COMPUTERTISED PRINTING UNIT
(CASE STUDY OF NCRI BADEGGI)

BY

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NOVEMBER, 2003

APPROVAL PAGE.

This project is certified to have been carried out by MOHAMMED ABUJA ADAMU PGD/MCS/2000/2001/1014 as part of the requirement for the award of Postgraduate Diploma in Computer Science in the Department of Mathematics and Computer Science, Federal University of Technology, Minna, Niger State Nigeria.

It has been read and approved by the undersigned on behalf of the Department of Mathematics and Computer Science, Federal University of Technology, Minna.

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MALL AUDU ISAH Project Supervisor	Date
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.....	.....
External Examiner	Date

DEDICATION.

I dedicate this project work to my mother Hajiya Amina Adamu and in memory of my beloved father Late Mallam Adamu Shuiabu Nko Kutigi. May his gentle soul rest in perfect peace, amen.

ACKNOWLEDGEMENT.

I am indeed grateful to Almighty God for sparing my life to carry out this research work successfully.

My profound gratitude goes to my supervisor Mallam Isah Audu for his encouragement and patience in reading through the manuscript and making valuable corrections despite his tight schedule and other members of staff of the department for their unstinted help and cooperation during the copy preparation.

I wish to record my special appreciation to the Management of both National Cereals Research Institute (NCRI) and Federal University of Technology, Minna (FUTMIN) for the opportunity accorded during the period of my study.

Special thanks are also due to my family, friends and colleagues for their moral support, May God blessing be with every one you in His infinite mercy, Ameen.

ABSTRACT

This Research work is primarily intended for the benefit of the society that sponsors the technical development and will be of value to others who are interested in the computer's relevance to their organization.

The information contained in this research work will be of help and useful to those in the printing industry or those who intend to established a computerized unit press in their organizations or companies for more revenue yielding thereby saving cost of production and time that give rise to efficiency and good quality work.

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CHAPTER ONE.

GENERAL INTRODUCTION

1.1 PREAMBLE.

Man is a social being who wish to make things around him better than it use to be. In addition, he is curious in nature and desire to know the future which is not certain of attaining.

Through time, certain things became part of man and started off with the use of sign language; The curiosity of man brought about the use of language to communicate with those around him. Since many could not understand the various signs, there interpretation and meanings, it was regarded as an available means of communication and hence this lead to speech.

People started talking to each other with the various languages they were conversant with. However, since everybody at different locations had varying languages, the use of speech was a serious problem as one need to virtually learn every language before communicating with other people. Besides one could easily forget what other person has said. This short coming lead to another discovery known as writing.

Many developed the art of writing in order to solve the problem of forgetting what others had said, coupled with the problem of speed. This was farely accepted but not in totality because a written copy could not go round to every body in the society. These drawbacks paved way to the evolution of the Art of Printing. Many copies of write ups and speeches could be copied and printed out at a limited time. On the contrary the voluminous printing out and the burden of storing excess copies which after sometime

could be damaged whereby the originals could not be reached became problem. Therefore, the faster means of communication that is less bulky and portable was sorted for. This challenge lead to search and discovery of telecommunication which is a greet improvement on man's desire for communicating. This desire was facilitated through telephones, telegrams, fax etc and has also aided man to communicate from distance places within a short period. Besides, they are less cumbersome and response time is also shortened.

However, proper efficient, accurate storage and processing of data for objective meaningful information led to the evolution of computer by the scientists due to improved technology. Today computers adaptation covers every fact of human endeavor, like banking sectors, industries, Government Offices, Private houses, Libraries, Schools, Companies etc make use of computer in one way or the other. Its use is very versatile.

1.2 BRIEF HISTORY OF NCRI

The National Cereals Research Institute Badeggi as it is known today was established by an Agricultural Institutes order of 1975. However its History dates back to 1898 during colonial protectorate Administration of Governor Alfred Maloney following the establishment of botanical observatory in Lagos. It was later named the Federal Agricultural Station by the Lugard Administration in 1915 before it metamorphosed into the Federal Department of Agricultural Research (FDAR) in 1954 at Moor Plantation, Ibadan.

It assumed its present name NCRI in 1975 with the National mandate for the conduct of research into the genetic improvement and production of the major stable grains

– Rice, Maize, Sorghum, Cowpeas and overall Agricultural problems nationwide.

Following a general re-organisation of the Agricultural Research systems in the country in 1987, the institute's crop mandates and coverage area were modified. The new mandate crops are rice, soybean, benised and sugarcane. The institute is also the Zonal Coordinating Research for the Central Zone with the Mandate for the farming systems research and extension. The Zone Comprises of the following states – Benue, Kogi, Kwara, Nassarawa, Niger, Plateau, Taraba and the F.C.T. Abuja. NCRI was relocated from Ibadan to its present Headquarters at Badeggi, Niger State in 1984, and has nine other outstations located in different part of the country (Mokwa – Niger State, Bacita – Kwara State, Ibadan – Oyo State, Numan – Adamawa State, Uyo Akwa-Ibom State, Warri – Delta State, Birini Kebbi – Kebbi State. Yandev – Benue State and Amakama – Abia State) were newly developed Technologies are evaluated before they are released for general use.

