

**A COMPUTERIZED STOCK RECORDS MANAGEMENT SYSTEM  
(CSRMS)**

**A CASE STUDY OF BUHWEJU TEA FACTORY STORE,  
BUHWEJU DISTRICT**


**BY  
NINSIIMA PATIENCE  
BIT/0009/123/DU  
(DCS) K.I.U  
Email: [p\\_ninsiima@yahoo.com](mailto:p_ninsiima@yahoo.com)**

**A PROJECT REPORT SUBMITTED TO THE FACULTY OF SCIENCE  
AND TECHNOLOGY IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF BACHELOR  
OF INFORMATION TECHNOLOGY DEGREE  
OF KAMPALA INTERNATIONAL  
UNIVERSITY**

**JULY 2014**

## DECLARATION

I, Ninsiima Patience declare that I have done this project report myself and to the best of my knowledge it has never been submitted anywhere for any purpose.

Signature:  .....

Date: 24/07/14 .....

### APPROVAL

This Project report has been done by Ninsiima Patience under my supervision at Kampala International University – Western Campus and it is now ready for submission.

Signed:  .....

Date: 21<sup>st</sup> July 2014 .....

Mr. Turiabe Victor  
Supervisor

## TABLE OF CONTENTS

DECLARATION .....	i
APPROVAL.....	ii
TABLE OF CONTENTS .....	iii
DEDICATION .....	vi
ACKNOWLEDGEMENT .....	vii
LIST OF ACRONYMES .....	viii
LIST OF TABLES .....	ix
LIST OF FIGURES.....	x
ABSTRACT.....	xi
CHAPTER ONE .....	1
INTRODUCTION AND BACKGROUND.....	1
1.0 Introduction .....	1
1.1 Background .....	1
1.3 Objectives.....	3
1.3.1 General objective of the study.....	3
1.3.2 Specific objectives of the study.....	3
1.4 Research questions .....	3
1.5 Scope of the study .....	4
1.5.1 Geographical scope .....	4
1.5.3 Time scope .....	4
1.6 Significance of the study .....	4
CHAPTER TWO.....	6
LITERATURE REVIEW.....	6
2.0 Introduction.....	6

2.1 Stock management system .....6

2.1.1 Stock management .....6

2.1.2. Stock management systems.....6

2.2. *Computerized stock records management*.....8

2.3 System Testing and Implementation .....9

2.3.1 *System testing* .....9

2.3.2 *System implementation* .....9

CHAPTER THREE.....11

METHODOLOGY .....11

3.0 Introduction .....11

3.1 Study design .....11

3.2 Study area .....11

3.3 Study population .....11

3.4 Sample size.....11

3.5 Sampling methods .....12

3.6 Sources of data .....12

3.7 Data collection methods: .....12

3.7.1 *Questionnaires* .....12

3.7.2 *Record inspection* .....12

3.8 Data processing, analysis and design .....13

3.8.1 *Data processing and presentation*.....13

3.8.2 *Data analysis*.....13

3.8.3 *System design* .....13

3.9 Ethical consideration .....13

3.10 Limitations of the study.....14

1.2.1 System requirements .....22

1.2.2. Logical flow of the new system .....23

1.2.3: Conceptual design of the system .....26

1.2.4: Physical design of the system .....30

4.3 System testing and implementation.....30

4.3.1. System testing .....30

CHAPTER FIVE.....31

SYSTEM IMPLEMENTATION .....31

5.0 Introduction .....31

5.1. System functionality.....31

CHAPTER SIX .....45

DISCUSSION, CONCLUSION AND RECOMMENDATIONS .....45

6.1 Discussion .....45

6.2 Problems encountered .....46

6.3 Recommendations .....46

6.4 Conclusion.....47

REFERENCES.....49

APPENDICES.....50

## **DEDICATION**

I dedicate this work to my beloved parents, my brothers and sisters, my classmates, management and staff Buhweju Tea Factory, and all my friends.

## ACKNOWLEDGEMENT

Before anybody else, I thank God for the gift of life, parents, and friends.

I extend my gratitude to students and staff Computing Department KIU-WC and KIU – WC as whole.

My sincere thanks go to my supervisor Mr. Turiabe Victor for the parental support he has rendered me throughout this struggle.

Special thanks to Mr. Arinaitwe Eliot and Mr. Mugisha Brian for their efforts in designing a computerized stock records management system.

I also thank my lecturers at Kampala International University – Western campus; most especially those in the computing department for the support towards making this project a success.



## LIST OF ACRONYMES

SRS	Software Requirements Specification
BTF	Buhweju Tea Factory
CD	Compact Disk
CSRMS	Computerized Stock Records' Management System.
DBMS	Database Management System
DFD	Data Flow Diagrams
GRV	Goods Received Voucher
ICT	Information and Communications Technology
IGTF	Igara Growers Tea Factory
KIU	Kampala International University
LPO	Local Purchase Order
MIV	Material Issue Voucher
NIC	Network Interface Cable
RAM	Random Access Memory
SDLC	System Development Life Cycle
VB	Visual Basic
GB	Gigabytes
ROM	Read Only Memory
HOD	Head of Department

## LIST OF TABLES

Table 3.1: Respondents' sample size distribution.....	11
Table 4.1: Findings on respondents' bio-data, period spent at work .....	17
Table 4.2: Findings on availability of Computers and computer Literacy.....	18
Table 4.3: Findings on Problems of the current system.....	19
Table 4.4: Benefits of a computerized system.....	20
Table 4.5: General opinion about the benefits of a computerized system.....	21
Table 4.6: Hardware requirements.....	23
Table 4.7: Software requirements.....	23
Table 4.8: Item table.....	26
Table 4.9: Category table.....	26
Table 4.10: In coming items table.....	27
Table 4.11: Suppliers.....	27
Table 4.12: Outgoing items table.....	28
Table 4.13: Department users.....	28
Table 4.14: Units table.....	28
Table 4.15: Department.....	29
Table 4.16: Order table.....	29
Table 4.17: Login/Users table.....	29
Table 4.18: Stores table.....	30

## LIST OF FIGURES

Figure 4.1: Data flow diagram of the old system.....	1
Figure 4.2: Data flow diagram of the new system.....	19
Figure 4.3: Class diagram of the new system.....	20
Figure 5.1: Splash Form.....	31
Figure 5.2: Login form.....	32
Figure 5.3: Main Form.....	32
Figure 5.4: Stock Form.....	34
Figure 5.5: Stock card.....	35
Figure 5.6: Stock card (search functionality).....	36
Figure 5.7: Received items form.....	37
Figure 5.8: Outgoing/Issued items Receipt.....	38
Figure 5.9: Outgoing/Issued items .....	39
Figure 5.10: Stock status.....	40
Figure 5.11: All issued items.....	41
Figure 5.12: All received items.....	42
Figure 5.13: Monthly report for received items.....	43
Figure 5.14: Monthly report for received items.....	44

## ABSTRACT

This project was aimed at developing a computerized stock records management system and the case study was Buhweju Tea Factory. A number of problems such as consuming of a lot of time, absence of data backup, slow generation and retrieval of reports/information, subjectivity to human errors among others were found out to be problems associated with the current paper based stock records management system in stores' section at Buhweju Tea Factory.

The objectives of the study were to analyze the current stock records management system and find out errors and limitations associated with it, to develop a computerized stock records management system that will solve problems (errors and limitations) of the current stock management system, and to test and implement the designed system.

To analyze the current system, questionnaires were used to get information from the selected respondents who filled and returned the questionnaires. Collected data was analyzed using Microsoft Excel and tables were used to present data.

Having analyzed the collected data, the above mentioned problems were confirmed to be the problems associated with the current system and it was agreed that a computerized system would help solve those problems. A computerized stock records management system was designed by use of data flow diagrams and class diagrams. Microsoft access 2007 was used to come up with a database and Microsoft Visual basic was used to design the user interface that helps the user to interact with the system. Unit testing was done on the designed system and was implemented and used on some computers, and it was working normally.

In spite the fact that a computer based stock records management system is expensive; it has a number of advantages such as time saving because information processing and report generation is done very fast, increased accuracy because it facilitates automatic calculations, information security and data backup and others.

The researcher recommends that the new system be adopted and be used in stock records management at Buhweju tea factory store.

# CHAPTER ONE

## INTRODUCTION AND BACKGROUND

### 1.0 Introduction

This chapter explains the background of the study, statement of the problem, objectives (general and specific), scope and significance of the study.

### 1.1 Background

Buhweju Tea Factory (BTF) is a tea processing company located in Burere Sub-county, in Buhweju district 40km along Nyakabirizi – Nsiika road, and was commissioned in April 2012.

Buhweju Tea Factory is a subsidiary company to Igara Growers Tea Factory (IGTF), whose birth was brought about by increased crop production. Green leaf volumes increased steadily and IGTF could not accommodate and process the large volumes, therefore decided to put up another factory to handle some of the green leaf volumes.

The vision of the company is “To be the leading Tea producer in Uganda and beyond”, with its mission statement: “To produce high quantity and quality of black tea in order to realize high profits for the benefit of all its stakeholders in effective, efficient and sustainable manner” and the company’s goal is: “To increase productivity and benefits of share holders”

Buhweju Tea Factory has a number of departments which include; Field, Factory, Human Resource, Engineering, and Accounts.

The research was carried out in Stores section. This section is responsible for receiving, storing, and issuing of all company items/stock which include; machinery, stationary, food, farm inputs (e.g. herbicides, fertilizers, and plunning knives), packing materials, fuel, and many others.

*Stock management* means overseeing and controlling of the ordering, storage and use of components that a company will use in the production of the items it will sell as well as the overseeing and controlling of quantities of finished products for sale.

(<http://www.investopedia.com/>)

Under stock management, the store keeper (the section head) is responsible for keeping track of the stock levels of all items, ensure proper requisitions made by user departments, and also make

sure the suppliers deliver the right items, at the right time and in right quantities. All item details such as supplier's name, goods received voucher (GRV) number, quantity received, the rate, and total cost, how much has been issued and when, at what rate, total amount, and average cost are all spelt out in a ledger card. The store keeper makes sure the ledger card for each item is updated (indicating balances/current stock) all the time; which helps to decide when to and not to make an order.

This process is done manually using pieces of paper called ledger cards where by each item has a paper folder/file that contains all the records/information about previous receipts and issues.

The paper volumes have rapidly increased and retrieving certain information from them is time consuming, and hectic. One wonders what the situation will be in the next ten years.

The paper based stock records management is also prone to human errors, space consuming, laborious, and make report generation difficult. The security of information is low because the records are prone to disasters (for example fire outbreak, rodents, and floods). Records are also prone to unauthorized access because they are kept in shelves and cupboards and are easily accessible.

Information backup is also hard because backing up data would mean photocopying every record and storing it in a different place which require more physical storage space; which would otherwise be made easy with a computerized system where back up sites and external storage devices like flash disks, compact disks (CDs) and floppy disks can be used as information backup equipments.

## **1.2 Problem Statement**

Stock management is important especially in processing companies because it helps in planning, budgeting, proper resource allocation by ensuring timely stocking, improving efficiency, supporting decision making, and ensuring that capital is not tied up unnecessarily.

