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PRODUCTION AND STOCK CONTROL COMPUTERIZED SYSTEM

A CASE STUDY OF

NIGER DETERGENT INDUSTRIES LIMITED

BIDA

BY

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A PROJECT SUBMITTED TO THE DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF POST-GRADUATE DIPLOMA IN COMPUTER SCIENCE OF THE FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.

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CERTIFICATION

We certify that this project titled "Production and Stock Control Computerized ystem (NDIL Bida case study)" has been read through and meet the requirements overning the award of Post-Graduate Diploma in Computer Science of the Federal niversity of Technology, Minna.

DR. S. A. REJU
SUPERVISOR

24-04-98
DATE

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DATE

XTERNAL EXAMINER

DATE

DEDICATION

The project is dedicated to my beloved parents - MR and MRS J. Z. Gana

with all my love

ACKNOWLEDGEMENT

I wish to acknowledge the Creator of Heaven and Earth, the Almighty God, the Omnipresence for his mercies, love and wisdom granted me during the course.

Wisdom does not come from the North or East, but from the Lord. I wish to salute the leadership quality of Dr. K.R. Adeboye (H.O.D.) for pastoring the department in the right direction.

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ABSTRACT

Stock control is the pivot through which any production company rotates. Hence, production and stock control computerized system of the Niger Detergent Industries Limited Bida is an improvement on the traditional modes of operations. Production and stock control are two ingredients that must be pursued simultaneously in order to achieve maximum efficiency.

From the researches conducted, the management and the staff concerned were ready to work with the new system designed.

The new system limited itself to production update, sales update, price details, stock enquiry and report generation.

The production update concerned with the levels of products produced, amount of goods available in the store and the goods produced and sold as per the period specified by the management. While the sales update limits itself to the sales made during the period.

The stock enquiry concerned itself with the placement of an order by the customer. The report generations give accounts of the analysis of sales made and production made for a specified period of time either for present or future decision purpose.

The new system was brought to an end with some suggested recommendations for the running of the proposed system which the researcher believed that if those suggestions are adhere to, maximum effective use of the equipment shall be attained.

CHAPTER ONE

INTRODUCTION TO STOCK CONTROL

1.1 PREAMBLE TO THE STUDY

Every business regardless of its size or purpose is concerned with processing facts or data about its operations in order to provide correct accurate information to management. Executive decisions are based on data such as operating expenses, market statistics, inventory levels and other quantitative factors. The depth, accuracy and currentness of factual information at the disposal of the management can provide a business with a substantial edge over its competitions.

However, these raw materials or raw data are of limited use, only after these data have been examined, compared, classified, analyzed and summarized, do they become useable information and become useful to the management.

With the advert of the industrial revolution, and increase in the amounts of data to be processed in shorter and speedy time, business felt the need for faster, cheaper, more efficient methods of processing data.

Thus, various types of automated devices were developed and introduced on the business screen. most recently and foremost among them was the introduction of the electronic computer, the fastest and most sophisticated business so far devised by man.

The computer revolution is for all practical purposes. The computer revolution has created many new careers for millions of people, making the automated

processing of data a successful and a life-wire venture. There isn't a home or a business that hasn't felt the impact of the electronic computer.

It is based on this that the researcher has decided to dwell on the topic "production and control of stock computerized system, a case study of Niger Detergent Industries Ltd., Bida. Thus, the introduction of computers in organizations and the ever-increasing sophistication of data processing system has highlighted the importance of most valuable organizational resources. It is from the manipulation and interpretation of data that information is generated and in turn used for decision making.

One should borne in mind that the realization of the importance of data has meant that there is a need for proper management and efficient organization of data.

1.2 INTRODUCTORY CONCEPTS: COMPUTER AND STOCK CONTROL

For this project or research work to be complete and meaningful, it is expedient that some salient terms such as computer, stock and stock control should be clearly defined with regards to the research work.

1.2 (a) COMPUTER

The perception of a Novice and Veteran with regards to the term computer are quiet diverse to one another. Thus, in order to elude this variance, computer is defined as a Machine which accepts data from an input device, perform arithmetical and

logical operations in accordance with a predefined program and finally transfer the processed data to an output device either for further processing or final printed form. It has a further capability of storing data as may be required.

In a more a general term, any machine, device or system of machines used to make mathematical computations can be called a computer. Examples include the Abacus, the slide rule, and such calculating machines as the adding machines and the calculator.

Every computer system contains:

i Control Unit

ii Arithmetic and Logic Unit and

iii Storage unit

A computer consists of a number of components physically and non-physically that are inter connected, each one carrying out specific function towards the common objectives of processing data. The components which made up the computer system are:

i. Hardware

ii. Humanware (lifewire)

iii. software.

The control Unit controls and co-ordinates the activities of a computer system much as the human brain co-ordinates and controls the human body. In executing an instruction, the Control Unit performs the following functions:

i. Determine the Instruction to be executed.

ii. determine the operations to be performed by the instruction.

iii. Determine what data if any are needed and where they are stored.

iv. Determine where any result are to be stored.

v. Determine where the instruction is located.

vi. Causes the instructions to be carried out or executed.

The arithmetic Logic Unit (ALU) performs three basic functions of: Data transfer; Arithmetic calculations and Decision Making.

Data transfer involves the moving of data from one location within the computer to another. Decision making is the ability to speedily compare two quantities or numbers to determine if one of the numbers is smaller than, equal to or greater than the second of the numbers and respond by taking an appropriate action based on the result of the comparison. It is also possible to test the existence of a condition encountered during the processing of a particular application and to alter the sequence of instructions accordingly.

The computer storage unit or memory unit as it is sometimes called is an essential unit for the operations of a computer as one's memory is important for the performance of common every-day activities. It must have the capacity to store large quantities of data or any item of which he must be capable of being recalled from one location in storage and moved to a location elsewhere in the computer, such as the arithmetic in the Millionth or Billionth of a second.

It is note worthy that when an item of data is stored in a given location, it replaces the previous contents of that location. But the pervious contents of that location, when an item of data is "moved" from its initial storage location, the item of data is not physically removed from its initial storage location. what happened is that a copy or image of the data is transferred to where it is needed.

The process is analogous to the one which takes place when you request information from your memory. for example, if you wish to write down your telephone number for a friend, you simply transfer an image of the number from your memory to the paper, while the telephone number in your memory remains unaltered.

The Storage Unit of the CPU also stored computer, instructions, sometimes called stored programs. Thus, computer storage consists of a large number of cells, each with a fixed capacity for storing data, each with a unique location and address.

A computer once set into operation can performs virtually unlimited number of calculations, one after another without further action on the part of the person using it. It is this ability that differentiate a computer from an ordinary calculating machine, which requires control by a human operator for each calculation.

Although, the computer itself deals only with numbers, it can work with information that was not originally in numerical form, if that information leads itself to mathematical and logical analysis. It does by first converting letters or words into numbers; it then performs calculations with the numbers and converts the results into words/letters.

A computer does not think at least not in the most widely accepted sense of the world, it does only what it is told and it does exactly what it is told.

1.2 (b) STOCK AND STOCK CONTROL

Stock or inventory consists of unusable but idle resources. these resources could be men, materials, machines or money. In other word, stocks are goods or services used in the business activities for the operations of the day-to-day activities.

Stock control is the techniques adopted by which materials of the correct quantity are made available as and when required with due regard to economy storage and ordinary costs, purchase prices, and working capital. It involves:

(a) Assessing the extent of stockholding of items individually and collectively.

(b) Assessing the items to be held in stock.

(c) Regulating the input of stock into the storehouse.

(d) To act as a buffer against an unpredictable high rate of stock uses.

The objectives of stock control is to ensure a correct balance between the cost of stock holding and the benefits from stockholding.

It therefore follows that stock is held for the purpose of providing a reserviour for materials to absorb the effects of variations in delivery and consumption, and to maintain the availability of supplies within the organization concerned. It further means that it is inevitable to hold stocks of materials which are regularly used and also items which may be required at short notice in the event of plant breakdown.