1.3 FUNCTIONS OF NCRI

The institute being an integral arm of the Government under the Federal Ministry of Agriculture and Rural Development is meant to serve both the public and private sectors and performs the following functions:

- Research into the genetic improvement of rice, soybean, beniseed and sugarcane.
- Research into production packages, processing and industrial capacity utilisation of rice, soybean, beniseed and sugarcane.
- Fabrication of simple Agricultural tools such as planters, shellers, fertilizer

spreaders and rice parboilers.

- Dissemination of research results to both public and private sectors.
- Organisation of trainings for train the trainers as well as direct training of farmers.
- Organisation of field days on regular basis.
- Consultancy services for both individuals cooperate organisations and State Government on
  - i) Soil and plant analysis
  - ii) Analysis test and evaluation of Agrochemical such as fertilizers, herbicides, pesticides for various climatic conditions on rice, soybean, beniseed and sugarcane.
  - iii) Feasibility studies on Agricultural and Agro industrial business for banks, individual farms and consultants.
  - iv) Management and execution of medium and large scale Agricultural and Agro allied enterprises.
  - v) Carryout soil surveys, mapping and evaluation services.
- Fabrication of small and medium scale equipments and machines for farmers, co-operative farmers union etc e.g. maize and rice planter, cowpea shelters, fertilizer spreaders, rice thresher, rice parboiler (50, 100 and 500kg capacity), rice mill spare parts, cassava grinder, house hold grinder for maize, sorghum, cowpea etc, and complete golden brown sugar processing plant.

- Production of high quality seeds of all varieties of rice, soybean, beniseed and sugarcane for farmers on request.
- Transfer of the research technologies and services of all research findings to the rightful beneficiaries and farmers.

1.4 ORGANOGRAM OF NCRI

NCRI has Governing Board of six member committee head by the chairman, then follows by the Director and Chief Executive who is the Head of the Administration of NCRI Badeggi. The management of NCRI is subdivided into Eight divisions, Each being Headed by Assistant Director and these are:-

1) Rice Research Division
2) Sugarcane Research Division
3) Farming Systems Research and Extension Services Division
4) Oil Seeds Research Division
5) Planning Research and Statistics Division
6) The Administration and Supplies Division
7) Finance and Accounts Division
8) Information and Documentation Division

These Divisions have various programmes, sections and units under them for effective and efficient dispensation of the administrative functions that make the work to move on smoothly.

1.5 OBJECTIVES OF THE STUDY

The objective of the study is to computerise the printing unit of the National Cereals Research Institute (NCRI) to change it from the conventional method of printing that is cumber some to computerize system that is most widely used now all over the world. The computerized method is the modern way of printing as a result of highly developed technologies and new innovations coupled with Globalization in the international economy. The resultant force is the perfect, effective and good quality of printed product.

1.6 SCOPE OF THE STUDY.

This project work is restricted to only offset lithographic process of the NCRI printing unit. The section need to be computerized as this is where major part of printing work is carried out. The program is make ready in printing stages for good and proper reproduction in the lithographic section. This entails preparation of manuscript, planning, layout preparations, Art work, Typesetting, Scanning and printing out of the manuscript.

The computer is programmed to carry out all of these stages within shortest time unlike the conventional method that is cumbersome and time consuming. The project is aimed at identifying the problems faced by the unit and finding solutions to such problems on how to developed a program that will eliminate these problems for the future progress of the unit in terms of producing quality work and increasing the revenue based of the unit.

1.7 THE SIGNIFICANCE OF THE STUDY.

The significance of the study is to identify the problem areas and evolve ways to improve on them. These problem stages are:-

- The initial stage of manuscript preparation and job planning (programming)
- Preparation of layout and Art work (Layout design).
- Fresh work types setting and scanning where the original is already typed copy (computerisation).
- Print or scan the typed copy out (print result).

The conventional method problems can be eliminated easily using the computerise system. The operator will just seat by the computer using key boards and other key functions to program the computer, light pen or mouse may be used depending on the type of job he is handling either graphic, text type or data. The information is fed on to the computer through the input devices, these informaitons are processed by the processing unit and print out through the output devices.

1.8 DEFINITION OF TERMS

- **MANUSCRIPT:**

  This is the original copy of what is going to be printed or reproduced either handwritten or typed copy.

- **OFF SETLITHOGRAPHY:**

  This can also be referred to as palnographic printing process which works on the principle that grease and water do not mix when the image to be printed

is put the flat surface e.g. plate.

- **ART WORK:**

  Can be referred to as the preparations done on the paper on how the job to be printed will look like, e.g. Artistic Drawings, paging of job etc.

- **LAY OUT:**

  Stripping, on of Art work on flat surface paper on how the pages will follow each other in orderly manner prio to plate making.

- **IMPOSITION:**

  This is the system of arrangement of pages in sequential manner on the plate for the machine to print.

- **STRIPPING.**

  This is the method of arranging and pasting of negatives on the layout to plate making.

- **FILMING:**

  The photographing of the pictures, text matters etc from the camera copy board to produce negative for plate making for the machines to print.

- **CAMERA WORK:**

  The processes involved during the filming to produce negatives.

- **PLATEMAKING OR PLATING.**

  The process of transferring the image to be printed from the layout or negatives on to the flat surface of a thin aluminum or zinc plate for the printing machine to print.