At Buhweju Tea Factory stock management is done manually using papers and pens and as a result, the files have piled up with time. This method is not good because retrieving information from the files is time wasting, laborious, and a lot of space is also wasted in keeping those files. The information is also insecure and vulnerable to rodents, fire outbreak, floods, unauthorized access, issues which can't easily be solved when still using the paper based system.

If there is no immediate intervention, the company may suffer from inefficiency caused by either under stocking or over stocking or misallocation of resources, continue to lose more precious time and space, keep spending on maintaining many workers, incurring losses resulting from human errors (miscalculations), un expected stoppages of manufacturing/production processes that normally occur due to poor planning which results in certain essential items to run out of stock, and can also lose its information at one time because information security and backup are not well catered for in the current stock management system.

The researcher therefore aimed at developing a computerized stock management system which can reduce insecurity, time wastage, subjectivity to human errors, wastage of physical space, and need for a lot of labor to do the work.

### **1.3 Objectives**

#### **1.3.1 General objective of the study**

To design a computerized stock management system that can ensure reliability, security and convenience in the management of stock records at Buhweju tea Factory.

#### **1.3.2 Specific objectives of the study**

1. To analyze the current stock records management system at Buhweju Tea Factory
2. To develop a computerized stock records management system that will solve problems (errors and limitations) of the current stock records management system at Buhweju Tea Factory.
3. To test and implement the designed system at Buhweju Tea Factory

### **1.4 Research questions**

1. What are the challenges faced by the current paper based stock records management system?
2. How can a computer based system be designed to overcome the challenges of the current system?
3. Will the developed computer system be reliable and able to make stock records management?

## **1.5 Scope of the study**

### **1.5.1 Geographical scope**

The research was carried out at Buhweju Tea Factory in Buhweju district, with in stores section.

### **1.5.2 Content scope**

This research was carried out at Buhweju Tea Factory in the stores section with special interest put on the processes involved in stock records management system in that section.

### **1.5.3 Time scope**

The research was carried out in a period of 3 months effective May 2014 up to end of July 2014 and data used was from April 2012 when the company began up to May 2014.

## **1.6 Significance of the study**

The computerized system will help the factory to save time and space, employ less staff to run the section thus being cost effective, achieve information security and backup , and generate timely reports which support planning, budgeting, and decision making.

The computerized system will make the work less hectic. This will enable stores' staff to enjoy their work thus increased productivity and efficiency.

Other departments like the Human Resource who still use manual records management system may borrow knowledge from this research.

The researcher will have satisfied one of the requirements for the ward of Bachelor of Information Technology Degree of Kampala International University, and will gain a lot of knowledge and experience.

The government and other organizations of the same setting may also borrow a leaf from this, and may later employ it in some of its programmes and office.



The system will also lead to promotion of use of information and communications technology (ICT) in organizations because they will appreciate it and adopt it.

## CHAPTER TWO LITERATURE REVIEW

### 2.0 Introduction.

This chapter reviews what other authors have written on some of the issues and concepts in this study.

### 2.1 Stock management system

#### 2.1.1 Stock management

Stock management means overseeing and controlling of the ordering, storage and use of components that a company will use in the production of the items it will sell as well as the overseeing and controlling of quantities of finished products for sale.

(<http://www.investopedia.com/>)

Activities employed in maintaining the optimum number or amount of each inventory item.

The objective of inventory management is to provide uninterrupted production, sales, and/or customer-service levels at the minimum cost. Since for many companies inventory is the largest item in the current assets category, inventory problems can and do contribute to losses or even business failures. (<http://www.businessdictionary.com/>)

#### *A system*

James.A and O'Brien, (2002) define a system as a group of interrelated or interacting elements forming a unified whole. He further explains that a system has components input, processing, and output.

#### 2.1.2. Stock management systems.

A stock management system is a system that is used to manage, organize, and keep track of stock records. (<http://softwaresolution.informer.com/>)

Stock management system is a system used to show how much stock you have at any one time, and how you keep track of it; it is designed to capture and release information about stock of an organization. It applies to every item you use to produce a product or service, from raw materials to finished goods. It covers stock at every stage of the production process, from purchase and

delivery to using and re-ordering the stock. Stock management allows having the right amount of stock in the right place at the right time. It ensures that capital is not tied up unnecessarily, and protects production if problems arise with the supply chain. (<http://www.infoentrepreneurs.org/>) Stock Management System is a management system that you can use in order to fully shortcut based entries, add product details, customer details, supplier details and printable reports. Among its main functionality we can mention: adding/editing stock details, adding/editing supplier details, adding/editing customer details, adding/editing categories of stock. (<http://softwaresolution.informer.com/>). There are paper based stock management systems and computer based stock records management systems.

### ***Paper based stock management systems***

These stock management systems involve use of pens, pieces of papers (such as index cards and stock control cards) to manage, control, and capture all stock details. In spite the fact that paper based stock management systems are cheap and seem to be easy to use to many because they are used to them, these systems are time consuming, laborious, not accurate, less information backup or security, and prone to human error. (<http://www.infoentrepreneurs.org/>)

The researcher intended to develop a computerized system to help solve some of the problems of the current manual stock records management system.

### ***Computer based stock management systems***

Computerized stock management involves usage of computer soft ware and hardware to carry out stock management, and they may be web based or not. These systems run on similar principles to manual ones, but are more accurate, time saving flexible and information is easier to retrieve. You can quickly get a stock valuation or find out how well a particular item of stock is moving. (<http://www.infoentrepreneurs.org/>)

The researcher developed a computerized system to help the company save time and space, use/employ less labor, achieve accuracy, and have timely and reliable report generation which facilitate planning, budgeting and decision making.

*Stock/inventory record* refer to a Manual or computer-based record of the quantity and kind of inventory at hand, committed (allocated) to firm-orders or to work-in-process, and on order. It often also includes history of the recent transactions in each inventory item.

*Stock records management* is the administrative handling of stock records. (<http://www.businessdictionary.com/>).

## ***2.2. Computerized stock records management***

This refers to use of a computer program to track inventory/stock and create automated replenishment order. Computerized stock management is advantageous because it requires less effort, provides accurate information, has high processing speed, and provides better analysis of inventory trends which ease decision making. (<http://region3.dost.gov.ph/>).

Whereas a computerized stock records management is expensive, it has a number of advantages such as improved accuracy, improved security and data backup (for example cloud), increased speed, time and physical space saving.

A computerized system is a good option for businesses dealing with many different types of stock and in order to come up with a computerized system, system analysis and design has to be done.

### ***System analysis***

Raymond .M (1998) defines system analysis as the study of an existing system for the purpose of designing a new or improved system. According to Whitten. L et al, (2001), system analysis has a number of approaches which include; model driven analysis, structured analysis, information engineering analysis, object oriented analysis (OOA), and discovery prototyping analysis.

The researcher used the model driven approach. According to Whitten. L et al, (2001), model driven approach emphasizes the drawing of pictorial system models to document and validate both existing and/or proposed systems and the system model becomes the blue print for designing and constructing an improved system.

### ***System design***

According to Raymond .M (1998) system design involves preparing a detailed system design by use of for example data flow diagrams (DFD). It involves a number of processes which include; identifying possible solutions, evaluating the identified solutions, selecting the best solution, preparing the implementation proposal, and approval or disapproval implementation proposal.

The researcher followed the system development life cycle (SDLC) to design the proposed system.

Raymond further explains SDLC as an evolutionary process that is followed in developing a computer based information system or sub system.

System development life cycle (SDLC) is a conceptual model used in project management that describes the stages involved in an information system development project, from an initial feasibility study through maintenance of the completed application. Different SDLC methodologies have been developed to guide the processes involved, and they include; the waterfall model, spiral model, rapid application development (RAD), and joint application development (JAD). ([www.searchsoftwarequality.techtarget.com](http://www.searchsoftwarequality.techtarget.com) )

## **2.3 System Testing and Implementation**

### ***2.3.1 System testing***

According to Black and Rex; (2002), System testing of software or hardware is testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements.

Testing has four steps which include; unit testing, integration testing, system testing, and acceptance testing. ([www.softwaretestingclass.com](http://www.softwaretestingclass.com))

The researcher carried out system testing to ensure that there are no errors and any missing system requirements as identified during the system analysis phase.

### ***2.3.2 System implementation***

Raymond .M (1998) defines system implementation as the acquisition and integration of the physical and conceptual resources to produce a working system. According to him, system implementation involves planning implementation announcement, obtaining hardware and soft

ware resources, preparing a database, preparing physical facilities (for example space/room), user training, cutover proposal, and approval or disapproval to the new system.

According to Laudon .K & Laudon .J (2010) implementation is the realization of an application, or execution of a plan, idea, model, design, specification, standard, algorithm, or policy. There are different approaches or methods of changing from an old system to a new system, namely, parallel conversion, direct change over, phased implementation, and pilot.

Parallel conversion is a good approach because the new system and the existing system run side by side. To input the same data and perform the same processes, compare their output and prove the reliability of the new system. If the new system is accepted, the existing system will stop running and will be replaced by the new one.

The researcher used Microsoft access 2007 to design a database and Microsoft visual basic 2005 (VB 2005) to design the user interface because they are user friendly.

## CHAPTER THREE

### METHODOLOGY

#### 3.0 Introduction

This chapter explains the study area, data collection methods and tools, sampling methods, data processing and analysis, and the system design.

#### 3.1 Study design

The researcher used case study design where by Buhweju Tea Factory was the selected case study and in the study both qualitative and quantitative approaches were used to study the system used to manage stock records at BTF.

#### 3.2 Study area

The study was carried out at Buhweju Tea Factory in the stores' section with special interest put on the stock records' management.

#### 3.3 Study population

BTF has a total population of 350 people, but the study involved; the station head, all 3 stores' staff, 5 department heads, and 10 section heads, who added up to a study population of 19 people.

#### 3.4 Sample size

The sample size constituted all the 19 people

*Table 3. 1: Respondents' sample distribution*

<b>Respondents</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Station head	1	5.3
Stores' staff	3	15.8
Department heads	5	26.3
Section heads	10	52.6
<b>TOTAL</b>	<b>19</b>	<b>100</b>

### **3.5 Sampling methods**

The researcher used purposive sampling to select the station head, 3 stores' staff, 5 department heads, and 10 section heads because these have key information required. All stores' staff were chosen because they are involved/carryout all the stock records management processes. Section heads were selected because they are involved in the requisition process, and the station head and the department heads were selected because they are top level administrators, and are involved in planning, budgeting, and decision making.

### **3.6 Sources of data**

Data required included primary and secondary data. Primary data was obtained from the selected respondents. Secondary data was obtained from existing records such as stock management records, transaction records, and any other relevant documents after getting permission from the relevant authorities.

### **3.7 Data collection methods:**

The researcher used interviews, questionnaires, and record inspection to gather all the required data for the study.

#### ***3.7.1 Questionnaires***

According to Burns.A.C and Bush.R.F (2010), a questionnaire is a research instrument consisting of a series of questions and other prompts for the purpose of gathering information from respondents.