In practice, every industrial concern or public undertaking has storehouses and finds it necessary to keep stores in stock for one reason or the other, among these reasons are:

1. Delivery cannot be exactly matched with usage day by day.
2. Discounts or improved prices for bulk purchases more often than not offset the cost of storage.
3. Operational risks or possible changes in program requires the holding of stocks as a precaution against serious breakdown or interruption of production or other activities.
4. Fluctuations in the price of a commodity is considered desirable to hold stocks against when prices are low.

We should note that the importance to be given to each of these factors depend on the circumstances of individual business. There are basically two methods of controlling stocks, namely control of stock by quantity and By value.

CONTROL OF STOCK BY QUANTITY

The basic method of controlling stock by quantity is by means of fixing for each commodity, stock levels which are noted on the stock record and subsequently used as a means of indicating when some action is necessary.

CONTROL OF STOCK BY VALUE

Note that control of stock by quantity is only bound to given the correct result if every item is kept at a proper level. This is never achieved in practice, hence value control is therefore necessary to show the overall position.

1.3 FORMS OF STOCK

Forms of stocks here simply referred to stock levels which is a means by which correct quantity of products are made available. It is also Methods of controlling or preventing excess and shortage of stocks in an organization.

The five basic levels are thus considered below:

1. MINIMUM STOCK LEVEL

The Minimum stock level is the amount of stock expressed in Units of quantity issued which at any material time should not be short-fall of it. this is very important in order to avoid stoppage in production and inadequate materials. This is sometimes called Danger level.

In determination Minimum stock level, these factors are considered pertinent:

(a) Rate of consumption of the goods available.

(b) The lead time.

(c) The availability of raw materials.

etc.

2. RE-ORDER STOCK LEVEL

This is the amount of stock expressed in Units of quantity issued, at which ordering action is initiated. The re-ordering level should be higher than the minimum stock level, in order to cover emergency periods, such as abnormal usage , delay in delivery, etc.

In deciding on the re-order stock level, the following are considered paramount:

(a) Rate of usage of the goods.

(b) Minimum stock level.

(c) Liability of the suppliers.

3. HASTENING STOCK LEVEL

This is the level at which stocks available are correctly utilized in order to avoid fall between the re-order stock level and the minimum stock level.

4. MAXIMUM STOCK LEVEL

This is the level at which quantities of stocks are held in store in order to keep the company going. We should note that any increase in stock above this level is dangerous, hence, the following elements should be considered in arriving at this level.

(a) Rate of consumption of the goods.

(b) Obsolence of the goods.

(c) Deterioration of the goods.

(d) Loss of overstocking.

5. BUFFER STOCK LEVEL

This is the stock level at which stocks held in store has fall below the minimum stock level. It is sometimes called an "insurance level". This stock level used in a period of inevitable periods by any organization.

Since the objective of any profit making organization is mostly limited to profit making especially the Niger Detergent Industries Limited, Bida (NIDL). Thus, it is valuable to consider the Economic Order Quantity. The Economic batch quantity that

is the period that is economical to order at a time, taking into consideration the cost of ordering and carrying costs.

There are certain advantages to be gained from buying goods in large quantities. It is however possible to make the size of batch so large that further economies are more than offset by the costs of stock holding. A compromise is sought between two small or two large batch. The compromise which minimizes the total costs involved, is called the Economic Batch Quantity (EBQ).

example:

Niger Detergent Industries Limited Bida has a steady demand for their products of 320 items per month. It buys from her supplier (Raw-material) at a cost of #4 per item and the cost of ordering and receiving delivering of a replenishment order is 38 per occasion. It the stock holding costs are 25% per annum of stock value. Find the EOQ?

Given:

$$Q = \sqrt{\frac{2cd}{hp}}$$

where:

Q = Economic batch Quantity.

d = Annual demand for product.

C = Delivery cost per batch.

h = Stock-holding cost per annual (expressed as a fraction or % of the stock value).

p = Cost price per item.

Solution:

$$\Rightarrow = Q = \sqrt{\frac{2 \times 320 \times 8 \times 12}{0.25 \times 4}}$$

$$= 247.87$$

$$Q \simeq 248$$

$$Q = \underline{\underline{₦248}}$$

This implies that buying in bulk, the company will take advantage of ₦248.00 (only) instead of individual item purchase, which would have cost the company more than the present price of ₦248.00.

1.4 OBJECTIVES OF THE STUDY

"Time " is always an enemy of man, thus time is an inevitable element for any production concern, especially a production company like Niger Detergent Industries Limited Bida which is competing strongly in the same market with other companies. The followings has been considered as the objectives of the study:

1. To ensure a correct balance between the cost of stock-holding and the benefits from stock-holding .
2. To act as a buffer against an unpredictable high rate of stock usage.
3. To enable the product to be product or procured in economic quantities.
4. To acquaint the management with the basic techniques of stock control.
5. To enlighten the management in respect of the significance of computers in their daily operation activities.

6. The researcher deem it necessary to embark on the topic as the first of it kind in the company, and to broaden the knowledge of the public, management, students and other researchers on the topic.

1.5 CATEGORIES OF COMPUTERS

Computer have been classified into various classes for easy identification, memory capacity it contain and price variations, so that individuals and groups has the opportunity to choose according to their appropriate business desires.

Thus, computers can be classified in to three viz, :-

1. Classified in term of sizes
2. Classified by logic
3. Classified according to purpose.

CLASSIFICATION IN TERMS OF SIZES

Classification of computer in terms of sizes is subdivided into the followings:

1 SUPER COMPUTERS

Super computers are the most powerful machines available in the mid-1980. They are regarded as the fastest and the most expensive computers. It is capable of processing data at least 10 million arithmetic operation per second. It is used to process scientific data, simulation of Airflow to simulate auto-accidents on video screen, too study the results of explosion of nuclear weapons, etc.

2. MAINFRAMES

A mainframe is a large computer commonly used in business and industry. They have large memory capacity. They generate fair amount of heat, thus requires a cooling system. Mainframe computers serve more than one user at a time because they are able to support large networks of individual terminals and remote job-entry locations.

3. MICROCOMPUTERS

The microcomputers are the small of and least expensive computer ardently available. These are types of computers often found in small business, homes and class rooms. The primary storage unit of a microcomputer is usually smaller than of the other types of computers. it is less complex. It is sometimes called personal computers (PC).

4. MINICOMPUTERS

A Minicomputer is a computer with many od the capabilities of a mainframe, but generally with lower price and small storage capacity. they are easier to install than mainframes. They are sinted for processing takes not requiring access to large volume of stored data.

CLASSIFICATION IN TERMS OF LOGIC:

1. ANALOG COMPUTERS:

These are computers which performs its operation by measuring and comparing some variables in form of mathematical equations. It is a computer that represents its

data in form of measurement. They assigned numeric values by physically measuring some actual property such as the length of an object etc. They are used for a wide/variety of industrial and scientific applications.

2. DIGITAL COMPUTERS:

A digital computers is one which performs arithmetic operations, and access logical decisions according to instructions given to it. Note, number and letters are represented as digits. Examples are mainframes and PCS.

3. HYBRID COMPUTERS:

These computers combines the best features of analog and digital computers. They have the speed of analog computers and accuracy of digital computers. They are used to solve sophisticated problems, such as study of process control and optimization, etc.

CLASSIFICATION ACCORDING TO PURPOSE

1. SPECIAL PURPOSE COMPUTERS

These are computer designed for a specific tack, such as computers used for guiding NASA'S space shuttles. Hence, the operations that can be carried out by this type of computer is pre-determined at the time of manufacture.

2. GENERAL PURPOSE COMPUTERS:

These are computers designed to serve for more than one purpose/task. They are used to solve various kinds of problem depending on the program or software loaded in to them. Their main memory is typically Random Access Memory (RAM); a temporary storage that loss its contents when the computer is switched off. It is easy

to charge the contents of RAM. substituting one program for another and this is what makes these types of computers general purpose machines. general purpose computers are commonly found in business, commercial and scientific environments.

1.6 SCOPE OF THE STUDY

This project will be meaning less and less valued without boundary, hence the scope of this study is limited to Niger detergent industries. Limited Bida with special area consideration on the "production and stock control computerized system."