- **PLATE:**

  This is made of aluminum or zinc sheet which is thin and flat that is fixed round the plate cylinder of the printing machine and bears the image to be printed.

- **IMPRESSION.**

  This refer to the method of obtaining a printed product when the impression cylinder and plate cylinder come into contact of the printing machine during the machine running.

- **SUCKER:**

  The system by which the paper is lifted up from the feed table's pile during printing. The suckers are the invisible grippers.

- **GRIPPERS:**

  These are the systems that pick up paper from the sucker and take it round during the machine run for printing.

- **DELIVERY SYSTEM.**

  Are the systems that bring back the paper to the delivery table after the print is obtained.

- **FEEDING SYSTEMS:**

  Are the systems that feeds paper on to the machine from the feed table pile before the print is obtained.

- **MAKE READY:**

  This refers to all the operations involved to get the machine ready for printing.

- **ROOF READER:**

  This refers to the person assigned to go through the printed copy for it to conform with the original copy or customers requirements.

- **REGISTRATION:**

  This refers to instances of when printing colours to overlap or overprint on top each other correctly without any side deviate from each other to give miss-registration or distortion. It also refers to a situation when one side of the substrate in printed and back correctly.

- **SUBSTRATE.**

  This refers to the papers use for printing by the printing machines.

- **COLLATE.**

  This is the process of gathering and arranging the printed documents on a sequential order of how it follow each other e.g. books that we read.

- **FORME.**

  This could be an offset printing machine plate of any type and size or letter press type chase.

- **PRE-PRESS:**

  These are all the preparation made on the machine before the printing commences.

- **RE-PRO:**

  This is short form of reproduction in printing terms

CHAPTER TWO.

LITERATURE REVIEW

2.0 INTRODUCTION

This chapter is only concern with the printing unit of NCRI which is one out of the processes of printing.

The reader will only limit himself to offset lithography being the process of printing adopted by NCRI.

2.1 PRINTING UNIT OF NCRI

In this modern age we may think of television, radio as only means of communication, printing still provides the greatest source of news, information and knowledge known to man. Not only do we read books, magazines, Newspapers of all kinds, but we must have labels to tell us what is inside a bottle, tin or package, music written on a sheet or recorded on a disc even the program on the radio or television. Infact printing enters every aspect of our daily lives. To meet these demands printing is an expanding complex and progressive industry both technically and in its structure, with a high degree of specialisation among workers and firms. This account described the basic jobs and work of the printer or organisation, and different processes he uses in terms of setting up a printing unit.

There are several printing processes and varies from each other. Each process has its own advantages and limitations. In this project work we shall limit

ourselves to offset lithographic process that in versatile among all and adopted by NCRI. NCRI established a unit press which is only one of the processes of printing (Offestlihography) and comprises of the following sections.

2.01 PLANNING:

This is where all the jobs meant for printing are planned, right from job costing to how the job will look like after printing as well as other operations involved prio to printing.

2.02 LITHOGRAPHIC SECTION

This section is charged with the responsibility of undertaking all the graphic art work, e.g. typesetting, layout design, image scanning, filming, stripping, camera work, and plate making for the machine to print.

2.03 OFFSET MACHINE PRINTING.

Printing of all the jobs are done here ranging from smallest card or pamphlets to book work or colour printing. The principle of offset machine is that printing is obtained from a very thin metal surface called plate usually made of zinc or Aluminium which can be bent to fit round the printing cylinder. This method of printing works on the common phenomena that the ink confiness itself to the printing areas while the non printing areas are water receptive. The system depends on the actions of the two natural enemies – Grease and water – they do not mix. A greasy substance is applied to the printing areas and non printing areas have a very finely grained surface and damped with water. The greasy printing ink adhered to the greasy image areas but rejected by the water on the

damped part of the plate which remains cleaned and do not mark the paper during printing. The paper is fed on to the machine from pile on the feed table or board and goes through the cylinders with the help of air, suckers and invisible grippers to obtain the impression from the impression cylinder when come into contact with the plate cylinder. The damping rollers go over the plate first to damp the non printing areas, then follow by the inking rollers which deposit greasy ink thinly over the printing areas. The operator now turns on the impression lever to obtain the print that finally travels out with the help of conveyor belt and delivers on the of delivery table as a printed paper.

2.0.4 PRINT FINISHING.

The last stage in the printing unit. All printed jobs converges here for further finishing touches. It is also known as Bribery. The printed books are bound either Hard or Soft cover depending on the nature and type of book. The receipt are collated and numbered then packed in packages and dispatched. The stacked printed sheets are taken from the machine room to the boundary where they are cut into sections suitable for folding. The folding is either manual or by the automatic folding machine.

2.1 THE COMPUTER SYSTEM.

The computer system is an electronic machine capable of accepting data, process the data under guidance of a set of instruction, and produces an accurate and efficient result at a tremendous speed. These data are processed through imput processor and output devices.

A computer system consists of a number of components that are interconnected to

each other, one carrying out a specific function towards the common objective of processing data. These devices connected to the computer are called peripherals. There are three major components which constitutes a contemporary computer system and are as follows:-

- Hardware:

  The hardware is the physical components which can be seen and includes the monitor, keyboard, actual machine that is the system unit, paper etc.

- Software:

  This is a series of program which operate the computers, and can be classified into system software and application soft ware.