Self administered questionnaires were given to respondents by the researcher. The questionnaires were used because they are an easy and cheap means of collecting data from many people at the same time.

#### ***3.7.2 Record inspection***

The company's records especially transaction and stock management records in the stores' section were inspected to enable the researcher get the nature and type of data that is captured in



stock records management. The method was used because the researcher felt this was the best method to gather data requirements to be used in designing the new system.

### **3.8 Data processing, analysis and design**

This involved editing, coding, data presentation, data analysis, and proposed system design.

#### ***3.8.1 Data processing and presentation***

After all the necessary data was collected, the researcher checked data collection forms for omissions, identified answers that could have been recorded on wrong portions of the questionnaire, identified irrelevant answers in the questioner, and identify some questionnaires that could have been returned unfilled. The researcher further categorized the data and tabulated it by use of excel spread sheet. The data was sorted in tabular forms and presented using tables.

#### ***3.8.2 Data analysis***

The researcher applied reasoning to understand and interpret the collected data. This involved identifying consistent patterns and summarizing the appropriate details revealed in the investigation. The researcher used Microsoft Excel for data analysis.

#### ***3.8.3 System design***

The system was designed following the traditional system development life cycle (SDLC). Tables, flow charts, data flow diagrams (DFD), use case diagrams, class diagrams, and entity relational diagrams were be used in the system design.

The user interface was designed using visual basic 2005 (VB 2005), and the data base was designed using Microsoft access 2007.

### **3.9 Ethical consideration**

The researcher took an introductory letter from the computing department of Kampala International University, which she presented to the relevant office at Buhweju Tea Factory, where she was given a letter of acceptance. The researcher then gave consent form(s) to the respondents. In this form (consent form), the aims of the researcher were explained and the

respondent was asked to contribute freely in the study. In this very form the respondent was assured that the information collected would be treated with the highest level of privacy, integrity, and confidentiality

### **3.10 Limitations of the study**

1. Some questionnaires were not returned in time. This caused some delays in the research.
2. Some of the respondents feared to give some of the information in spite presentation of the authority letter to them.

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND DESIGN

#### 4.0 Introduction

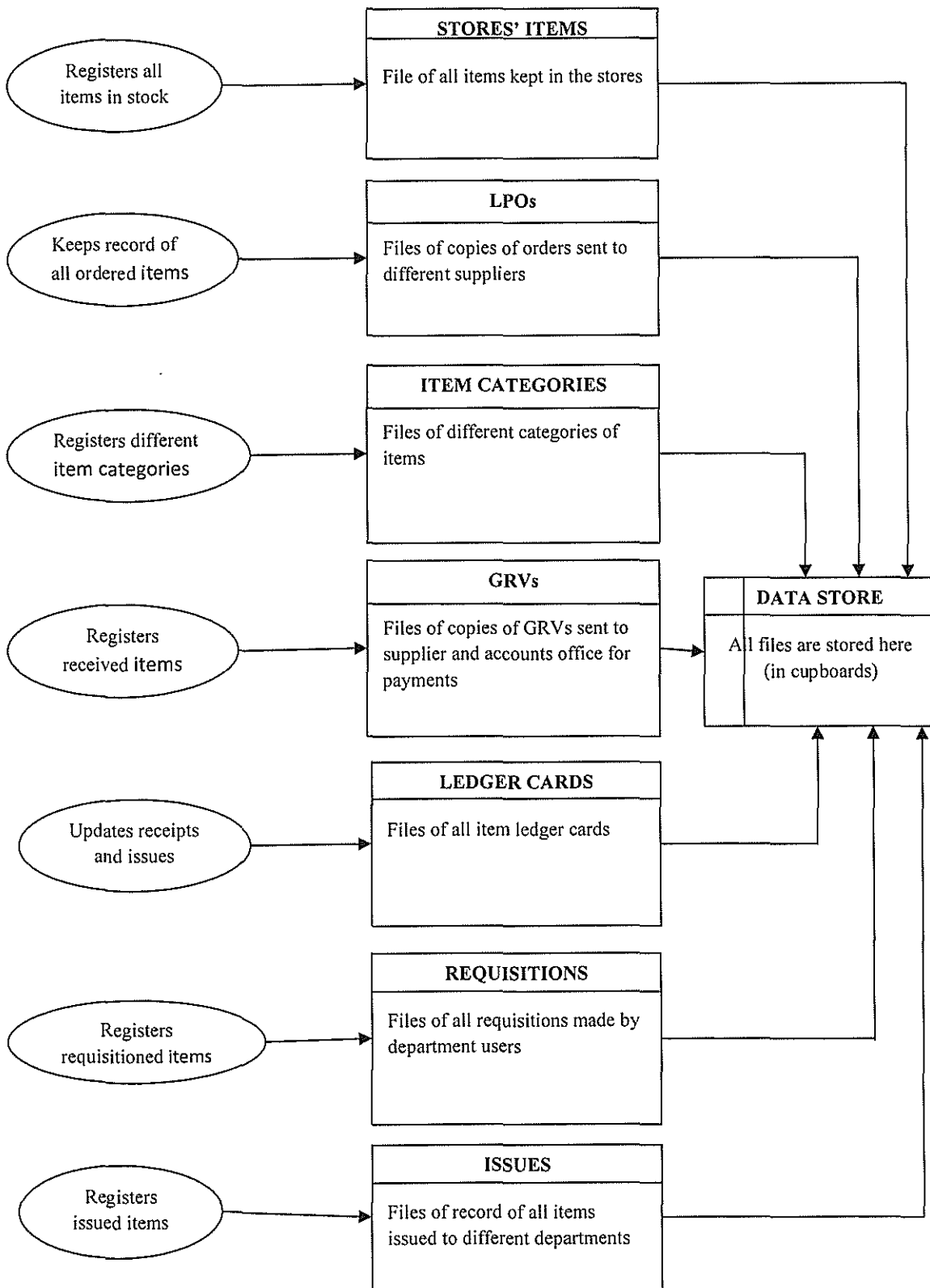
This chapter presents data presentation, analysis and design of the new stock records management system.

#### 4.1. The current system

BTF used to pieces of papers to do stock records' management. This involved capturing, storing, retrieving of information and generating reports, and stock control. The documents involved were, ledger cards (stock control cards), LPOs, MIVs, GRVs and others. The documents are then filled kept into folder files, and then kept in cupboards, Retrieving and generation of reports is hard and laborious.

The figure below highlights the different processes or activities performed in the stores;

Figure 4. 1: Data flow diagram of the current system



#### 4.1.1: Data Presentation

The researcher issued questionnaires to all the 19 respondents and all the questionnaires were returned. Data collected was summarized as shown as below.

##### *Findings on respondents' bio-data, period spent at work.*

The distribution of respondents in terms of age, gender and period spent at work are reflected in table 4.1 below;

**Table 4.1: Findings on respondents' bio-data and period spent at work.**

	Category	Frequency	Percentage (%)
<b>Age</b>	0-18	0	0
	19-30	8	42.1
	31-49	9	47.4
	50 <sup>+</sup>	2	10.5
<b>Gender</b>	Male	17	89.5
	Female	2	10.5
<b>Period spent in position (months)</b>	0-6	3	15.8
	7-12	11	57.9
	13-18	3	15.8
	19 <sup>+</sup>	2	10.5

**Source:** Primary data (questionnaire)

In terms of age, there were no respondents lying in the age bracket 0-18. This was due to the fact that the company does not employ people below the age of 18. Out of the 19 respondents, 47.4% lie in the age bracket 31-49, 42.1% belong to category 19-30, 10.5% are above 50 years of age. The average age is 31-49 and this means that reasonably mature people are employed and these mature people are believed to have given me correct information

In terms of gender, 17 respondents (89.5%) were men, and 2 (10.5%) were female. The men were many because the company prefers to employ more males than females because processing work is hard and women may not easily manage to do it.

On the time spent at the work place, Out of the 19 respondents, 11 of them (57.9%) had spent 7-12 months, 3 (15.8%) had spent 0-6 months and 3 (15.8%) had spent 13-18 months, and only 2 (10.5%) had spent more than 19 months in the organization. Most of the people had spent over 3 months in the organization which convinced the researcher that they were in position to give the required information about the organization.

*Availability of Computers and computer literacy*

The respondents were also asked on whether there are some computers in the stores section and whether they have knowledge on how to use computers and their responses are reflected in table 4.2 below;

**Table 4.2 Availability of Computers and computer Literacy**

	response	frequency	percentage
<b>Computer literacy</b>	Yes	11	57.9
	No	8	42.1
<b>Computer availability in section</b>	Yes	0	0
	No	19	100

**Source:** Primary data (questionnaire)

As reflected in table 4.2 above, 11 (57.9%) of the respondents are computer literate whereas 8 (42.1%) are not, but good enough the store keepers are computer literate. This means that once computers are adopted less training will be required for the users.

All the 19 respondents said that there are no computers used in the stores' section. This was also evidenced by the researcher when she visited the stores section. This means the researcher has to go an extra mile advising and convincing BTF management to purchase computers on which the designed system will run.

*Problems of the Current System*

Using closed ended questionnaires, the respondents were also asked to highlight the problems of the current Paper based system and their responses are summerised in table 4.3 below.

**Table 4.3: Findings on Problems of the current system**

	<b>Mean</b>	<b>Conclusion</b>
Subject to human errors	4.9	Strongly agree
Time consuming	4.7	Strongly agree
Retrieving and generation of reports is hard and laborious	4.5	Strongly agree
Data is vulnerable to hazards like fire outbreaks and intended theft,	3.9	Agree
Authentication is hard	3.6	Agree
Hard to backup data	3.1	No opinion
Wastes physical space	2.4	Disagree

**Scale;** 1 represents strongly disagree, 2 represents disagree, 3 represents no opinion, 4 represents agree and 5 represent strongly agree.

**Source:** Primary data (questionnaire)

To get the position of the respondents on the problems of the current system, the mean was used based on the scale given in relation to the responses and the list was written in the order of precedence according to the mean got. As reflected in the table, respondents strongly agreed that the paper based stock records management is time consuming, subject to human errors, and that retrieving and generation of reports is hard and laborious. Respondents also agreed that the current system makes authentication hard and that it is vulnerable to fire outbreaks or intended theft.

However there was no clear position on the point that paper records are not easy to backup and disagreed that the method wastes space. This was attributed to the fact that the records are not yet too many since the plant has just started but in an interview with some respondents they admitted that whereas the two problems are not yet so much felt, it will be felt in the future since the records on papers rapidly increase daily.