CHAPTER TWO

PRODUCTION AND STOCK CONTROL AT NDI

2.1 HISTORICAL BACKGROUND OF N.D.I. LTD BIDA

The history of Niger Detergent Industries Ltd Bida will be meaningless without reference to the mother company, the Niger state supply company Minna. Thus, the Niger state supply company was established in September 1982 by the Niger state development company limited. The company was commissioned by Col. Lawal Gwadagbe, the then Military governor of Niger state in June, 1988.

The Anthropogy of N.D.I.L. is as follows.

The movement towards the creation of the company commenced as far back as 1991 when some machinery were purchased and delivered into the country. Machines were completely purchased and received into the country by 1992. However, the company could not take off until 6th December, 1995, when it was officially commissioned by col. c. k Emein, the Military Governor of Niger state by then.

The company has the Board of directors as "the heart" of the company, Executive Director, a Project Manager and/ Supervisor, Accountant, and Marketing/ Administrative Officer respectively.

In other word, the company is composed of three departments: these are, the Production, Account and Marketing. The company is manned by the project manager who delegates authority to his subordinates .

The company is located at B.C.C. Road, Bida, adjacent to Niger Supermarket, Bida .The company's main goal is the production and marketing of detergent soaps .The finished products are packed in such a way to meet the purchasing power of her target consumers. They are packed into;

a. Bar soap tablets.

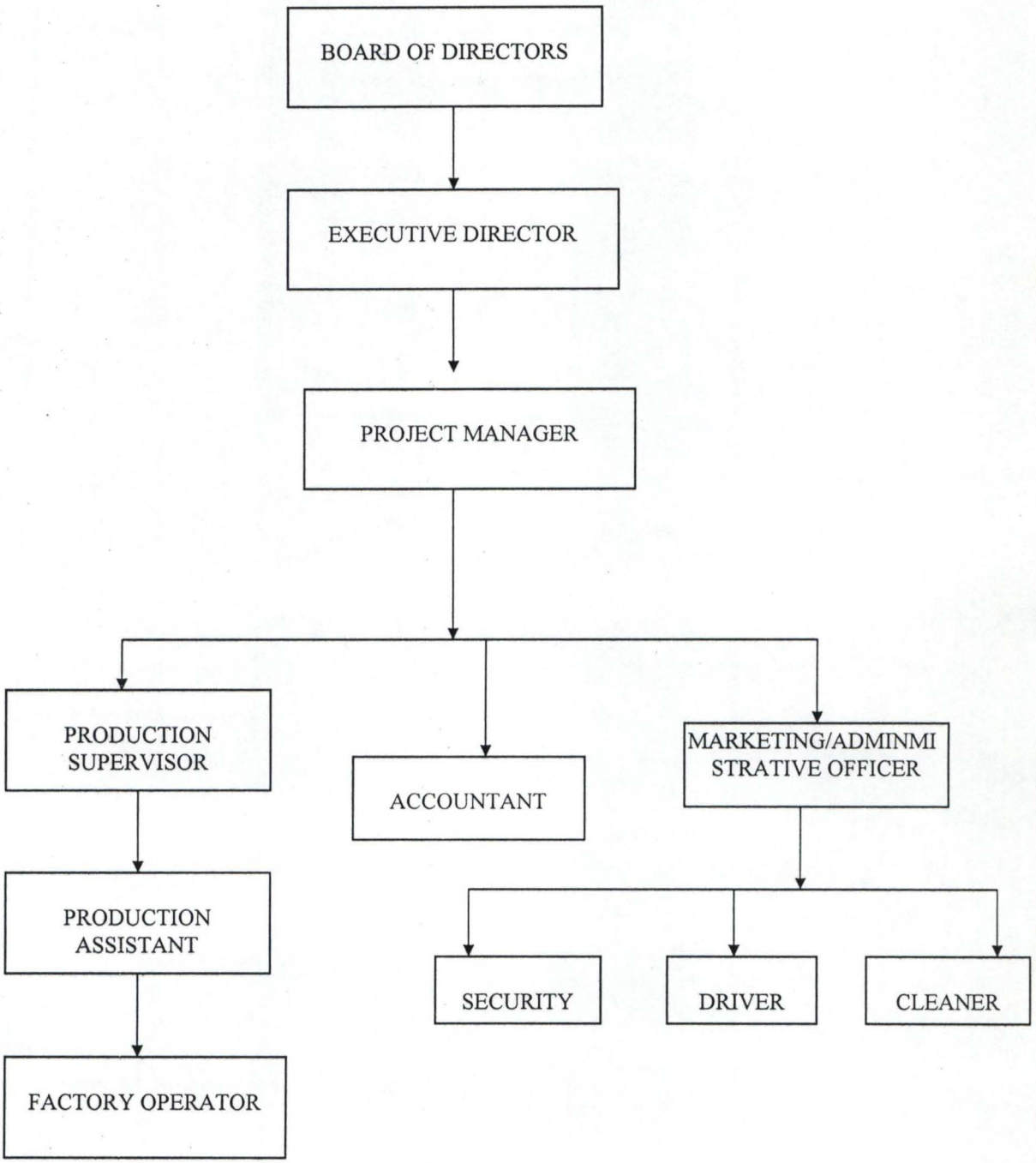
b. Semi-laundry.

c. Toilet tablets.

2.2 ORGANIZATIONAL STRUCTURE:

The organizational structure here refers to the hierarchy of authority from one person to another .This is demonstrated diagrammatically as shown below;

ORGANIZATIONAL STRUCTURE



The Accountant is also charged with the responsibility of store's activities, likewise the marketing manager co-ordinates the administrative affairs of the company.

2.3 LEVELS OF PRODUCTION PROCESSES

The company's production process consists of the following units;

(i) RAW MATERIAL SOURCE

In any production concern, raw materials are regarded as the 'daily food' of the company .The raw material for this company is the fat and caustic soda or caustic potash .When these raw materials are obtained, they are refined .Refining depends on the quality of the crude fats or oil .They may be refined and bleached before saponification .

(ii) a. BLEACHING; This is the composition of some chemical contents in order to achieve some target result .This washing stage lyes remove considerable colour bodies, but some further improvement in the colour of the soap can be obtained by adding sodium hydrosulfite, etc After a short while boil, the soap is grained out as needed.

b. SIEVE; Immediately they are bleached, then the bleached contents are sieved in order to extract out unwanted particles .

c. BLENDING; This entails mixing of various colours desired for the achievement of quality standard.

(iii) SAPONIFICATION

Saponification commenced by the addition of some percentages of caustic soda solution and the slow addition of the remaining oil [either coconut or groundnut oils].The saponification composed of the following stages;

a. a slow incubation period,

b. a rapid exothermic stage,

c. gradual completion .

After completion of the saponification, dry salt is added to the boiling soap until a hard or open grain is obtained .

(iv) DYEING; This is the process of extracting some unwanted water contents in the soap .It implies the 30 water content of heat soap must be reduced to 10-15 before the soap can be shaped into bars .

(v) MIXING AND MILLING; Pigments, dies, perfumes, germicides, etc may be added to bar and flake soap products .The milling operations completes the soap.

(vi) PLODDING; This is the final production stage where the physical production features are completed .

(vii) CUTTING; Here, the finished soap products are cut according to the company's desired sizes .

(viii) STAMPING; The unwrapped finished products are stamped with the company's trade mark. The company's trade mark is 'LION'.

(ix) PACKAGING; This is limited to designing and producing the container or wrapper for the finished products .

(x) MARKETING; This is concerned with the total system of the company's business activities designed to plan, price, promote, distribute want-satisfying goods and services to her present and potential customers. More about the marketing activities of the company's products will be discuss in the later part of this chapter .

2.4 MATERIALS MANAGEMENT

The concept of 'materials management' is the primarily materials organizational tools-tool which have been used in the past and will be used increasingly in the future to achieve closer co-ordinations and controls of a firm's various materials activities .Materials management is defined as 'the line of responsibility which begin with the selection of suppliers and ends when the material is delivered to its point of use' [Dean Ammer, Harvard Business Review 1969].