- Life ware:

  These are the people that operate the computers, the system analysist, operators, programmers, system Engineer etc.

2.2 IMPORTANCE OF COMPUTERS.

The importance of computers in this millenium can not be over emphasised. It is an example of an automated tool with many characteristics. The computerized system provides for storing of information and data, retrieving of such information/data when required and less time for searching is guaranteed. It runs at high speed in processing the information and data for the better management. Also in it very efficient and saves time in production thereby creating avenue for more wealth for the industrialist.

In the case of NCRI, the use of computer is predominantly in the Administrative

sector, Research Division, Library, printing, Laboratories and Accounting Department.

2.3 COMPUTER AND PRINTING.

National Cereals Research Institute Badeggi has a standard printing unit which is the last resort for printing all the Research Publications, Administrative Forms and Documents, Financial reports and forms and other necessary informations used for future reference. The computer is used in typesetting all these mentioned documents and research results inform of either, Booklets, Pamphlets, Bulletins, Advisory Leaflets, Posters, Hand Bills, Research Highlights, Research Briefings, Annual Reports etc for the purpose of information desermination to farmers, governments, public, private sectors and other end users of research findings for the benefit of the society.

The document meant for printing is first typeset from the computer using keyboards and function keys. It is then visualized from the screen for the necessary corrections to be made, then print out as copy and send to the originator for vetting in order to conform with the original before the scanning of such copy for used in plating that the printing machine will use to reproduce in large quantity as required. Prio to scanning the typeface selection, ganging, type size and format are determined using the graphic packages, web publishing packages and data processing. Some printing machines have built in computer devices (digital devices) that control its functions, example of feeding and delivery systems. The colour balance of the printed copy is another important factor to note. This is achieved with the help of computer. The originals are scanned, then converted with a Roster Image Processor (RIP) of the output device into cyan, magenta and yellows (CMU) contrast. The

colour management systems include some intermediary steps between the out put of the Red, Green and Blue (RGB) value and the calculation of the cyan, magenta, yellow contrast value. The computer does this from scanning effectively to give well balanced colour separation which is also being controlled during printing for the perfect registration of the image.

In printing the out put profile is of crucial importance since the colour profile is not only a specification of the colour scope and the gradation but also specification of the image composition and the desired reproduction.

CHAPTER THREE.

SYSTEM ANALYSIS AND DESIGN

3.0 INTRODUCTION.

System analysis and design is concerned with man made systems which are imputs, processing and outputs to meet specifications of the user. A system can be regarded as the interface of all the imput elements in response to produce outputs. Digital printing has now found its way in the printing industry and compete with the traditional technologies, offset printing as an example. Digital printing can mean many things including non-impact printing processes of various types as well as offset print with former produced digitally either in prepress or on line.

3.1 CONVENTIONAL METHOD OF PRINTING AND THE RELATED PROBLEMS.

There are so many problems associated with the conventional method of printing ranging from pre make ready to pre press and image monitoring. The technology used is not so advanced that some of the systems are still crude in terms of application and render some operations very difficult. Colour management re-structure, production control is another aspect. Tone values are also difficult to control and affect the printed matter when reproduced. All these affect cost of production, efficiency, quality, and time wasting.

3.2 REASONS FOR COMPUTERISED SYSTEM.

Computerisation will improve the quality and variety of printed matter, greater

efficiency in production, flexibility in handling diverse products, process stability, environmentally minded processes and machines as well as attaining greater reliability and requiring less maintenance.

Within the shortest possible time, digitalization of image and text data is replacing conventional analogous processes. Computer to press and computer to print were the central products and trends, which means data processing, that is, software handling which calls for new knowledge has fundamentally changed prepress make ready in offset printing. This close the gap between electronic prepress and offset printing. These printing machines directly imports digital data from electronic prepress to economically print even the smallest runs in four colour offset quality.

3.4 SYSTEM REQUIREMENT

The new system is designed to work on the standard software computer system which make the following accessories very necessary.

a. Computer Hardware.

That is the physical components of the computer itself and these includes the keyboards, monitor, system unit, paper etc.

b. System software.

A series of programme that operate the computer system, for the purpose of production control covering all aspects from the acceptance of data from the supplie of materials (paper, films, printing plates) imposition and recording right through to printing, achieving, print processing and dispatch,

scheduling and control as well as the cost accounting.

c. Colour management systems.

These could be scanners, cameras, monitors and colour proof readers. These systems are an ancillary means to achieve today's quality standards. The trends to desktop has been manifested by the fact that Microsoft has adopted lino colour.

d. Black and white printer.

This is required for all jobs ranging from book work (Text) to colour separation.

e. Colour printer.

Needed for the direct colour printing from the computer system for immediate use.

f. Digital printing machine.

The machines provides from greater reliability and higher productivity and also maintains the speed even when used with other accessories and finishing equipments.

3.4 FEASIBILITY STUDY

Print media continue to contribute to the maintenance, expansion and further development of high degree of education, culture, progress and quality of life through out the world. In view of these problems and requirements analysed, this project is technically feasible as virtually all the hardware requirements are on ground and the required software

and manware can be designed for use with already existing software to yield positive results.

The operational feasibility would be possible and easy to operate since most factors are known to operators and the customers. This system provide more for efficiency, shorter dead lines, flexibility and speed of production in prepress through press to post press which has become a reality. The use of computer controlled machines intensifies the need to stream line and centralise program development and data acquisition.