**Findings on whether a computerized system can do better than a paper based system.**

After finding out on the problems of the current system, respondents were asked to give their views on whether and how a computer based system can solve some of all the problems. The responses are reflected in the table below;

**Table 4.4: Findings on whether a computerized system can do better than a paper based system**

	<b>Mean</b>	<b>Conclusion</b>
Provide more accurate and reliable data about stock flow	5.0	Strongly agree
Eases computation and calculation	4.8	Strongly agree
Reduce the time required to capture, store and retrieve data	4.7	Strongly agree
Reduce the amount of labor required to capture, store and retrieve data	4.6	Strongly agree
Ease the generation/handling of summaries/reports	4.6	Strongly agree
Makes authentication easy	4.5	Agree
Make it easy to backup information so that incase of fire outbreaks or other causes of data loss, there is a backup	3.7	Agree
It is easy to restrict unauthorized access and alteration of data	3.4	Agree
Saves a lot of physical space	3.1	No opinion

1 represent strongly disagree, 2 represent disagree, 3 represent no opinion, 4 represent agree and 5 represent strongly agree. Source: Primary data (questionnaire)

**Source:** Primary data (questionnaire)

To get the position of the respondents on how a computer based system can overcome the problems of the current system , the mean was used based on the scale given, in relation to the responses and the list was written in the order of precedence according to the mean got.

As reflected in table 4.4, the respondents strongly agreed that a computerized stock records management system reduces the time required to capture, store and retrieve data and the amount



of labor required to capture, store and retrieve data, eases computation and calculation and generation/handling of summaries/reports, and provides more accurate and reliable data about stock flow.

They also agreed that a computerized system makes it easy to backup information so that in case of fire outbreaks or other causes of data loss, there is a backup, and easy to restrict unauthorized access and alteration of data, and that it makes authentication easy.

Respondents had no opinion on whether a computerized system saves a lot of physical space.

The findings above justified the researcher's reason to improve the existing stock record management system to a computerized system.

***General opinion about the usefulness of a computerized system***

The respondents were asked to give their general opinion on how beneficial it is to use a computer based system compared to a paper based system and the table below portrays their views.

***Table 4.5: Findings on respondents' general opinion about the benefits of a computerized system***

	<b>Mean</b>	<b>Conclusion</b>
It is generally cheaper, convenient, effective and efficient to use computer in stock records mgt.	4.8	Strongly agree
Buhweju Tea Factory will greatly benefit if it chooses to use a computerized system	4.4	Agree

Source: Primary data (questionnaire)

As reflected, respondents strongly agreed that it is cheaper, convenient, effective and efficient to use a computerized stock records management system. They further agreed that BTF will greatly benefit once it chooses to use a computerized stock records management.

The above findings gave the researcher a go ahead to develop a computerized stock records management system.

## **General analysis on the old system**

Basing on the above analysis, the researcher found out that the old system is faulty. This is based on the fact that the respondents themselves portrayed their lack of confidence in the old paper based system because of the problems associated with it as reflected in table 4.4. Table 4.5 and table 4.6 also reflect how the respondents seemed positive about the idea of a computer based system. This propelled and motivated the researcher to design/ to come up with a computer based system for Buhweju Tea Factory.

## **4.2. New computerized system**

In order to design an effective system, the researcher first gathered different requirements, both functional and non functional which were catered for in the designed computer based system. Data flow diagrams and class diagrams were used to make a plan/design the new system which was later constructed using Microsoft access and visual basic.

### ***4.2.1 System requirements***

#### ***Functional requirement***

These are functions and tasks the system is able to accomplish. These include;

- The system allows the user to enter, save, and retrieve information regarding stock.
- The system allows the user to generate periodic reports.
- The system automatically makes calculations when any entry is made
- The system protects information from un authorized access with the use of passwords.
- The system allows the user to search for information in the data base.

#### ***Non- functional requirements***

- The system gives text message warnings/alerts when stock reorder levels are reached
- The is easy to use with a GUI.
- The system is platform independent and is compatible with many operating systems.
- The system uses passwords to restrict un authorized access

### *Hard ware and software requirements*

These are requirements necessary for the new system to run

**Table 4.6: Hardware requirements**

<b>Hardware</b>	<b>Minimum system Requirement</b>
Processor speed	750 MHz
Memory/RAM	1GB
Hard drive	80GB
NICs	2

**Table 4.7: Software requirements**

<b>Software</b>	<b>Minimum system Requirement</b>
Operating system	Windows XP and other latest versions of windows
Database Management system (Back end)	Ms Access 2003/2007
Interface software (Front end)	VB 2005
Word processing	Microsoft office 2003/2007

#### **4.2.2. Logical flow of the new system**

In the current system the user logs into the system via a login form. The system then checks whether the entered user name and password are correct. When the user name and password are correct, he/she is logged in, if they are incorrect he/she is requested to re-enter them. After the user has successfully logged into the system, he/she selects the activity he wants to carry out, either to make an entry of the received items, that of issued items, or view a report. The received items' figure increases the stock level whereas that for issued items decreases the stock level. Whenever quantity issued is entered, the system checks whether the current stock is equal or below the set minimum stock level/minimum quantity/reorder level. When the reorder level is reached, the system gives a reorder reminder; otherwise the user continues and finishes the issuing process.

Figure 4.2: Data flow diagram of the new system

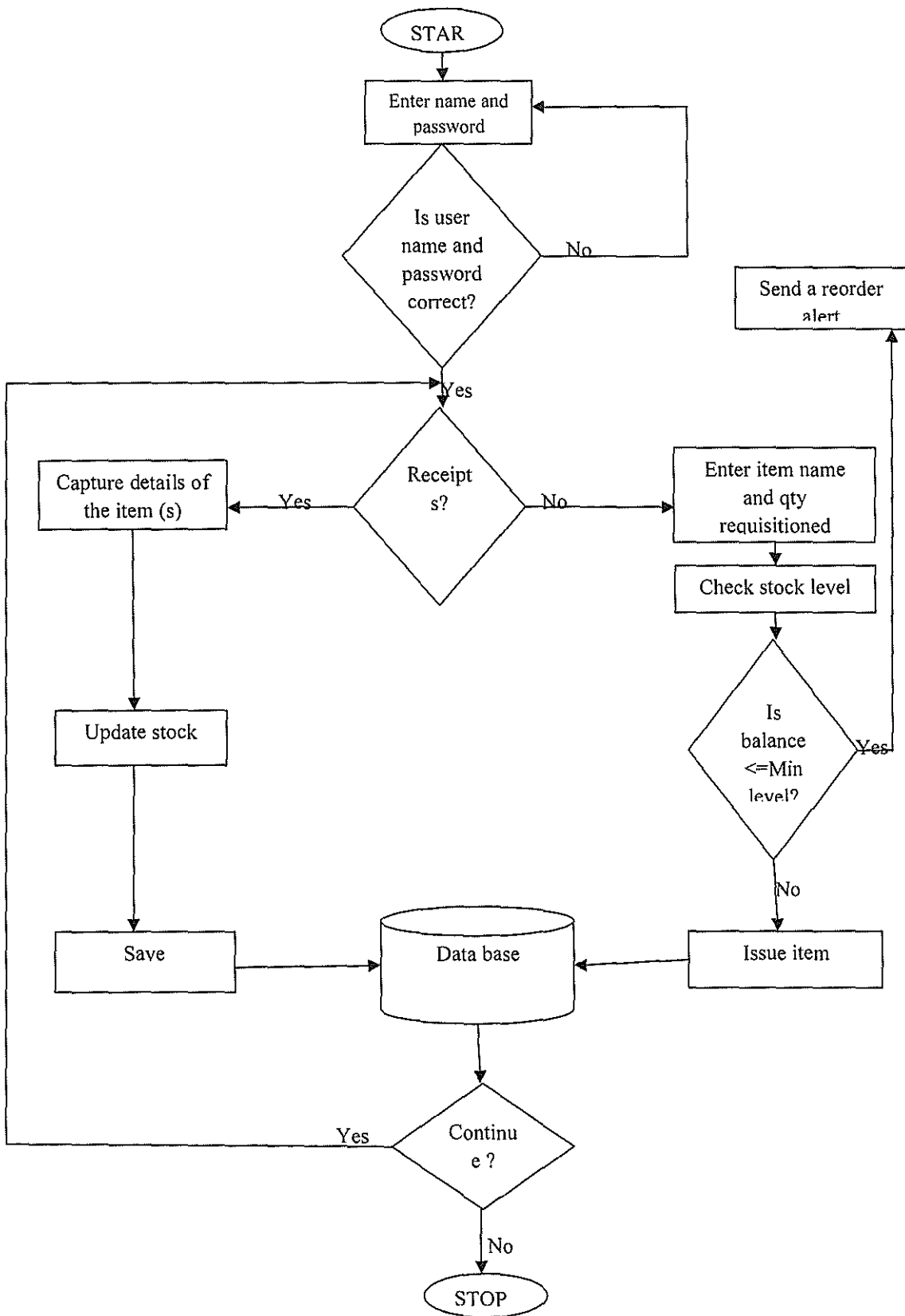
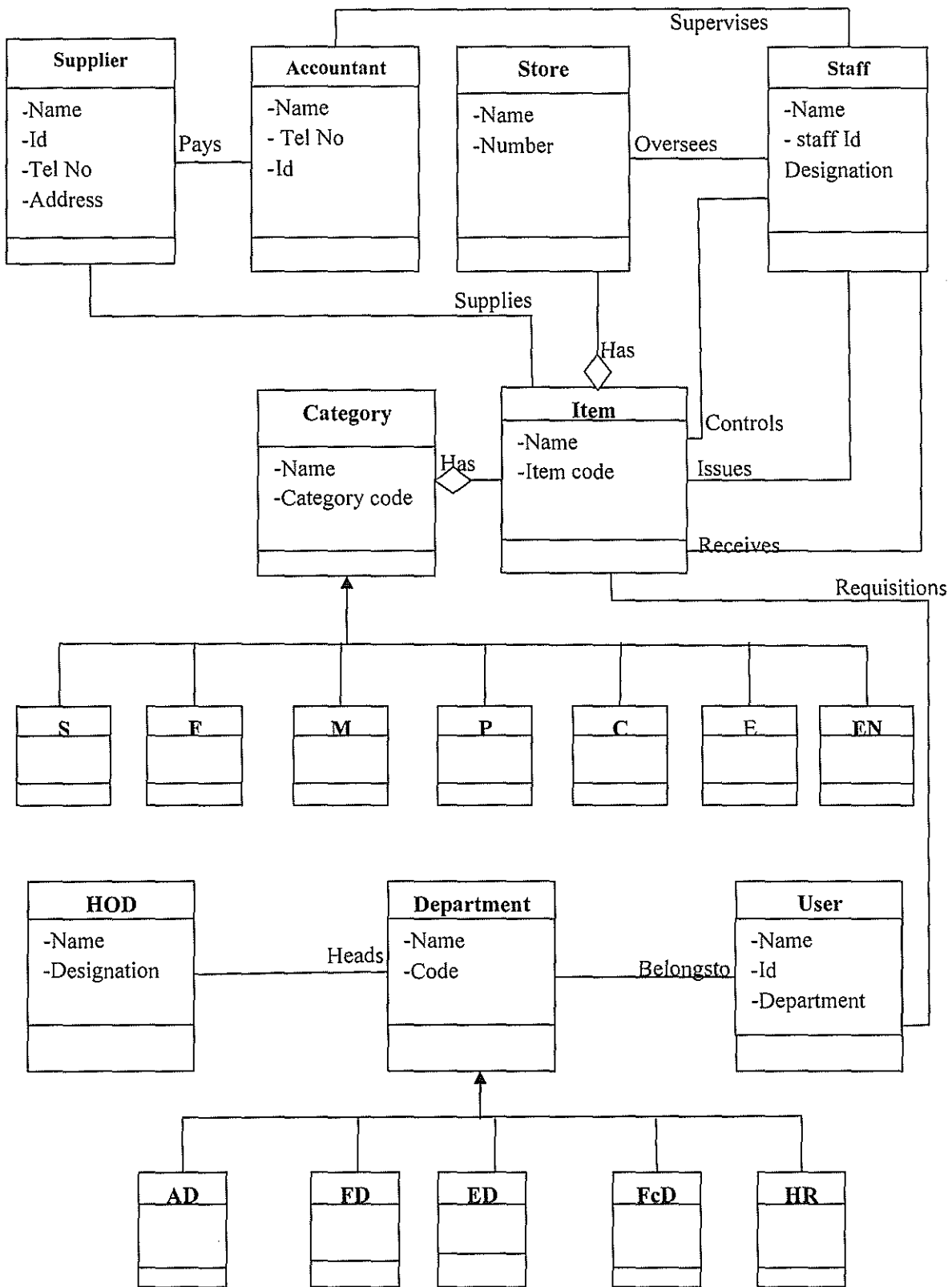


Figure 4.3: Class diagram of the new system



### *Class diagram key*

P- Packing materials	AD – Accounts
C- Cleaning materials	EN – Energy
FcD – Factory	HR – Human Resource
F – Food	S – Stationary
E – Electricals	M- Machinery
FD – Field	FD – Field

### *4.2.3: Conceptual design of the system*

The database is composed of the following tables;

**Table 4.8: Item table**

Item table contains details of all the items kept in company stores.