Materials management as practiced in business today can be defined as a confederacy of traditional materials activities bound by a common idea-the idea of an integrated management approach to planning, acquisition, conversion, flow and distribution of production materials from the raw-material state to the finished product state .

The materials management concept advocates the assignment of all major activities which contribute to material's cost to a single material management

department .This includes the primary responsibilities which are generally found in the purchasing department plus all other major procurement responsibilities including inventory management, receiving, warehousing, surplus and salvage, and frequently production planning control. It should be noted that a specific form of materials organization most appropriate for one company may not be the best for another company.

In conclusion,one of the paramount advantage of materials management is that it forces co-ordination between purchasing and production control. Purchasing and production control are both responsible for the on-line delivery of production materials.

2.5 WHY COMPUTERISED NIGER DETERGENT INDUSTRIES LIMITED, BIDA

A computer is a useful tool, but certainly not the answer to all man's problems. Reasons behind computerising NDI Ltd Bida will be classified into three for easy understanding:

1. MONEY AND TIME

Almost all organizations in today's automated world, employed the services of computer technology for the fact of saving time and money which is synonymous to "household name "in our business world. The factor considered here is the end result, which includes knowledge gained, data or output created, financial saving or time saved substantiates the cost of preparing, writing, and executing them mannually.

2. REPETITION

In a repetitive task a human effort will get to a point where he will be bored or the tasks becomes monotonous. We should borne in mind that this is a recurring problem with human beings who perform tasks that are repetitive and monotonous in nature. But these factors are eliminated with the aid of computer.

3. NUMEROUS CALCULATIONS:

"Volume" is a term that signifies an operation or task that requires large quantities of data to be stored or processed by the computer. In most cases, application requiring limited calculations on limited amounts of data can be more easily and economically handled by manual technique. However, computers are ideally suitable to handle such business functions as payroll, personnel accounting and Inventory since each of these function are justifiable, definable, repetitive and deals with a large volume of data.

Base on these reasons, the researcher decided to computerized the Niger state Detergent industries Ltd, Bida.

2.6 MANUAL SYSTEMS AND PROBLEMS

All the activities that takes place in the NDI, Bida premises which is the main thrust of the study are operated manually. The problem associated with the manual operation can be summarised below.

1. The stock system is not properly kept in the sense that there are pretty items which (could) takes much time to be recorded.

2. Customers are not given opportunity to visit directly the company's premises, and neither there is a departmental stores which can take care of such customers.

3. The monthly stock taking takes some days or weeks which implies inadequate services provided for her customers.

4. It is only the cash machine that helps the N.D.I. Ltd, Bida to keep records of cost of items sold, and since it is operated manually errors are bound to occur.

5. In view of the company's static policies, replenishment of stocks (Raw materials and finished goods), it takes longer time before these stock could be replenished.

2.7 COMPUTERISED SYSTEM AND LIKELY PROBLEMS

There are many system for the maintenance of production and stock control. A computerized system will receive input data, carry out a computation or process it, and output result. The input may be typed directly via key board or read by appropriate devices from the printed characters, bar codes, magnetic disc, or tape punched cards and other media. The output could be display on a screen or printed in a hand copy form.

However, in any case, computerized problems are:-

1. Some of the staff whose works are minor in nature could be relieved of their Jobs.

2. There will be a change in operation in the sense that the former method (manual) is not the same as the computerized one 3. The company need to train its staff as computer operators and to be able to diagnose when there is a problem.

4. The company will have to employ the services of a system analyst and a programmer to take care of their processing department for other applications they may decided to develop.

5. The company would have to purchase a complete system i.e. the hardware and software component and a printer, etc.

2.8 SALES ACTIVITIES

The sales activities of the company can be studied by defining the term "selling". Selling is a promotional techniques adopted by a company in order to enlighten and creates awareness among its target consumers about the goods and services provided.

This therefore implies that "selling" as a promotional means will be valueless without the application of selling concept which is a management philosophy that concerns itself with the concept that consumers may buy and may not buy enough of the company's products, unless the company uses adequate promotional means to motivates her target potential consumers. These promotional means includes Advertising, publicity, personal selling, etc.

The sales activities of the company will be divided into four unite, namely:

1. Sales not by cartons.
2. Sales in cartons.
3. Sales in cartons and by vehicle.
4. Sales by public address system.

1. SALES NOT BY CARTONS

This is a direct sales, using missionary salesmen who sells directly to the target consumers. Since the product was just newly introduced into the market, the potential consumers were a bit scared about its usefulness especially in terms of quality and delivery as opposed to the competitors products in the market like Lever brother, Nasco, etc. The sales is in pieces according to the purchasing power of the consumers.

The target areas for these sales are: Doko, Lemu, Agaie, Badeggi, and kateregi. Each day, between ₦1,000 and ₦2,500.00 are recorded according to the marketing officer of the company. And among the brands of the company's products, only bar tablet is the mostly acceptable by the consumers.

2. SALES IN CARTONS

This is a situation where the company sales men sales to some loyal customers in cartons. The patronage of her customers in this system is low as compared to the first one above. Most of the distributors were afraid to add the company's product line to the existing line of their business due to the simple reason of infancy of the company.

3. SALES IN CARTONS AND BY UECHIDE

This technique adopted is to take care of some areas which can not be reached by the missionary salesmen. Hence, the only motor car the company has is used in this direction. Between ₦10,000 and ₦15,000 sales are always recorded per day according to the sales men.

4. SALES BY THE PUBLIC ADDRESS SYSTEM

The company's motor van moves from one angle to another with the public address system. This method is the advanced promotional means available to the company. Although it is very expensive, it creates opportunities for advertising the company's product. The sales usually range between #18,000 and #20,000 per day.

At this point, it is pertinent for the researcher to state that the company's sales activities is very low, and this is attributed to the following factors.

1. Infancy

The company is just newly introduced into the market and hence, the kin competitors are very strong and vestile with their market strengths.

2. Interest

The shareholders and the Boards of Directors has shallow attitude towards the promotional techniques. Thus, no adequate attention were given to publicity.

3. Purchasing power:

The environment upon which the company operates is a premise where there is a low incomes among the people.

2.9 DATA COLLECTION

Data were collected through personal contact using interview method. This was the most appropriate means of collecting data for the researcher for the simple reason that it is a new company and it lack most literatures needed for this research work.

2.10 DATA PRESENTATION

The data collected were presented in a precise and straight forward manner in essay pattern for easy understanding for the readers.

CHAPTER THREE

PRODUCTION SYSTEM DESIGN

System design is the process of planning a system or to replace or to complete an existing system. The first step towards system design is the identification of system requirement and this is followed by the formulation of design alternatives.

3.1 SYSTEM ANALYSIS

Analysis of a system is the procedural study of its operations with an attempt to discover what is basic problems area. The analyst must examine all the facts he has gathered in order to make a proper assessment of the existing system. He must resist the temptation to include ideas in the new system which have been fully worked out.

The aims of the stage is to ensure that all feasible alternatives are eventually produced. The present system must be criticized against the principles of procedure after which the strengths and weaknesses of the system should be apparent.

Same of the principles of procedures considered are:

i. FLEXIBILITY

Is the system flexible? what will be the effect on the system as per { a big } increase or decrease in the volume to be processed?

ii. PURPOSE

Are the purpose being satisfied?

iii. ECONOMICAL

Benefits should be related to the cost of producing them or are there more economical methods of achieving the set up targets.

vi. RELIABILITY

How reliable is the procedure?

v. EXISTING SYSTEM

If a change is made, what equipment and other facilities currently being used could be incorporated in the new procedure?

An important aim of the analysis is to produce a requirement specification. A system analyst with a sound business knowledge should discuss the requirements specification with the user and at the end of the discussion, the requirement specification should be in an accepted form. Estimates for alternatives designs should be prepared and the decisions to proceed with a particular design should be made.

3.2 PROGRAM SPECIFICATION

This is the program documentation of the proposed system. It is a collection of sorts of programs responsible for the proper operations of the expected task However, it should be noted that the new system was developed in modular. This is a programming technique that requires dividing a big job into subproblems with the aim of developing program for each subproblem. This method has a major advantage which is the reduction of the complexity of a problem.