3.5 COST AND BENEFIT ANALYSIS

The cost and benefit analysis is necessary to know the economic viability of the proposed system. This feasibility will contribute immensely by bringing the printing unit to a modernised level of technological development in complementing the new innovations. The cost implication when put into consideration will be the resultant force of expected turn over from the performance after implimentation. Hence, the cost and benefit is analysed below.

3.5.1 COST ANALYSIS.

In order to determine the cost of operation under the existing system it is necessary to recognize the various way in which cost may be incurred.

A. Development cost

CPU	-	N80,000.00
Black & White printer	-	N60.000.00
Colour Printer	-	N30,000.00

	UPS	-	N25,000.00
	Scanner	-	N30,000.00
	Digital Printing Machine	-	N5m
	Installation cost	-	N50,000.00
	TOTAL	=	N5,275,000.00

B. Operating Cost.

A programmer	-	N166,704.00/annum
Air conditioner	-	N65,000.00
Materials	-	N200,000.00
Utilities	-	N100,000.00
Miscellaneous exp.	-	N50,000.00
		N581,704.00
Grand Total	=	N5,856,704.00

3.5.2 BENEFIT OF THE PROPOSED SYSTEM

The organization will derive a lot of benefit from the newly designed system and these includes:

1. the problems of the conventional system will be eliminated
2. The quality of production will be improved.
3. An automated digitized system of printing to compete with the international market.
4. Improve revenue desired for the unit and NCRI at large.

5. Less cost of production and increase capital investment as number of operators and materials wasting will be reduced.

6. Better services and faster delivery of printed materials.

7. Greater efficiency is achieved and improvement of information storage and retrieval system.

8. Greater room for maneuvers in colour reproduction.

CHAPTER FOUR.

4.0 SYSTEM IMPLEMENTATION AND DOCUMENTATION

The system designed the phase of translating the system requirements into a blue print. It is transformed into physical reality. It is transformed into physical reality. It involves the application of various techniques, principles and tools in defining the new system in such a way to facilitate easy and detailed development required.

The headway of designing a new system begins with the existing one and must address all aspects. The modifications in respect of the problems and requirements emanated from the existing system is elicited by the analyst. The three major areas to be considered in system designed are in:

1. Software considerations
2. Hard ware considerations
3. Human considerations

System designed begins with the software considerations because the software required in system must often determine the type of hardware to be utilised to the fullest with a trained computer personnel.

4.1 SOFTWARE DESIGN.

The most important phase of software design is data design which has great impact on the quality of the software due to its influence on data structure of the programme.

A good software design exhibit the following criterials.

1. The design should be based on information obtained during software requirements analysis.

2. It should solve the problems of old systems and adequately meet the requirements specified in the analysis.

4.2 PROGRAM DEVELOPMENT.

Developing a good computer programme is a task that requires careful and adequate planning. A good program is one that is efficient, user friendly, reliable easily maintained, portable, cost effective and well documented.

1. Specification:

   The specification should contain details of what the program is expected to do and how to achieve this goal. Here, input data and output information s are required.

2. Design.

   This state defines an outline of how to solve the problem. The outline is usually inform of an algorithm. And is a step by step method of solving a problems which can be implemented in may ways such as flow charts, pscudocodes. N – S diagram etc. The flow chart is used for this study.

3. Coding.

From the algorithm obtained at the design stage one can proceed to transform the outline into a form understandable by the computer, this involves cording the algorithm in a suitable computer language.

4. Festing.

This involves inventing simple test data and manually going through the program to ascertain the result before typing into the computer. Once ascertained that it could work as required in comparison with the result obtained from the previous ran and were fraud to be the same, it is then concluded that the new system is working accordingly.

5. Implementation.

The program implementation implies making a program fully operational once it is ascertained to be fested and found working to specification. It can be compiled into an executable form and then installation diskette will be used to install the new program into the computer.

6. Documentation.

Program documentation is the description of what the program does, how the task is achieved and how to use the program to solve problems earlier emmerated for the purpose of this study in changing the system from the conventional method to computerised digital system.

4.3 DATABASE DESIGN.

An important aspect of data analysis is the database design. The first phase of the design of a database is the establishment of a data dictionary, which is a collection of definitions that the data are is a database.

The aim of the data dictionary is to provide specific standaralised nomenclature and description of the data used in the system such that all the users of the system use these term uniformity.

Database is accessed through database management DBMS which is a software package that manages large and complex file structures. DBMS makes database available to a large number of users and the sharing of Data helps to reduce the average cost of data access as well as avoiding duplication of data. Users can only access DBMS which will interprete the data requirements in the accesses required and returns the results to the use in the of form that the user requires.

Print Promotion News Letter

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NCRI extension worker explaining to famers in one of their on farm demostration visit to famers farm site.

