORMAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin</td>
<td>Admin number</td>
<td>Unique ID</td>
<td>Number</td>
</tr>
<tr>
<td></td>
<td>Admin name</td>
<td>User name for admin</td>
<td>Text (30)</td>
</tr>
<tr>
<td></td>
<td>Password</td>
<td>Private code for system access</td>
<td>Text (30)</td>
</tr>
<tr>
<td>Field officer</td>
<td>Officer Name</td>
<td>Name of province</td>
<td>Text (30)</td>
</tr>
<tr>
<td></td>
<td>Email address</td>
<td>Local email</td>
<td>Text (30)</td>
</tr>
<tr>
<td></td>
<td>Password</td>
<td>Officers private code for system access</td>
<td>Text (30)</td>
</tr>
<tr>
<td>Work plan</td>
<td>Program</td>
<td>Name of program</td>
<td>Text (30)</td>
</tr>
<tr>
<td></td>
<td>Sent date</td>
<td>The date on which the work plan was set</td>
<td>Date</td>
</tr>
<tr>
<td></td>
<td>Period</td>
<td>The period for which the work plan will cover</td>
<td>Text (30)</td>
</tr>
<tr>
<td>Executive director</td>
<td>Director number</td>
<td>Unique ID</td>
<td>Number</td>
</tr>
<tr>
<td></td>
<td>Access name</td>
<td>User name</td>
<td>Text (30)</td>
</tr>
<tr>
<td></td>
<td>Password</td>
<td>Private code for</td>
<td>Text (30)</td>
</tr>
</tbody>
</table>
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 and 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 illustrating 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.
Figure 4.6 Class Diagram

Administrator
Name: String
Password: long
Email

Field Officer
Program Name: string
Province Name: string
officer no.: int number
password: long

Work plan
Program name: string
sender’s name: string
period: date
sent date: date

Field report
Program name: string
sender’s name: string
period: date
sent date: date

Director
Name: string
Password: long

Transactional report
Type: long
content: long
date: date
owner: long
+create{}
+Delete {}
+Read {}
+Insert {}
+Update {}
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.

![Package Diagram](image)

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.
Assign field officer
Create account for the officer in the system
Calculates field Allowance
Prepares field report
Send field report to the admin
Analyze the report
Send the analyzed report to the director
Summarize the report for executive reporting
Send the executive report to the donor
Generate report
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. Outputs 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.

![System login form for all users](image)

Figure 4.9: System login form for all users
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 where 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 the where 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
Davids (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 where covered. The system was then tested against the intended objectives of developing the system. In testing the system the following procedures where used:

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

![Invalid User Details Entered!]

**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

![Error message for invalid ID format](image)

ID number entered in invalid format! Please re-enter in the following format: 99-999999-z-99

**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

![Error message for invalid phone number](image)

**Only Numbers Allowed in Phone Number Field!!!**

**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 MySQL manager and the examp 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 just 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 safeguard 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.
References


4. www.women.gov.zw

5. Ministry of women affairs gender and community development handbook(2010),Print flow, Zimbabwe

6. Sward, D, (2008), Measuring the Business value of Information Technology, Pearson, United kingdom


14. Peshkin, B. (1993), Goodness of Qualitative Research, Houghton Mifflin Harcourt, USA


26. Schriber, H. M. (2010), Integer Programming, Addison-Wesley, United States
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.
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.

[Image of the form with annotations]

- Enter username for officer
- Enter password and re-enter again
- Click to add first name
- Click to add surname
To register new program

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

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

So as to 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 on indicators and the form will appear as shown below:

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:
Appendix B

Interview checklist

1. What is the scope of this organization

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2. What are the transactions that you do daily

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

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

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................................................................................................................................................
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?

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

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

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

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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.....................................................................................................................
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How quickly is data capturing?

Fast  Medium  Slow

Data aggregation is

Cumbersome  Moderate  Easy

Conclusion.....................................................................................................................
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Appendix E: Snippet of code

Login

```php
<?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]'"构造的文本

    $rw = mysql_num_rows($rs1);

    if($rw == 1){
        
        <script language="javascript">
        alert("Username already in use");
        
        location = 'logindetails.php?clientid=$_GET[clientid]'

        </script>

        ?><

        echo "<script language="javascript">
        alert("Username already in use");
        
        location = 'logindetails.php?clientid=$_GET[clientid]'

        </script>

        ?></p>

```
Registering a new user

```php
<?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 &lt;?php echo $firstnames.
    ".$surname; &gt");

</script>

&lt;?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 &lt;?php echo $_POST['username'] &gt; already in
        use.");

    </script>

    &lt;?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

<?php

Change password

<?php

session_start();

include ('aut.php');

?>

<?php
if(isset($_POST['Submit'])) ///forsubmit 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 "("; 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 occurred";
}

//}

?>
Logout

<?php

session_start();

unset($_SESSION['username']);

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