It therefore follows that the program specification provides detail documentation of the entire system. It serves as the mode of communication to the computer for the execution of the entire task. The program specification also serve as a means of maintaining the entire system. This could be in terms of modification or adding new facilities to the Overall workings of the system.

The program specification of this project work is contained in Appendix I.

3.3 ALGORITHM AND FLOWCHART

This assertion descrbes the procedure required for executing the required task. This is done in terms of stating the relationship between the files and the report that needs to be generated. It further means careful selected elementary instructions that describes the basic actions to be performed. It has four main properties namely:

i. It is a sequence of steps with some particular starting point.

ii. It is general i.e. it can be used for a range of related problems.

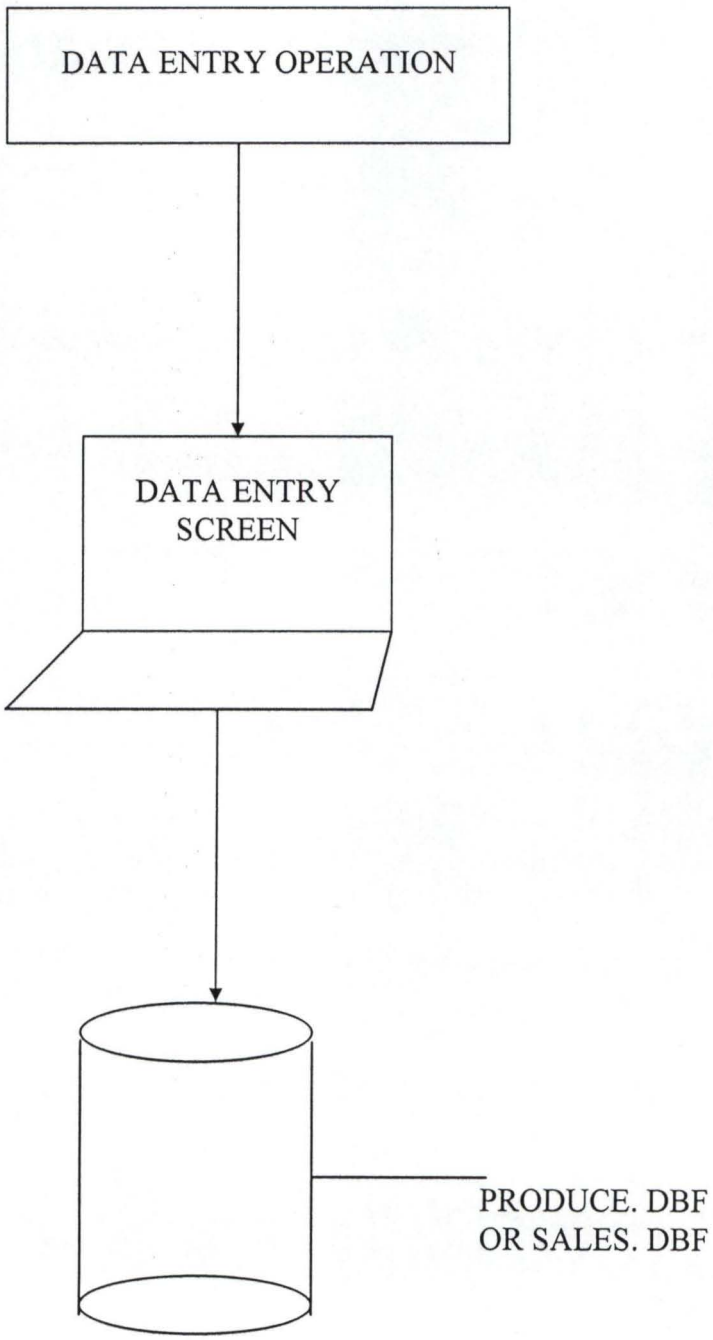
iii. It is definite in size and time.

iv. It is definite and unambiguous.

While a flow chart is a seies of symbols, each representing a function in the program and each connected to the next in a vertically downward direction by flow lines.

On the contrary, it should be noted that information on sales and production are transferred into SALES.DBF and PRODUCT.DBF respectively. The system chart for data inputed is stated below:

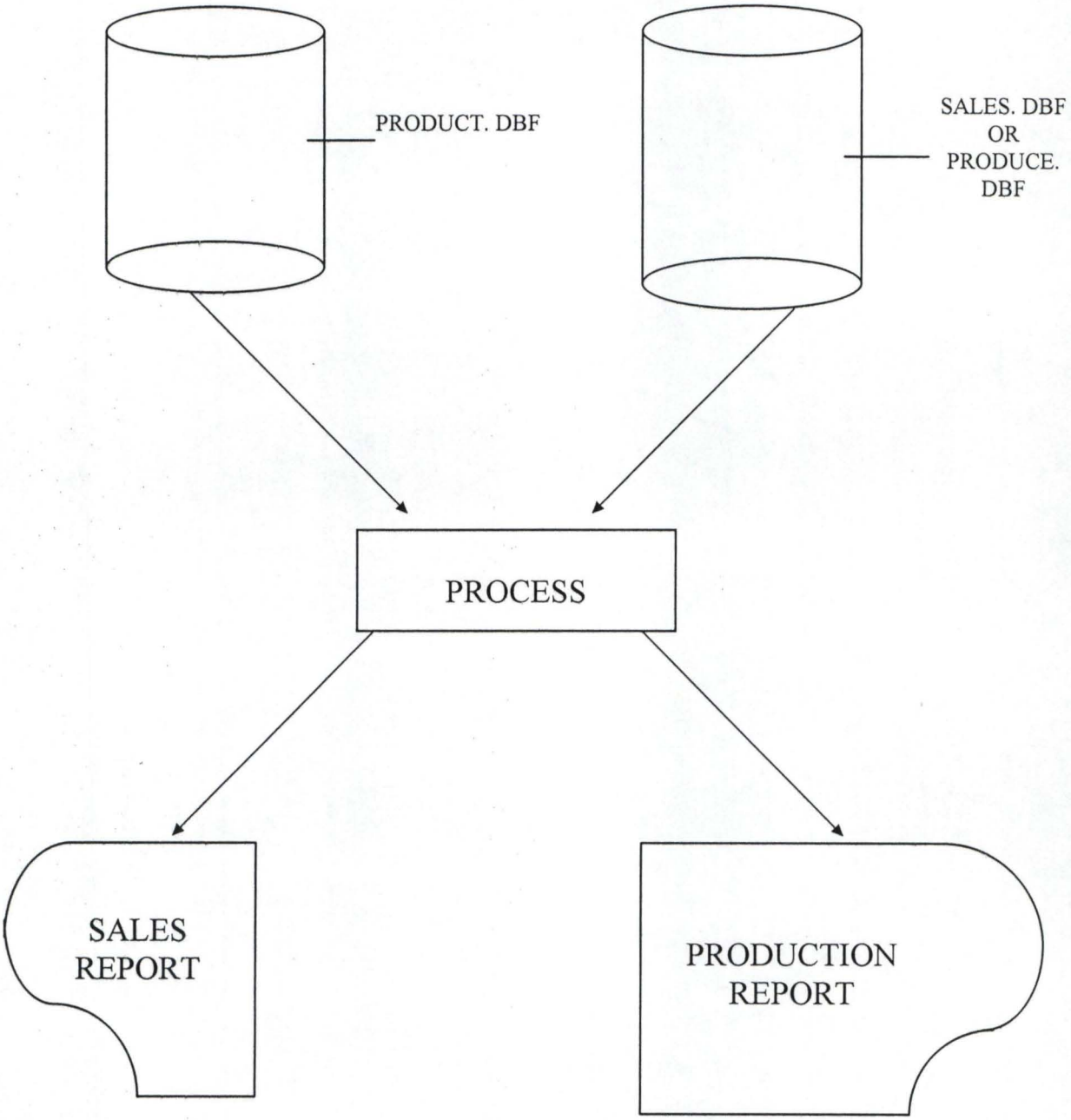
ALGORITHM AND FLOWCHART



From the above design, it could be observed that the data entry is done/ carried out through the computer via the input form for sales or production. Once the data is entered, the computer transfers them to either the SALES.DBF or PRODUCE.DBF depending on the type of data inputed.