Number

	id	Date
	7	02/10/78
▶	8	02/11/78
	9	02/12/78

Print Promotion News Letter

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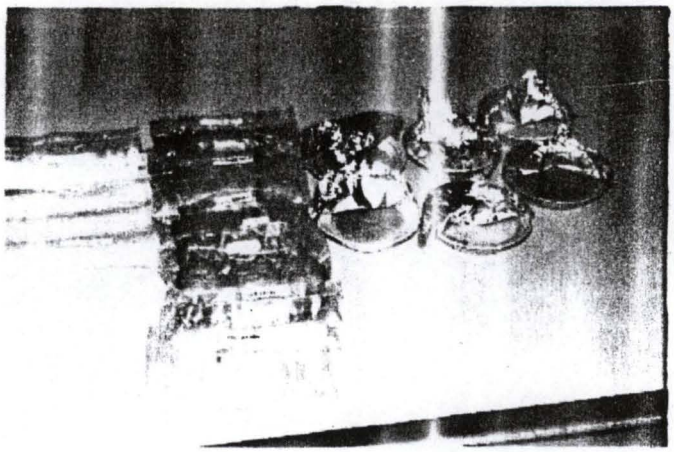

Comment:

Rice / Soybean recipies produced by women in Agriculture section of NCRI to meet the daily food nutirents of the Nigerian dish in one of their trade fair

Number.....

id	Date
15	02/18/78
16	02/19/78
18	02/21/78

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Comment

Rice production Trainning cource for the extension worker in the central zone organised by NCRI Extension services and training Division July 19, 1997

Number...	
id	Date
17	02/20/78
13	02/16/78
15	02/18/78

Print Promotion News Letter

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Research scientist explaining Rice production methods to the visiting students at NCRI Fadama Research plot.

Number.....

	id	Date
	8	02/11/78
▶	9	02/12/78
	10	02/13/78

Print Promotion News Letter

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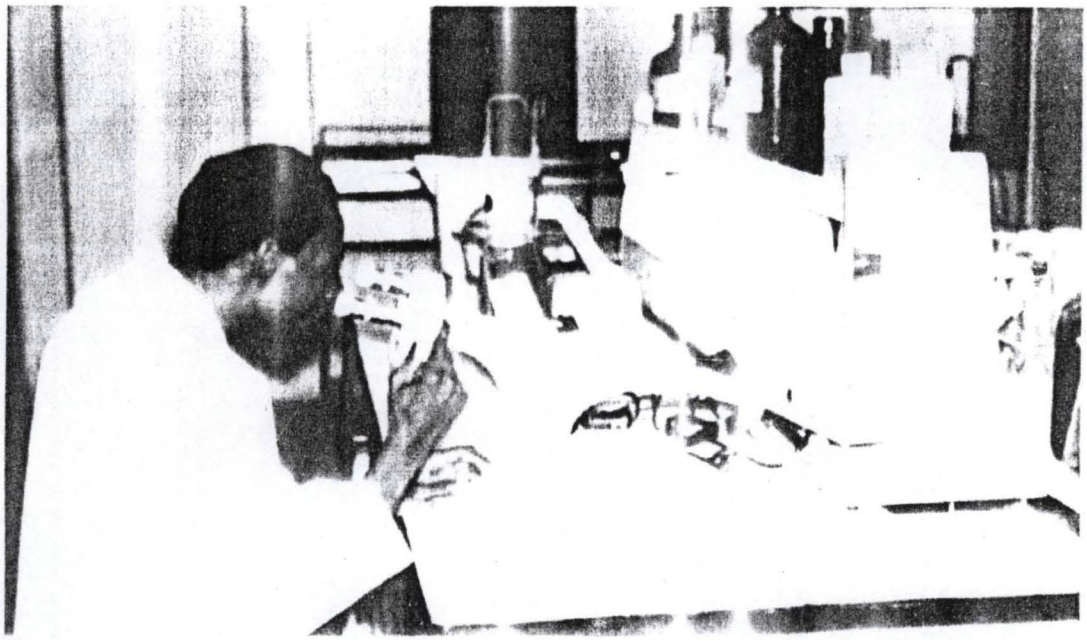

Comment:

Laboratory Technologist analysis soil samples in NCRI laboratory at Badeggi Headquaters.