Field	Data type	Size	Description
ITEM_CODE	Text	25	Uniquely identifies all items
ITEM_NAME	Text	25	Name of the item
UNITS_CODE	Text	15	Uniquely identifies units
UNIT_NAME	Text	20	Measurement units
CATEGORY_ID	Text	25	Uniquely identifies item categories
CATEGORY_NAME	Text	25	Category names
DESCRIPTION	Memo		Details of an item
STORE_NUMBER	Text	25	Name of the store
MINIMUM_QUANTITY	Number	20	Minimum stock level
QUANTITY_IN_STOCK	Number	8	Current stock balance

Primary key: ITEM\_CODE Foreign key: CATEGORY\_ID references categories, UNITS\_CODE references units.

**Table 4.9: Category table**

Stores different item categories and their category Ids

Field	Data type	Size	Description
CATEGORY_CODE	Text	25	Uniquely identifies item categories
CATEGORY_NAME	Text	25	Name of item category
DESCRIPTION	Memo		Details of a category

Primary key: CATEGORY\_ID

**Table 4.10: In coming items table**

Captures details of items brought into the store

Field	Data type	Size	Description
ID	Auto number		Primary key
RECEIPT_NUMBER	Text		
DATE_OF_RECIEVING	Date		Date when items where received
SUPPLIER_ID	Text		Uniquely identifies suppliers
ITEM_CODE	Text		Code of the item
UNITS	Text		Measurement units
DESCRIPTION	Memo		Details of those items
CATEGORY_CODE	Text		Uniquely identifies categories
QUANTITY_RECIEVED	Number		Quantity of items
UNIT_COST	Number		Cost of a one item
TOTAL_COST	Number		Total cost of all items
STAFF_ID	Text		Name of the receiving staff
STORE_NUMBER	Text		Name of the store

Primary key: ID Foreign key: ITEM\_CODE references items, SUPPLIER\_ID references suppliers, and STAFF\_ID references staff.

**Table 4.11: Suppliers**

Stores details of suppliers

Field	Data type	Size	Description
SUPPLIER_ID	Text		Uniquely identifies suppliers
SUPPLIER_NAME	Text		Name of the supplier
COMPANY_NAME	Text		Name of company of the supplier
ADDRESS	Memo		Address of the supplier
TEL_NUMBER	Number		Supplier's telephone number

Primary key: SUPPLIER\_ID

**Table 4.12: Outgoing items table**

Field	Data type	Size	Description
ID	Auto Number		Primary key
DATE_OF_ISSUE	Date		Date on which items are issued
ITEM_CODE	Text		Code of the item
UNITS	Text		Measurement units
DESCRIPTION	Memo		Details of item(s) issued
CATEGORY_ID	Text		Category of the item
QUANTITY_REQUISITIONED	Number		Quantity requested
QUANTITY_ISSUED	Number		Quantity of issued items
UNIT_COST	Number		Cost of one item
TOTAL_COST_FOR_ISSUED	Number		Total cost of the issued items
STAFF_ID	Text		Issuing staff
AUTHORIZED_BY;	Text		Authorizing officer (HOD)
DEPARTMENT_CODE	Text		Code of requisitioning department
REQUESTED_BY;	Text		Receiving officer (User)

Primary key: ID Foreign key: ITEM\_CODE references items, CATEGORY\_CODE references categories

**Table 4.13: Department users**

Stores details of section heads responsible for requisitioning items

Field	Data type	Size	Description
DEPARTMENT_USER_CODE	Text		Uniquely identifies requisitioning officers
DEPARTMENT_USER_NAME	Text		Name of the requisitioning officers
DEPARTMENT_NAME	Text		Requisitioning department

Primary key: DEPARTMENT\_USER\_CODE

**Table 4.14: Units table**

Stores measurement units for all items

Field	Data type	Size	Description
CODE	Text		Uniquely identifies units
UNIT_CODE	Text		Measurement units
DESCRIPTION	Memo		Details of units

Primary key: CODE



**Table 4.15: Department**

Stores all the departments at Buhweju Tea Factory

Field	Data type	Size	Description
DEPARTMENT_CODE	Text		Uniquely identifies departments
DEPARTMENT_NAME	Text		Name of the Department
HOD	Text		Head of the department
HOD_CODE	Text		Code for Head of department
DESCRIPTION	Memo		Details of the department

Primary key: DEPARTMENT\_CODE

**Table 4.16: Order table**

Stores all details of items ordered for.

Field	Data type	Size	Description
ORDER_NUMBER	Text		Uniquely identifies orders
DATE_OF_ORDER	Date		Date of ordering
SUPPLIER_ID	Text		Uniquely identifies suppliers
ITEM_CODE	Text		Code of the item
ITEM_NAME	Text		Name of the item
UNITS	Text		Measurement units
DESCRIPTION	Memo		Details of item(s) ordered for
STAFF_ID	Text		Ordering officer (staff)
STATUS	Text		Status of the order

Primary key: ORDER\_NUMBER Foreign keys: SUPPLIER\_ID references suppliers, ITEM\_CODE references items, and STAFF\_ID references staff.

**Table 4.17: System users table**

Stores details of system users

Field	Data type	Size	Description
USER_NAME	Text		Name of the system user
PASSWORD	Text		Pass word for security purposes
LEVEL	Text		Level of system usage

Primary key: USER\_NAME

**Table 4.18: Stores table**

Stores details of all stores

<b>Field</b>	<b>Data type</b>	<b>Size</b>	<b>Description</b>
STORE_NUMBER	Text		Number of the store
STORE_NAME	Text		Name of the store
DESCRIPTION	Memo		Details of the store

Primary key: STORE\_NUMBER

#### **4.2.4: Physical design of the system**

The physical design involves the input, data base design, and the output design of the system

##### **Input design**

Forms were designed to be used by system user to input data into the system. Forms were designed using Microsoft visual basic 2005.

##### **Data base design**

A data base was designed to store and process input data. A database was designed using Microsoft Access 2007.

##### **Out put**

Reports and queries were designed to output the input data such periodic reports and any other required data. Queries and reports were designed using Microsoft access 2007 and Microsoft Visual basic 2005.

### **4.3 System testing and implementation**

#### **4.3.1. System testing**

After constructing the running system, the researcher embarked on the testing process. Unit testing was carried out and later the entire elements of a system were integrated and tested together using both valid and invalid data and the systems was working properly.

#### **4.3.2. System implementation**

Upon successfully testing the system, the researcher implemented the system on some computers and it was working well.

## CHAPTER FIVE

### SYSTEM IMPLEMENTATION

#### 5.0 Introduction

This chapter basically talks about the functionality of the designed CSRMS.

#### 5.1. System functionality

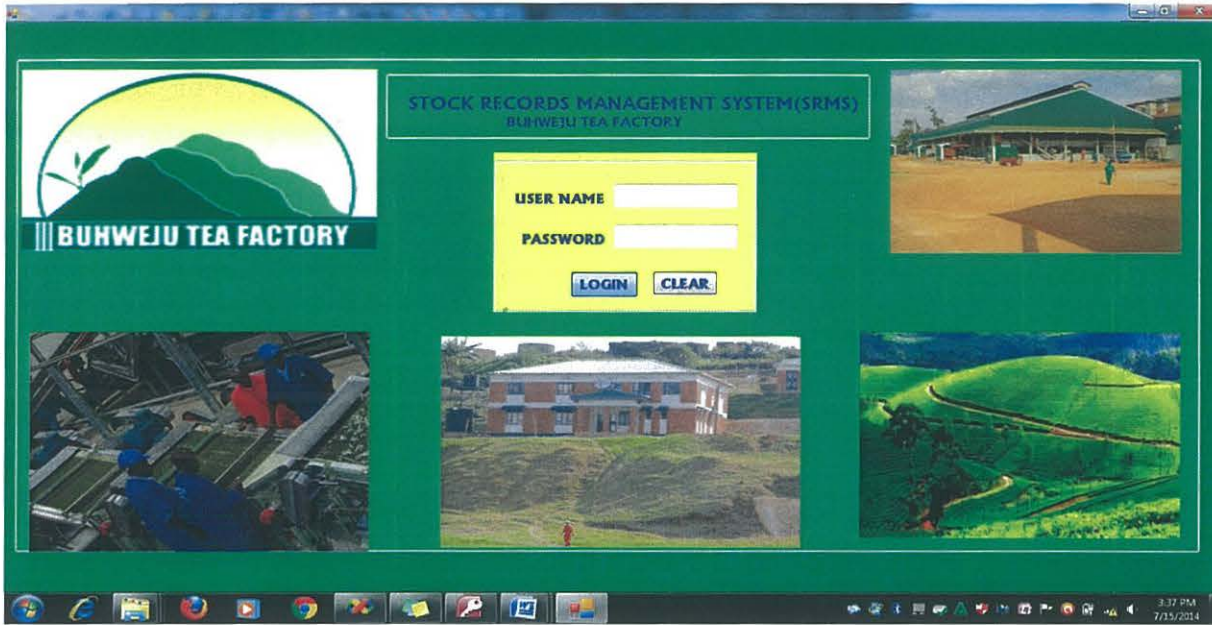
For one to use the designed system, he/she has to first install it on a computer that meets the minimum requirements specified in chapter 4. Once the program is installed, it can be accessed by clicking the start menu, select all program, click CSRMS. Once CSRMS is selected, a splash form shown in the figure 5.1 appears for about 5 seconds and then the login form shown in figure 5.6 is loaded.