The procedure for the generation of report is stated below:

ALGORITHM AND FLOWCHART



The above procedure implies that computer activates the database files (PRODUCT. DBF and at the same time. Once this is done, the processing begins and the necessary report would be generated.

3.4 INPUT AND OUTPUT SPECIFICATION

Every program accepts inputs and generates output. These are terms which means the source of data and the production of information (the processed version of data).

3.4.1 INPUT SPECIFICATION

For proper execution of task, a system needs to be inputed. For this proposed system, the inputs required are the details of production as well as that of sales. For that of production, the data that will be required are as follows:

i. Delivery note number.

ii. Production number

iii. Date of production

iv. Product type

v. Quality of product.

The data required for sales are stated below:

i. Invoice Number.

ii. Date of sales.

iii. Customer's name and address.

iv. Product type.

v. Quantity of sales.

The above procedure implies that computer activates the database files (PRODUCT. DBF and at the same time. Once this is done, the processing begins and the necessary report would be generated.

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The data required for sales are stated below:

i. Invoice Number.

ii. Date of sales.

iii. Customer's name and address.

iv. Product type.

v. Quantity of sales.

3.4.2 OUTPUT SPECIFICATION

The result of any process is communicated to the users via output. This could be in form of software (report that appears on the screen) or Hardcopy (report that appear on paper via printer).

For the proposed system, one of the required reports is the Stock Enquiry Report which is a soft-copy report and its shows the stock position of all the items produced in the organization. Others are the hardcopy reports which are of two types namely: Production Report and Sales Report. The production report shows the details of production while the sales report displays the details of sales activities.

3.5 DATABASE SYSTEM

The introduction of computers in organization and the ever-invearing sophistication of data processing system have shown the importance of data as one of the most valuable organization resources. It is from the manipulation and interpretation of data that information is generated and in turn used for decision making.

The realization of the importance of data has shows that there is a need for proper management and efficient organization of data. Since the late 1960s, users have been inventing in a mechanism that providers facilities for the successful organization and assessing of data. The mechanise is known as **DATABASE SYSTEM**, a term that mean both the organization of data and software that is needed in order to manage the data provided effectively.

Thus, a database can be defined as a mechanized shared centrally controlled collection of data used in an organization. It is regarded as any collection of useful information organized in a systematic and consistent manner. A good example of this is the telephone directory and library catalog. Database system allow the data to be produced and organized separately from other resources. specifically, the objectives of database system are as follows:

(1) DATA INTEGRATION IS ACHIEVED

In a database system, information from several files is co-ordinated, assessed and operated upon as though it is in a single file. Logically, the information is centralized physically, the data may be located on different devices. In this system, it is possible for two or more applications to be showing compatible data. This allows the users to gain valuable information by linking data across the organization. The data are no longer owned by particular application, but instead they are shared among the users.

2. DATA REDUNDANCY IS REDUCED

Data redundancy occurs in file processing system when the data cannot be arranged to suit all the application programs in accessing these data. This results in the same data appearing in more than one file. This leads to wastage of storage and duplication of efforts during data entry.

3. DATA INDEPENDENCE CAN BE ACHIEVED

Any changes that occerred to the data records during the life of the file, it requires that all programs accessing these data must be changed. However, database

system provide data independence of programs. Data independence is the insulation of application programs from the physical or logical storage of data. This objective seeks to allow for changes in the content and organization of physical data without re-programming of applications, and to allow modification to application programs without re-organising the physical data. In database organization, each application system interfaces with the DBMS, rather than directly with the database. Any changes to the data once accommodated by changes to the DBMS without any changes to the application program being necessary

4. DATA ARE CENTRALLY CONTROLLED

In database environments, data and operations are centrally controlled, and this can lead to better management of data by enforcing standards for all the database users on how information would be released out.

Specifically, it allows for proper security of data, since there is only one source of data in the organization, such standards would easily be enforced.

3.6 DATABASE FILE STRUCTURE

As stated earlier the new system is designed using database management system. However, in this software, data are stored in a database file.

The database file structure is used to described the structure of the database files required in proposed system.The structure is in terms of the description of the field names, field types field width as well as the content of the files.

The proposed system is expected to operate on these database files namely: **PRODUCT.DBF**, **PRODCE.DB**F and **SALES.DBF** Each of these files are described as follows:

PRODUCT DBF:

This is a database file that contain details of all the products manufactured in the organization. It contains information such as the product code, product description, price and the total quantity of each products. The structure of this file is stated as follows:

S/NO	FIELDNAME	FIELDTYPE	FIELDWIDTH
1	CODE	Character	2
2	DESCR	Character	20
3	PRICE	Numeric	6/2
4	TQTY	Numeric	9

PRODUCE. DBF:

This file contains the details of production activities in the organization. The production details such as the production number, data of production quality produced and others are entered into the file. The structure of this file is as shown below:

S/NO	FIELDNAME	FIELDTYPE	FIELDWIDTH
1	DNN	Character	4
2	PNNMB	Character	6
3	PDATE	Date	8
4	CODE	Character	2
5	QPROD	Numeric	9

SALES. DBF:

The sales. DBF is a file that store information about the sales made within a particular time. It is a transtion file that keeps sales details such as the invoice number, sales date, Quality sold, and so on within a month. The format of this file is stated below:

S/N	FIELDNAME	FIELDTYPE	FIELDWIDTH
1	INVNO	Character	4
2	SDATE	Date	8
[illegible]	CODE	Character	2
[illegible]	QSOLD	Numeric	6
5	SVALUE	Numeric	10/2
6	CHAME	Character	25
7	CADDR	Character	35

CHAPTER FOUR

SYSTEM EXPERIMENTATION

4.1 DESCRIPTION OF THE PROPOSED SYSTEM

The researcher designed the new system in such away that the operations of the company which was manually operated upon has been changed to a computerized system, such that the production processes and the sales activities (especially storing of the goods produced and sales made to date) are the paramount areas considered.

In other words, the computerized system composed of production update, sales update, price details, stock enquiry and reports generation.

The production update comprise of new production entry, Edit production Details, viewing production Details and Erasing production details. Also the sales update is made up of New sales entry, Edit sales details, viewing sales details and Erasing sales details.

The Design is in such away that rooms are made for (any) change (s) in the future, especially price fluctuation and production variance. The new system is simply designed such that not only computer professionals can understand it, but also Novices in the discourse can as well follow the steps of the design.

From the main menu of the design as shown in figure 1 it composed of:

4.1.1 A. PRODUCTION UPDATE

The production update concerned itself with the correct assessment of the goods cedtergenty of hand and as when required by the management for decision on purposes. Details of this design is should in figures 1, 2 and 15 below.

B. SALES UPDATE:

This unit limited itself to the sales made as per the goods produced during the period. Details of the specification is shown in figures:- 7,8,9,10,11,and 16 below.

C. PRICE DETAILS:

Form any going concern, especially production company of which the Niger detergent industries limited Bida to remain in its markets, the management must be conscious of the prices fixed on those goods produced and its competitors price. Also room must be made to accommodate changes in the economy most especially taking in to account, the purchasing power of her target markets. It is based on these reasons, the reseacher designed this unit program in order to take care of such occurrences. Details of this design is shown on figure 12 below.

D. STOCK ENQUIRY:

"Out of stock" is a semantic business which symbolized inefficient management of the store manager for his inability to have assessed either the raw materials or the finished goods correctly. Sequence to this, the researcher designed a program in respect of the above topic to assess the levels of stock in the store at any material

moment, to avoid overstocking and understocking. Details of this is shown in figure 13 below.

E. REPORT GENERATION

The reports generation concerned itself with the accounts of goods produced, goods issued out goods sold and the balances available in the store this unit of reports generation is of paramount importance to the management to aid daily activities. The details of the design is as shown in figure 14 below.

F. QUIT :

This is the control panel which returns the programmer/machine back to the main routine.

COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

MAIN MENU

A ----- PRODUCTION UPDATE

B ----- SALES UPDATE

C ----- PRICE DETAILS

D ----- STOCK ENQUIRY

E ----- REPORTS GENERATION

Q ----- QUIT

PICK CHOICE:

FIG.1 OUTPUT ONE

COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

PRODUCTION UPDATE MENU

A ----- NEW PRODUCTION ENTRY

B ----- EDIT PRODUCTION DETAILS

C ----- VIEW PRODUCTION DETAILS

D ----- ERASE PRODUCTION DETAILS

E ----- EXIT

PICK CHOICE:

FIG. 2 OUTPUT TWO

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

NEW PRODUCTION ENTRY

DELIVERY NOTE NO (Enter "XXXX" To Exit): 123

PRODUCTION NUMBER: 00124 PRODUCTION DATE: 10/08/97

PRODUCT CODE: 02 - SEMI-LAUNDRY

QUANTITY: 120,000 BALANCE: 123,000

(S)AVE or (A)BANDON - Pick Choice:

FIG 3 OUTPUT 3

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

EDITING PRODUCTION DETAILS

DELIVERY NOTE NO (Enter "XXXX" To Exit): 123

PRODUCTION NUMBER: 000124 PRODUCTION DATE: 10/08/97

PRODUCT CODE: 02 - SEMI-LAUNDRY

QUANTITY: 120,000 BALANCE: 123,000

(S)AVE or (A)BANDON - Pick Choice:

FIG 4 - OUTPUT 4

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

VIEWING PRODUCTION DETAILS

DELIVERY NOTE NO (Enter "XXXX" To Exit): 123

PRODUCTION NUMBER: 00124 PRODUCTION DATE: 10/08/97

PRODUCT CODE: 02 - SEMI-LAUNDRY

QUANTITY: 120,000 BALANCE: 123,000

VIEWING PRODUCTION DETAILS - PRESS ANY KEY

FIG.5 OUTPUT 5

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

DELETING PRODUCTION DETAILS

DELIVERY NOTE NO (Enter "XXXX" To Exit): 123

PRODUCTION NUMBER: 00124 PRODUCTION DATE: 10/08/97

PRODUCT CODE: 02 - SEMI-LAUNDRY

QUANTITY: 120,000 BALANCE: 123,000

TO DELETE PRODUCTION DETAILS (Y or N):

FIG. 6 OUTPUT. 6

COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

SALES UPDATE MENU

A ----- NEW SALES ENTRY

B ----- EDIT SALES DETAILS

C ----- VIEW SALES DETAILS

D ----- ERASE SALES DETAILS

E ----- EXIT

PICK CHOICE:

FIG.7 OUTPUT.7

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

NEW SALES ENTRY

INVOICE NO (or Enter "XXXX" To Exit): 987

CUSTOMER'S NAME — CUSTOMER'S ADDRESS

HUKWUEMEKA JOHN — S.E. 47, SABON GARI, MINNA

PRODUCT CODE: 03 - TOILET TABLETS — DATE OF SALES: 12/12/97

QUANTITY: 500 — SALES VALUE: # 40,000.00

(S)AVE or (A)BANDON - Pick Choice:

FIG.8 OUTPUT.8

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

EDITING SALES ENTRY

INVOICE NO (or Enter "XXXX" To Exit): 987

CUSTOMER'S NAME	CUSTOMER'S ADDRESS
MR. CHUKWUEMEKA JOHN	S.E. 47, SABON GARI, MINNA

PRODUCT CODE: 03 - TOILET TABLETS DATE OF SALES: 12/12/97

QUANTITY: 500 SALES VALUE: # 40,000.00

(S)AVE or (A)BANDON - Pick Choice:

FIG.9 OUTPUT.9

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

VIEWING SALES DETAILS

INVOICE NO (or Enter "XXXX" To Exit): 987

STOMER'S NAME	CUSTOMER'S ADDRESS
HUKWUEMEKA JOHN	S.E. 47, SABON GARI, MINNA

CODE: 03 - TOILET TABLETS DATE OF SALES: 12/12/97

JANTITY: 500 SALES VALUE: # 40,000.00

VIEWING SALES DETAILS - PRESS ANY KEY

FIG.10 OUTPUT.10

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

VIEWING SALES DETAILS

INVOICE NO (or Enter "XXXX" To Exit): 987

CUSTOMER'S NAME	CUSTOMER'S ADDRESS
MR. CHUKWUEMEKA JOHN	S.E. 47, SABON GARI, MINNA

PRODUCT CODE: 03 - TOILET TABLETS DATE OF SALES: 12/12/97

QUANTITY: 500 SALES VALUE: # 40,000.00

TO DELETE PRODUCTION DETAILS (Y or N):

FIG. 11 - OUTPUT. 11

COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

PRICE DETAILS SCREEN

PRODUCT NAME	PRICE
BAR SOAP TABLETS	100.00
SEMI-LAUNDRY	50.00
TOILET TABLETS	80.00

(S)AVE or (A)BANDON - Pick Choice:

FIG. 12 - OUTPUT. 12

COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

STOCK ENQUIRY SCREEN

PRODUCT NAME	BALANCE
BAR SOAP TABLETS	4,500
SEMI-LAUNDRY	123,000
TOILET TABLETS	-500

VIEWING RECORD - PRESS ANY KEY

FIG. 13 - OUTPUT. 13

COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM

NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA

REPORT GENERATION MENU

A ----- PRODUCTION REPORT

B ----- SALES REPORT

E ----- EXIT

PICK CHOICE:

FIG. 14 - OUTPUT. 14

PRODUCTION DETAILS AS AT NOVEMBER

ODUCT TYPE: BAR SOAP TABLETS

NO	DATE OF PRODUCTION	DELIVERY NOTE NO	PRODUCTION NO	QTY PRODUCED
1	08/11/97	234	00123	12000
2	10/11/97	0012	00124	2000
3	12/11/97	0145	00215	5500
	BALANCE IN STOCK -			17,000

FIG 15

PRODUCTION DETAILS AS AT NOVEMBER

ODUCT TYPE: BAR SOAP TABLETS

NO	DATE OF PRODUCTION	DELIVERY NOTE NO	PRODUCTION NO	QTY PRODUCED
1	08/11/97	234	00123	12000
2	10/11/97	0012	00124	2000
3	12/11/97	0145	00215	5500
	BALANCE IN STOCK -			4,500

FIG. 16 - OUTPUT. 16

SALES DETAILS AS AT November

PRODUCT TYPE: BAR SOAP TABLETS

S/NO	DATE OF SALES	QUANTITY SOLD	SALES VALUE
1	09/11/97	3000	300000
2	10/11/97	2500	250000
3	11/11/97	4500	450000
4	11/11/97	5000	500000
	BALANCE IN STOCK -		4,500

FIG. 16

4.2 HARDWARE REQUIREMENT

The term **hardware** refers to the physical components of a computer system and the devices (Electronics and otherwise) used for processing data. That is, the physical machines displayed in any computer room. It comprises of the monitor or the screen board which is used to input and to generate outputs respectively. The central processing unit (C.P.U.) is regarded as the computer which is responsible for manipulation of all process data to obtain information.

It also composed of keyboards. The keyboards are used to type instructions for the computer, and to type information a user want the computer to process. All keyboards have standard letter keys, punctuation keys and space bar. They are used the same way a type writer is used. Most key board also have **function**, **Numeric**, **Arrow keys** in addition to **ALT**, **CTRL**, **DEL**, and **ENTER** or **RETURN KEYS**.

On the contrary, the hardware also composed of the printer which is the channel through which hardcopies are produced. Examples of such printers are : chain printer, Band printer, Drum printer, etc.

The designed program required a micro computer for its successful operation. A microcomputer is the smallest and least expensive computer currently available in the market. This is the type of computer often found in small business and classrooms. Microcomputers are popularly known as personal computers(PCs) which gives support in our homes and offices. A microcomputers offered a wide range of uses and composed of mixture of RAM, ROM, PROM and EPROM chips to create internal storage. Microcomputers are less complex in operations.

Based on the above attributes and the small size of the company, the researcher decided to chose this micro-computer to meet its designed programs.

In this respect, the hardware required a drum printer. This printer is a serial printer. That is, it prints a character of a fine. To achieve higher speeds, greater number of characters must be printed at once. This type of printer is called **Line printer**. The characters are mounted on a drum which has a complete set of characters for each print position across the paper (usually 132 positions).