Number	Date
4	02/07/78
5	02/08/78
6	02/09/78

Print Promotion News Letter

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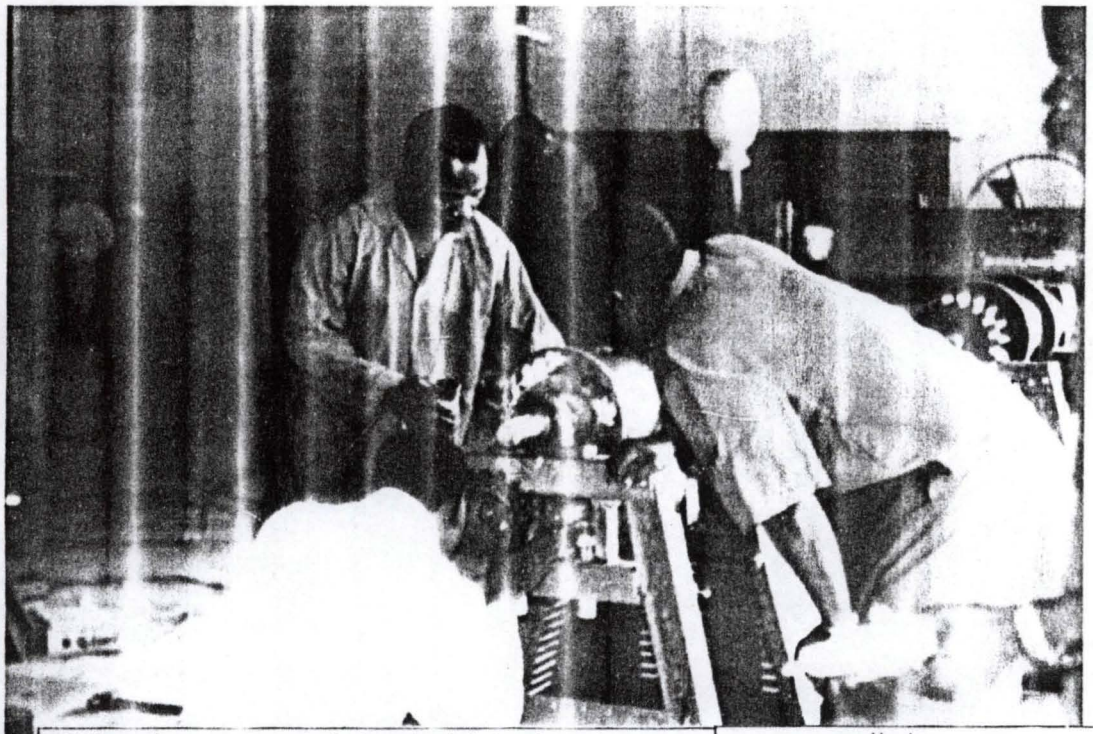


NCRI engineers at work during the fabrication of one on the small scale Brown sugar processing plant.

Number.....

id	Date
11	02/14/78
12	02/15/78
14	02/17/78

Print Promotion News Letter

Move Next Move Previous Move Last Move First Exit Print Interface

Comment:

Farming system research demostrate plot of NCRI showing Maize | Soybean intercroping.

Number.....

id	Date
2	02/05/78
3	02/06/78
4	02/07/78

Print Promotion News Letter

Move Next | Move Previous | Move Last | Move First | Exit | Print Interface

Sole Administrator of Niger State commisioner of police Simeon Oduoye admiring brown sugar recipies during his visit to NCRI.

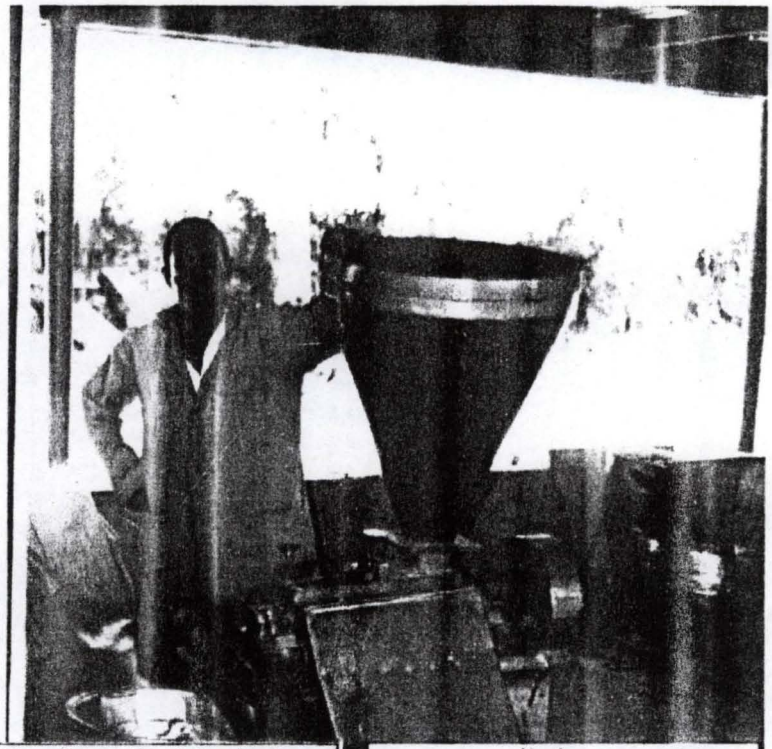
Number...

id	Date
2	02/05/78
3	02/06/78
4	02/07/78


Print Promotion New
Move Next
Move Previou
Move Last
Move First
Exit
Print Interface
A research taking observations in one of the rice screen House demostration at NCRI Fadama.
Number.....
id
Date
5
02/08/78
6
02/09/78
7
02/10/78

Print Promotion News Letter

Move Next Move Previous Move Last Move First Exit Print Interface



Rice milling maching designed and fabricate by NCRI Engineers at NCRI engineering workshop.

Number....

	id	Date
	9	02/12/78
▶	10	02/13/78
	11	02/14/78

CHAPTER FIVE.

5.0 CHOICE OF SOFTWARE PACKAGES.

A part from the mass produce ready made packages, users can choose to produce there own custom made or tailored made programs. Applications in the form of either integrated packages or software suites may be developed.

a. Integrated Packages.

This are single programs or software that have abilities different from software suites. It combine different documents types i.e. word processor, graphics and communications.

b. Software suites.

These are merely groups of programs that works together and individual applications are combined, they are called suites e.g. Microsoft office 2002 which combine the following individual application packages.

- Word (Word processing)
- Excel (Spreadsheet)
- Access (Database management)
- Outlook (Contact)
- Outlook express (For Electronic mail)
- Power point (For presentation)

5.1 TYPES OF APPLICATION PACKAGES.

In fact there are application packages for almost every conceivable task or

operations. The following five groups are recommendable for printing operations.