*Figure 5.1: Splash Form*



The log in form is used to ensure controlled system access, the user successfully logs in when both the user name and password are correct, and when they are not he/she is requested to re-enter the username and password. There are two different system users that is; limited and unlimited. Unlimited have more privileges than the limited users like adding users to the system, and has full control over the system.

Figure 5.2: Login form



After a user has been logged in the system, he/she is taken to the main form shown in figure 5.3 below;

Figure 5.3: Main Form





On the above form, the user makes a choice of the transaction he/she wishes to carry out from the different options under the strip menu. To view a report he/she clicks “REPORTS” then selects the desired report, and to make any other entry he/she clicks “FORMS” then selects the relevant form. The “REPORTS” and “FORMS” clicks are applicable to all other forms where they appear of the strip menu.

***The functionality of buttons used.***

ADD button: Creates a new row for the new entry.

SAVE button: Updates respective table in the data base.

BACK button: Is a navigation button that moves to the previous record.

NEXT button: Is a navigation button that moves to the next record.

DELETE button: Deletes the current record.

SEARCH button: Looks for a particular record by use of specific search criteria such as item name, receipt number and others.

REFRESH button: Refills the search space/table.

LOG OUT button: Takes away the use from the current form back to the login form or main form

TOTAL AMOUNT button: Sums up the amount of money on a selected receipt.

The specified events happen whenever a button is clicked.

The user interacts with system using a number of forms linked to a number of tables, namely order form, outgoing items form, incoming items form and stock form. The stock card form shown in figure 5.4 helps the user to enter details/descriptions/constraints of items in the data base.

Figure 5.4: Stock Form

FORMS

**STOCK CARD**

ITEM CODE: P0002 REFRESH

ITEM NAME: Toilet papers

UNITS: [dropdown]

CATEGORY: [dropdown]

DESCRIPTION: For toilet use

STORE NAME: [dropdown]

MINIMUM QUANTITY: 50

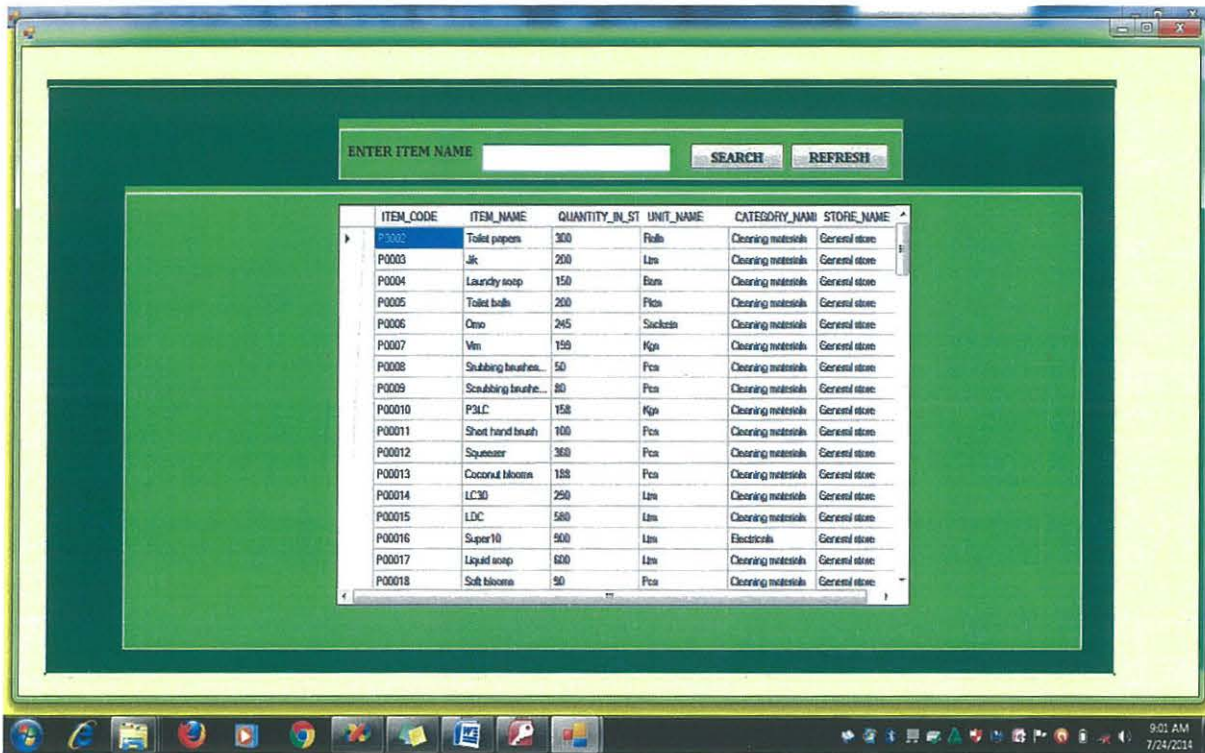
QUANTITY IN STOCK: 300

ADD ITEM SAVE BACK NEXT DELETE

9:46 AM  
7/24/2014

A preview of details (all item details) made via the form in figure 5.4 above appears as depicted in figure 5.5 below.

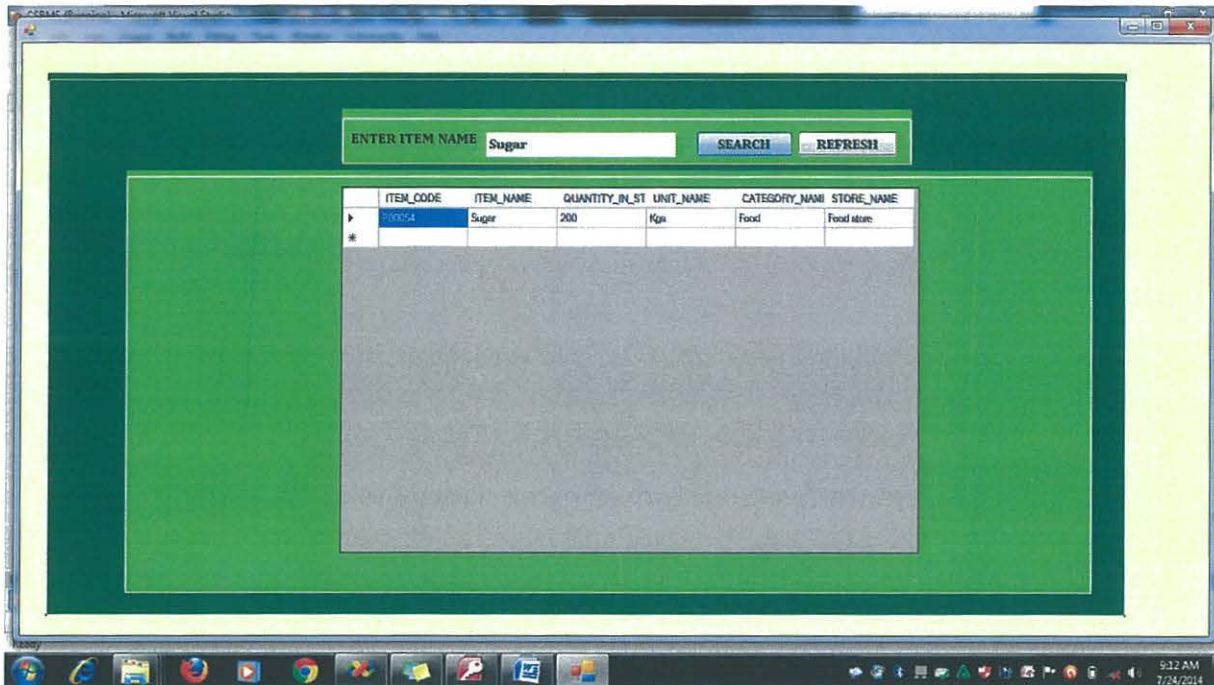
Figure 5.5: Stock card.



ITEM_CODE	ITEM_NAME	QUANTITY_IN_ST	UNIT_NAME	CATEGORY_NAME	STORE_NAME
P0002	Toilet paper	300	Pails	Cleaning materials	General store
P0003	Jik	200	Litre	Cleaning materials	General store
P0004	Laundry soap	150	Box	Cleaning materials	General store
P0005	Toilet balls	250	Pcs	Cleaning materials	General store
P0006	Ono	245	Sachets	Cleaning materials	General store
P0007	Vin	150	Kg	Cleaning materials	General store
P0008	Scrubbing brushes...	50	Pcs	Cleaning materials	General store
P0009	Scrubbing brushes...	80	Pcs	Cleaning materials	General store
P0010	PALC	158	Kg	Cleaning materials	General store
P0011	Short hand brush	100	Pcs	Cleaning materials	General store
P0012	Squeezer	360	Pcs	Cleaning materials	General store
P0013	Coconut blooms	188	Pcs	Cleaning materials	General store
P0014	LC30	250	Litre	Cleaning materials	General store
P0015	LDC	580	Litre	Cleaning materials	General store
P0016	Super 10	900	Litre	Electricals	General store
P0017	Liquid soap	600	Litre	Cleaning materials	General store
P0018	Soft blooms	90	Pcs	Cleaning materials	General store

The stock card (figure 5.5 above) shows the details of all items in stock. This view form is used to search for details of a particular item with the help of the search button as explain in figure 5.6 below.

Figure 5.6: Stock card (search functionality)



For example to see details of sugar, the user types “sugar” in the provided text box, and then clicks the “SEARCH” button, and the results will appear as shown in figure 5.6 below. After searching for the preferred item, the user clicks the “REFRESH” to refill the search space to again appear as in figure 5.5.

Another process involved here is receiving of items that are coming to the store. Figure 5.7 shows the Incoming/Received items Form which is used to capture some required information about received items.



Figure 5.7: Received items form

**IN COMING/RECEIVED ITEMS**

DATE: 24/07/2014 RECEIPT NUMBER: ISS002

ORDER NO NUMBER: 23

SUPPLIER NAME: Betty

ITEM NAME: Jik

UNITS: Ltrs

CATEGORY NAME: Cleaning materials

QUANTITY RECEIVED: 100

UNIT COST: 5000

TOTAL COST: 500000

DESCRIPTION: 20 ltr Jelcanes

STAFF NAME: Isaac

STORE NAME:

ENTER RECEIPT NO  **SEARCH** **REFRESH**

DATE OF RECEIPT	ISS	QUANTITY	ITEM CODE	UNIT COST	TOTAL COST	SUPPLIER
24/07/...	ISS002	100	P0003	5000	500000	SSS12
08/07/...	5	200	P00071	1000	200000	SSS16
17/07/...	ISS000	2	P00073	60000	120000	SSS13
17/07/...	ISS000	60	P00081	300	18000	SSS13
07/08/...	ISS001	40	P000103	200	8000	SSS6
07/08/...	ISS001	200	P00081	50	10000	SSS6
07/08/...	ISS001	700	P000102	300	210000	SSS6
17/07/...	ISS002	20	P00067	2500	50000	SSS10
17/07/...	ISS002	400	P00075	20000	8000000	SSS10
17/07/...	ISS002	5000	P00096	3000	15000...	SSS10
18/07/...	ISS001	22	P00082	1000	22000	SSS12

**TOTAL AMOUNT**

**ADD RECORD** **SAVE** **DELETE** **BACK** **NEXT**

For items received in stock, the left hand portion of the incoming/received items form is used to capture the details whereas a preview of all received items is shown on the right hand portion of the same form. For items on a particular receipt number, the user types the receipt number in the provided textbox and then clicks the “SEARCH” button for details and the “TOTAL AMOUNT” button for the total amount on that particular receipt.

For items in stock to be issued, the form shown in figure 5.8 and 5.9 are used to capture details about those items to be issued. The forms work together and the form in figure 5.8 is loaded first.

**Figure 5.8: Outgoing/Issued items Receipt**

ITEM ISSUING RECEIPT

DATE OF ISSUING: 24/07/2014

RECEIPT NUMBER: [dropdown] SELECT RECEIPT NO

ISSUING STAFF : [input]

AUTHORIZED BY: [input]

DEPARTMENT: [input]

REQUESTED BY: [input]

ADD ITEMS

The above figure shows the receipt for items to be issued. The details in the above figure apply to items that appear on the same receipt that is why they are filled at once. After the details have been filled, the “ADD ITEMS” button is clicked the form in figure 5.9 is loaded to enable the user add items to the selected receipt.

Figure 5.9: Outgoing/Issued items

**OUT GOING ITEMS**

ITEM: Office pins  
 UNITS: Pkts  
 CATEGORY: Stationary  
 QUANTITY REQUISITIONED: 3  
 QUANTITY ISSUED: 2  
 UNIT COST: 1000  
 TOTAL COST FOR ISSUED: 2000

ENTER RECEIPT NUMBER: **BSS0004**    **SEARCH**    **REFRESH**

DATE	ITEM_CODE	QNT REQUESTED	QNTY ISSUED	UNIT_COST	TOTAL COST
25/07/2014	P00042	3	2	1000	2000
01/05/2012	P00053	20	10	1000	10000
16/05/2012	P00042	2	2	1500	3000
01/05/2012	P00056	1000	500	90000	45000000
01/05/2012	P00057	10	3	5000	15000
01/05/2012	P00061	2	1	120000	120000
01/05/2012	P00066	30	30	70000	2100000
25/05/2012	P00083	1	1	25000	25000
06/06/2012	P00040	2	2	10000	20000

**TOTAL AMOUNT** [ ]

ADD ITEM    SAVE    BACK    NEXT    DELETE

The left hand portion of the form is used to enter details of items being issued and the right hand portion shows the details of issued items in the database and is used to search items on required receipt simply by typing the receipt number in the provided textbox and there after click the search button. The “TOTAL AMOUNT” button is clicked to compute the total amount on the selected receipt number, and the “REFRESH” button is clicked to refill the search space.

Entries saved to the data base are presented in form of reports and some of the reports generated are shown in figures below.

Figure 5.10: Shows a report of the stock status of all items in stock



Figure 5.10: Stock status

The screenshot shows a software application window titled 'BUHWEJU TEA FACTORY STOCK STATUS'. On the left is a sidebar with a tree view of categories: Bearings, Cleaning materials, Consumables, Electricals, Energy, Food, Inputs, Oils, Packing materials, Protectives, Stationary, Utensils, and V-belts. The main area displays a table with the following data:

ITEM	UNITS	MINIMUM QTY	QTY IN STOCK
Bearings			
1 B.34	Pcs	2	110
Cleaning materials			
2 Liquid soap	Ltrs	40	600
3 Toilet papers	Rolls	50	300
4 Herpic	Ltrs	10	1,050
5 Cotton waste	Kgs	200	1,950
6 Soft blooms	Pcs	15	90
7 LDC	Ltrs	40	580
8 LC30	Ltrs	40	290
9 Coconut blooms	Pcs	20	188
10 Squeezer	Pcs	10	360
11 Laundry soap	Bars	20	150
12 P3LC	Kgs	20	158
13 Scrubbing brushes (big)	Pcs	10	80
14 Scrubbing brushes (small)	Pcs	5	50

At the bottom of the window, it shows 'Current Page No: 1', 'Total Page No: 4', and 'Zoom Factor: 100%'. The Windows taskbar at the very bottom shows the time as 10:32 AM on 7/24/2014.

The items are categorized according to different categories for example stationary, machinery, food, cleaning materials and others. The “MINIMUM QTY” is the reorder level and “QTY IN STOCK” is the current stock level.

Whenever an entry is made on the outgoing items table and saved, the stock level in figure 5.10 reduces, and when an entry is made on the incoming items form, the stock level increases.

Figure 5.11 shows a report on issued items.

Figure 5.11: All issued items

BUHWEJU TEA FACTORY					
BUHWEJU TEA FACTORY GENERAL SUMMARY FOR ISSUED ITEMS					
01/05/2012					
ITEM	QUANTITY	UNIT COST	TOTAL COST	DEPARTMENT	
1 Salt	10	1,000	10,000	Field	
2 NPK fertilizer	500	90,000	45,000,000	Engineering	
3 Plunning kniv	3	5,000	15,000	Field	
4 Kettle	1	120,000	120,000	Field	
5 Firewood	30	70,000	2,100,000	Factory	
6 Omo	5	1,000	5,000	Factory	
<b>Total Amount</b>			<b>17,250,000.00</b>		
01/08/2012					
ITEM	QUANTITY	UNIT COST	TOTAL COST	DEPARTMENT	
7 MIVs	8	5,000	40,000	Accounts	
<b>Total Amount</b>			<b>40,000.00</b>		

The issued items are categorized/grouped according to date.

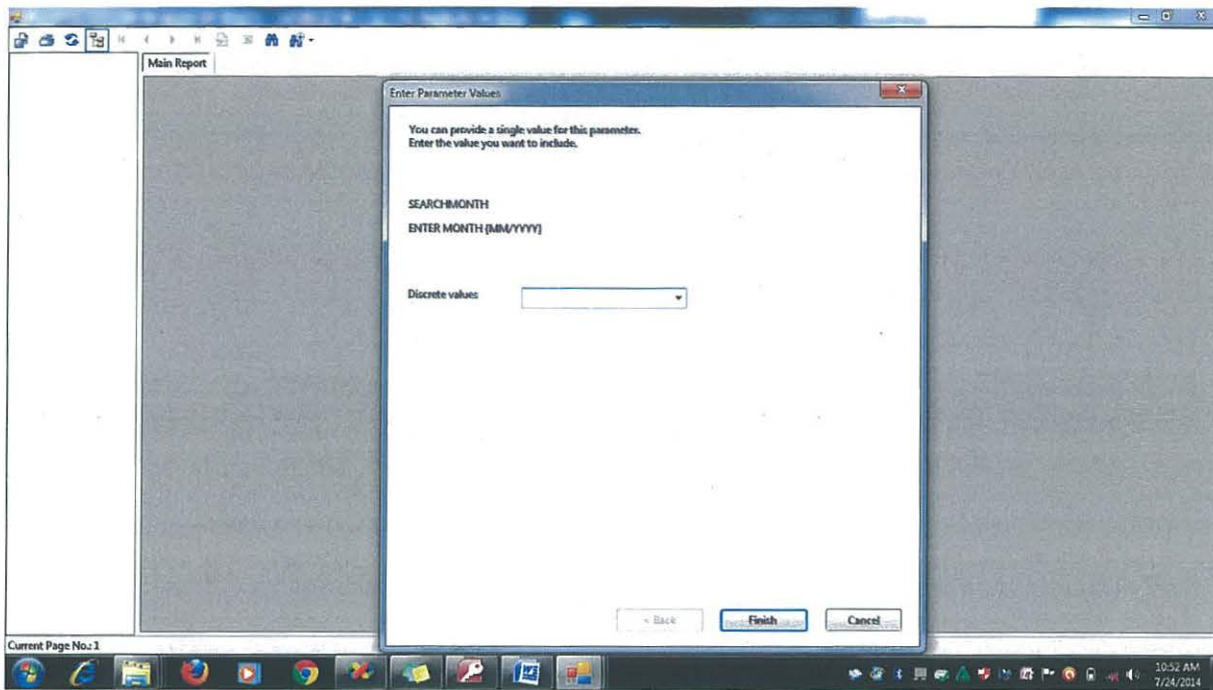
The system also generates a report of the received items and it is shown in figure 5.12 below.

Figure 5.12: All received items.

	DATE	ITEM	QTY RECEIVED	UNIT COST	TOTAL COST
5	1 08/07/2014	Head gears	200	1,000	200,000
		<b>Total amount</b>			<b>200,000.00</b>
ESS001	2 20/07/2014	Cotton waste	1,000	1,100	1,100,000
	3 10/07/2014	Herpic	1,000	1,500	1,500,000
		<b>Total amount</b>			<b>2,600,000.00</b>
ESS002	4 24/07/2014	Green leaf bags	200	1,000	200,000
	5 20/07/2014	Gf Laundry	1,000	3,000	3,000,000
	6 20/07/2014	Shoes	1,000	10,000	10,000,000
	7 20/07/2014	Sample bags	10,000	100	1,000,000
		<b>Total amount</b>			<b>14,200,000.00</b>
ESS004	8 21/07/2014	Sample bags			

This report shows all received items categorized/grouped according to receipt numbers. To know items received in a particular month, the report in figure 5.13 below is loaded.

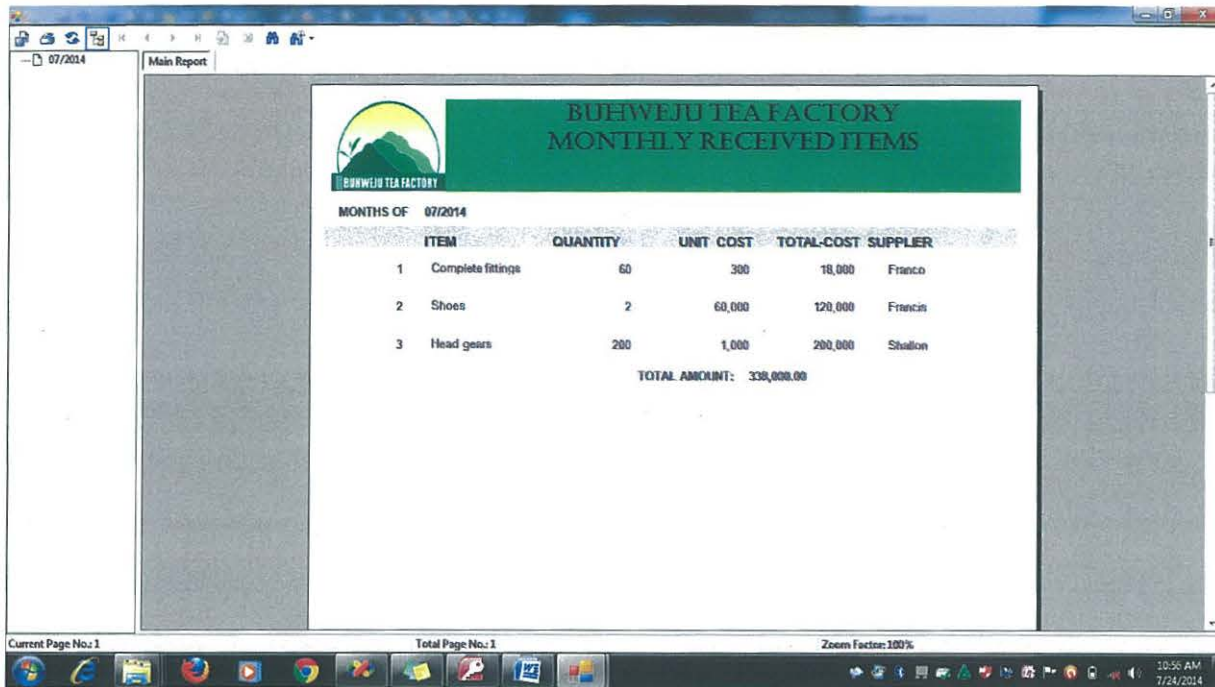
*Figure 5.13: Monthly report for received items*



When the above figure is loaded, the user enters the desired month and year for example July 2014, then clicks the “FINISH” button for the report in figure 5.14 to load.