1) Business application packages
2) Graphics packages
3) Utilities packages
4) Communication packages
5) Web publishing packages

For the purpose of this study were shall limit ourselves to the graphic packages and web packages.

Microsoft, PageMaker and Corel draw

5.2 RECOMMENDATION.

It has come clear that in any organisation manual operations can not meet up with the expected efficiency, time line execution of programmes and projects in order to increase revenue base. In offset printing filed many sequences of operations have been changed by new machinery generations and new materials and processes. Today it is the most widest method. The future development also shows an improvement in the quality and further increase in the profitability of the computerization of the NCRI printing unit is the answer to quick information determination, increased revenue base and good quality printing.

5.3 CONCLUSION.

The purpose of this project work is to provide lasting solution to the problems

encountered with the conventional method of printing adopted by the NCRI printing unit to a computerised system in order to meet up with the international standard so that it can compete with others in terms of Quality of work, efficiency, revenue generation, out put of production etc.

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ii) Introduction to NCRI

iii) NCRI Information Bulletin

iv) NCRI 1999 Annual Report.

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No. 43 of January 1995

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No. 48 of September, 1996

No. 51 of September, 1997

No. 52 of January, 1998

No. 53 of May, 1998

No. 55 of January, 1999

No. 57 of October, 1999

No. 62 of May, 2001

No. 64 of January, 2002

No. 67 of January, 2003

```
Private Sub Command5_Click()
   Unload Me
End Sub

Private Sub ll_Click()
   DataEnvironment1.rsCommand1.MoveLast
End Sub

Private Sub mm_Click()
  DataEnvironment1.rsCommand1.MoveNext
   If DataEnvironment1.rsCommand1.EOF Then
      DataEnvironment1.rsCommand1.MoveLast
   End If
   '
   If Val(txtid.Text) = 1 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic1.bmp")
   ElseIf Val(txtid.Text) = 2 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic2.bmp")
   ElseIf Val(txtid.Text) = 3 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic3.bmp")
   ElseIf Val(txtid.Text) = 4 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic4.bmp")
   ElseIf Val(txtid.Text) = 5 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic5.bmp")
   ElseIf Val(txtid.Text) = 6 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic6.bmp")
   ElseIf Val(txtid.Text) = 7 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic7.bmp")
   ElseIf Val(txtid.Text) = 8 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic8.bmp")
   ElseIf Val(txtid.Text) = 9 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic9.bmp")
   ElseIf Val(txtid.Text) = 10 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic10.bmp")
   ElseIf Val(txtid.Text) = 11 Then
      Picture1.Picture = LoadPicture("\PLntPic\Picture\pic11.bmp")
   ElseIf Val(txtid.Text) = 12 Then
```

```
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic12.bmp")
  ElseIf Val(txtid.Text) = 13 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic13.bmp")
  '
  ElseIf Val(txtid.Text) = 14 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic14.bmp")
  ElseIf Val(txtid.Text) = 15 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic15.bmp")
  ElseIf Val(txtid.Text) = 16 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic16.bmp")
  ElseIf Val(txtid.Text) = 17 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic17.bmp")
  ElseIf Val(txtid.Text) = 18 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic18.bmp")

  End If

End Sub

Private Sub mmn_Click()
 DataEnvironment1.rsCommand1.MovePrevious
  If DataEnvironment1.rsCommand1.BOF Then
    DataEnvironment1.rsCommand1.MoveFirst
  End If
  '
 If Val(txtid.Text) = 1 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic1.bmp")
  ElseIf Val(txtid.Text) = 2 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic2.bmp")
  ElseIf Val(txtid.Text) = 3 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic3.bmp")
  ElseIf Val(txtid.Text) = 4 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic4.bmp")
  ElseIf Val(txtid.Text) = 5 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic5.bmp")
  ElseIf Val(txtid.Text) = 6 Then
    Picture1.Picture = LoadPicture("\PLntPic\Picture\pic6.bmp")
```

```
    ElseIf Val(txtid.Text) = 7 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic7.bmp")
    ElseIf Val(txtid.Text) = 8 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic8.bmp")
    ElseIf Val(txtid.Text) = 9 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic9.bmp")
    ElseIf Val(txtid.Text) = 10 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic10.bmp")
    ElseIf Val(txtid.Text) = 11 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic11.bmp")
    ElseIf Val(txtid.Text) = 12 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic12.bmp")
    ElseIf Val(txtid.Text) = 13 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic13.bmp")
    '
    ElseIf Val(txtid.Text) = 14 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic14.bmp")
    ElseIf Val(txtid.Text) = 15 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic15.bmp")
    ElseIf Val(txtid.Text) = 16 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic16.bmp")
    ElseIf Val(txtid.Text) = 17 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic17.bmp")
    ElseIf Val(txtid.Text) = 18 Then
        Picture1.Picture = LoadPicture("\PLntPic\Picture\pic18.bmp")

    End If

End Sub
Private Sub mnb_Click()
    DataEnvironment1.rsCommand1.MoveFirst
End Sub

Private Sub mnuPr_Click()
    frmDispl.PrintForm
End Sub
```