Figure 5.14: Monthly report for received items



The screenshot displays a web browser window with a report titled "BUHWEJU TEA FACTORY MONTHLY RECEIVED ITEMS". The report is for the month of 07/2014. It features a table with the following data:

ITEM	QUANTITY	UNIT COST	TOTAL-COST	SUPPLIER
1 Complete fittings	60	300	18,000	Franco
2 Shoes	2	60,000	120,000	Francis
3 Head gears	200	1,000	200,000	Shallon

TOTAL AMOUNT: 338,000.00

The report in 5.14 above shows all items received in a particular month

Figures 5.1 through to 5.13 are some of the forms used to enter data in the system and figures 5.10 through to 5.14 are some of the reports generated by the system.



## CHAPTER SIX

### DISCUSSION, CONCLUSION AND RECOMMENDATIONS

#### 6.0 Introduction.

This chapter presents the summary of the discussion of the project, problems encountered, conclusions and recommendations about the designed computerized stock records management system.

#### 6.1 Discussion

The study was carried out successfully despite some of the challenges along way. The success of this study can be attributed to the co-operation of the staff at Buhweju Tea Factory and the efforts and determination of the researcher.

On the investigation of the current system, data was collected with the use of questionnaires, interviews, record inspection and observation and it was found out that just like in some other organization, paper based system was still being used due to the point that it is considered cheap and being a traditional way most people are used to it, it was found out that it has got many associated disadvantages like subjectivity to human errors, absence of data backup/security, difficulty/a lot of time consumption in generating/retrieving periodic reports, consumption of a lot of physical space, and requiring a lot of time and labor to carryout stock records management. Therefore computer based system was found to be an answer to most of the faults associated with the paper based system. And despite the fact that many people still use it they are not happy with it.

On designing a computer based system, the researcher was successful in using tools like dataflow diagrams and class diagrams in designing the CSRMS plan which was used as a blue print for constructing the actual CSRMS.

To ensure proper functioning of the system, the researcher successfully tested it before implementing it. Both unit testing and system testing were done respectively to make sure that all the units of the system and the entire systems are error free. Both real, assumed, correct and

wrong data were used in verifying and testing the computer system and the system was found fine before and after it was packaged. Therefore users at Buhweju Tea Factory will always find it easy to input, store, retrieve and manipulate just in time, conveniently with less worries on the security as long as they tame their passwords well and backup the data regularly that's after adopting the system.

Once the designed system is adopted, planning and decision making will be made easy because of readily and reliable information generated by the system, stock records management will be less laborious, physical space will be saved, and information security and data backup will be guaranteed.

## **6.2 Problems encountered**

Some of the respondents were not co-operate and brought the administered questionnaires later than the agreed time. This caused the data collection process end later than planned thus causing the study to end later than expected.

The researcher being a student had no enough funds to facilitate some of the study requirements such transport to the area of research, meals, accommodation while in the field, and the budget itself.

## **6.3 Recommendations**

- Since it was found out that paper based systems have got many associated problems, the researcher recommends that the designed system be adopted at Buhweju tea factory and even other organizations that still use paper based methods should also consider embracing use of computers and other relevant ICT tools.
- For future system designers, the researcher recommends that ample time should always be given in designing a clear plan with the help of tools like flowcharts and class diagrams before embarking on real coding since a bad plan would lead to wrong outcome(program)
- The researcher further recommends that BTF uses parallel conversion approach of implementation once it has chosen to use the designed system to allow room for users to train and get used to the computer based system, and compare output of the two systems.

- The researcher recommends that a database administrator or a systems administrator be employed to maintain the designed system.
- Ensuring use an updated virus at all times is also a key recommendation to avoid data loss.
- Regular backups are also vital in preventing consequences of data loss to such organization.
- Change of the user name or passwords to the system periodically and whenever a particular staff is no longer stores'/company's employee is a big step towards prevention of security breach.
- Trainings should be conducted to ensure that system users very well understand the system and its functionalities.
- Future programmers should always pay extra attention to testing their programs to ensure that they are error free.

#### **6.4 Conclusion**

Basing on findings and analysis in chapter 4, a computerized stock records management system is a venture worth to investing in. Once put in use, a number of advantages will be enjoyed. Both the organization and all stake holders will benefit from the use of the computerized system. The computerized system will ensure timely stocking, timely generation of periodic reports which support planning and decision making, and regular data backup by use of devices like flash disks or even by cloud computing.

A computerized system also provides controlled access to information unlike in the old system where anybody would easily access (without permission) information provided he/she managed to find his/her way to the store by any way.

A lot of physical space is saved when using a computerized system because there are no shelves required to store information.

Stores staff are able to enjoy their work because it has been made less laborious by use of a computerized system, and this will increase their productivity.

## **6.5 Area of further research.**

To enable advantages of ICT usage to be fully enjoyed at BTF, all other departments like Accounts, HRM and others should also have computer based systems and therefore this requires someone to come in and develop systems for those other sections.

## REFERENCES

1. Black, Rex; (2002). Managing the Testing Process - 2nd Edition
2. Burns, A. C., & Bush, R. F. (2010). Marketing Research. Upper Saddle River, NJ: Pearson Education.
3. Haag, Cummings, McCubbrey, and Pinsonneaut (2000) Management Information systems for the Information Age – 2<sup>nd</sup> Edition.
4. <http://region3.dost.gov.ph/>
5. <http://www.businessdictionary.com/>
6. <http://www.infoentrepreneurs.org/>
7. <http://www.investopedia.com/>
8. James A. and O'Brien. (2002) Management Information Systems. Managing Information Technology in the E-Business Enterprise. 5<sup>th</sup> Edition.
9. Jeffrey L. Whitten, Lonnie D. Bentley, & Kevin C. Dittman ( 2001) Systems Analysis and design Methods 5<sup>th</sup> Edition
10. Johnson Witchern. (1997). Decision Making with Data.
11. Keller, Gerald, and Brian Warrack. (2003) Statistics for Management and Economics – 6<sup>th</sup> Edition.
12. Laudon, K., & Laudon, J. (2010). "Management Information Systems: Managing the Digital Firm." New Jersey: Prentice Hall -11<sup>th</sup> Edition
13. Raymond Mcleod, Jr. (1998), Management Information Systems 7<sup>th</sup> Edition.
14. William G. Zikmund. (2000) Business Research methods – 6<sup>th</sup> Edition.
15. [www.searchsoftwarequality.techtarget.com](http://www.searchsoftwarequality.techtarget.com)
16. [www.softwaretestingclass.com](http://www.softwaretestingclass.com)

**APPENDICES**  
**APPENDIX 1: QUESTIONARE**

**CONSENT FORM**

**Researcher**

Am student at KIU carrying out research in this company, specifically in stores' section. I hereby request you to voluntarily take part in this study by filing the questionnaire below; there will be no payment for you but your assistance is highly appreciated. The information collected from you will be treated confidential and will only be used for this study. In accepting to take part in this study you are requested to show your consent by signing in the space provided for you below

Sign ..... Date: .....

**Researcher**

I hereby accept to freely participate in this study as a respondent.

Sign: ..... Date: .....

**Respondent**

**SECTION A:**

1. Age: (a) 0-18     19-30                       (b) 31-49                       (c) 50+
2. Sex: (a) Male     (b) Female
3. Marital status: (a) Married                       (b) Single
4. Position: .....
5. For how long have you been in that position?  
(a) 0-3 years     (b) 4-7 years     (c) 8-10 years     (d) 11+ years
6. Are you computer literate?  
Yes     No
7. Do you have a computer(s) in the stores section?  
Yes     No
8. If yes, what do you use them/it for?

.....  
 .....  
**SECTION B:**

Please answer the following questions basing on this scale;

1 represent strongly disagree, 2 represent disagree, 3 represent no opinion, 4 represent agree and 5 represent strongly agree

The following are the problems we face with the current system (tick where applicable)

	5	4	3	2	1
Time consuming					
Subject to human errors					
Wastes physical space					
Retrieving and generation of reports is hard and is laborious					
We find it hard to backup our data					
In case of fire outbreaks or intended theft, we don't have backup					
Authentication is hard					

Compared with the current manual system, using a computerized system to do stock records management can; (tick where applicable)

	5	4	3	2	1
Reduce the time required to capture, store and retrieve data					
Reduce the amount of labor required to capture, store and retrieve data					
Make it easy to backup information so that incase of fire outbreaks or other causes of data loss, there is a backup					
It is easy to restrict unauthorized access and alteration of data					
Saves a lot of physical space					
Eases computation and calculation					
Ease the generation/handling of summaries/reports					
Provide more accurate and reliable data about stock flow					

What is your general opinion about use of a computerized system in stock records management?  
(tick where applicable)

	5	4	3	2	1
It is generally cheaper, convenient, effective and efficient to use computer in stock records management.					
Buhweju Tea Factory will greatly benefit if it chooses to use a computerized system					



## APPENDIX 2: APPLICATION LETTER

### KAMPALA INTERNATIONAL UNIVERSITY – WESTERN CAMPUS

Date: 25<sup>th</sup> April, 2014

To  
The Human Resource Manager  
Buhweju Tea Factory

**RE: REQUEST TO CARRYOUT RESEARCH IN YOUR ORGANIZATION**

I am a 3<sup>rd</sup> year student at Kampala International University doing a Bachelor of Information Technology degree, and I would like to carry out research in your organization particularly in the stores section, with special interest put on stock records' management.

Thank you.

NINSIIMA PATIENCE  
BIT/0009/123/DU

**APPENDIX 3: ACCEPTNCE LETTER**

**BUHWEJU TEA FACTORY**

**P.O BOX 110, BUSHENYI**

---

Date: 1<sup>st</sup> May, 2014

To  
Miss Ninsiima Patience  
Kampala International University

**RE: RESEARCH ACCEPTANCE**

This is to inform you that your request to carry out research in our organization in the stores' section has been accepted and can start immediately.

While you are at the station, you are expected to abide to company rules and regulations and to stick to mission as stated in your application letter and to handle our records with the highest level of integrity and confidentiality.

I wish you success in your research.

HUMAN RESOURCE MANAGER  
BUHWEJU TEA FACTORY

Cc: Station Head  
Accountant  
Store Keeper