The drum is set in front of the paper and ribbon against the character as they come into the position. One complete revolution of the drum is sufficient to print the entire line. The speed is about 30 lines per second.

4.3 SOFTWARE REQUIREMENT

Software here refer to programs or written programs which is used to operates the hardware. The software required for this project is the Database IV system.

dBASE IV is an advance version of dBASE that provides a full relational data base environment to users, (especially the control center of dBASE IV is a significant improvement), up to 225 fields can now be specified per record and a database can be related to more than two. Programs and procedures can also be compiled and saved as object codes for execution.

It has longer number of memory variables, an improved indexing, a larger command line buffer, an improved command line printer handling. Capabilities and faster execution.

Perhaps why the researcher decided to choose this dBASE is as a result of full relational database capabilities using SQL (structured Query Language) that is compatible with IBM machines. Database can be viewed through the SQL facility as relational databases. Database queries and updates can be achieved.

4.4 SYSTEM CONVERSION AND CHANGE OVER

The system conversion here refers top file conversion which is a vital activity which is sometimes underestimated. It involves the form required by the new system. File conversion is often a complex and separate system task in itself, involving fact finding analysis, data capture, the design of clerical methods and computer process(es) form design, and the production of special training courses.

The changeover from old to the new system may take place when:

(a) The system has been proved to the satisfaction of the systems analysts and the other implementation activities have been completed.

(b) Users managers are satisfied with the results of the system tests, staff training and reference manuals.

(c) The target date for changeover is due. The changeover may be achieved in a number of ways. The most common methods are: direct, parallel running, pilot running and stage changeover. However, the system recommended by the researcher for the successful operation of the program designed is obtainable in chapter five.

4.5 SYSTEM TESTING

This is the testing of the designed program to ensure that the designed program work accordingly. The designed program works according to the specified outputs as shown in chapter four and as attached in Appendix I.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Production and stock control computerized system are vital aspects of any production company of which Niger Detergent Industries Limited is not an exemption. The researcher wish to conclude that production processes and sales activities which are the determinant factors for stock control and substainableness for any firm was exaustively considered. Also programs were designed based on these areas:

I. Production update.

II. Sales update.

III. Price update.

IV. Stock enquiry.

V. Report generation

As data is entered, immediate response is available and vetting is made before the data is processed. All database for all applications are properly maintained and backup for the systems effectiveness. In this proposed system, efficiency and accuracy are guaranteed.

The system is designed to provide the management with timely information and to ensure proper accountability in NDIL. The system is enhanced with a timely reports generated for all transactions in stores. The implementation of the proposed system

will enhance improvement in stock control in terms of availability, security, effectiveness and above all privacy.

However, it should be noted that nobody is perfect, this program cannot be said to be 100% error free, but as time goes on and through constant use by different organizations, several modifications may be required and some sort of debugging. Also, no user password was used in the program to avoid difficulty in execution.

RECOMMENDATIONS

This project will be valueless without inference(s) drawn from the researches carried out. Hence, the researcher deems it fit to make the following recommendations:

I For proper implementation of the proposed system, we therefore recommend 486 IBM computer DX 100mHz, 4mB RAM 850MB Hard disk with 6.0 DOS and above installed. Or Pentium 200mmx, 2.6GB ram WITH 1m BOGA.

II Computer without a printer is just like a man without a wife, thus we recommend EPSON LQ2170 Printer.

III A house without people therein is liken to a computer without an operator, thus all the principal officers and the members of the department concerned should be trained to be computer literate, particularly based on the new system and in line with the facilities available.

IV System monitoring and evaluation of the new system and the old one should be maintained in order to draw proper inferences in terms of efficiency, money and efforts involved possibly for a half year or more.

V The management should provide adequate security for the equipment, such things like:

(a) Fire

(b) Natural disaster

(c) Environmental problem

(e) Sabotage

VI **System Maintenance**

The moment the programs has been hand-over to the appropriate quota then it is the responsibility of the maintenance group within the computer department to maintain the program and the equipment, instead of the programmer. The user(s) should ensure that the system work properly and meets all their requirements by the time the hand-over take place.

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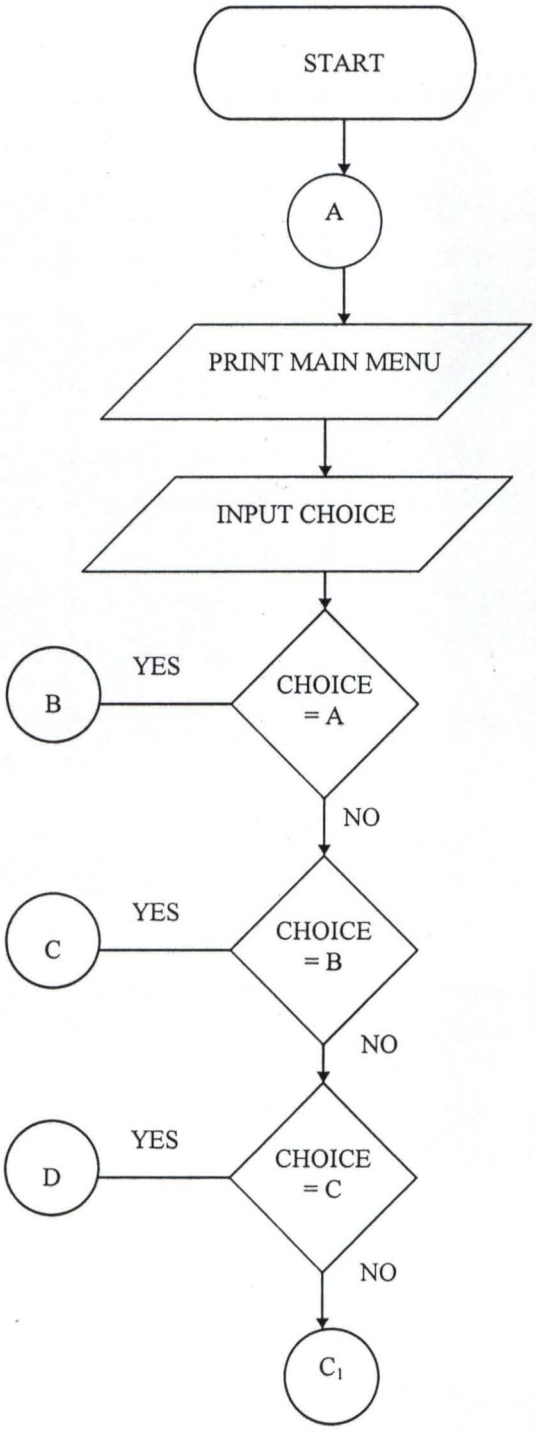
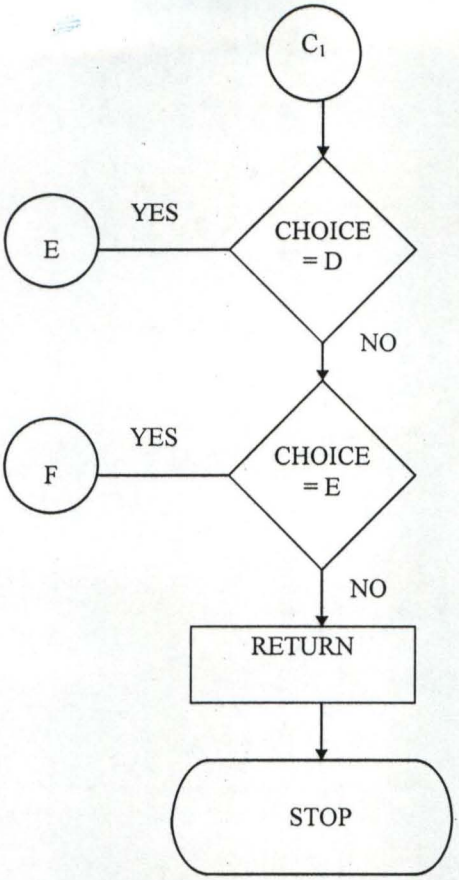
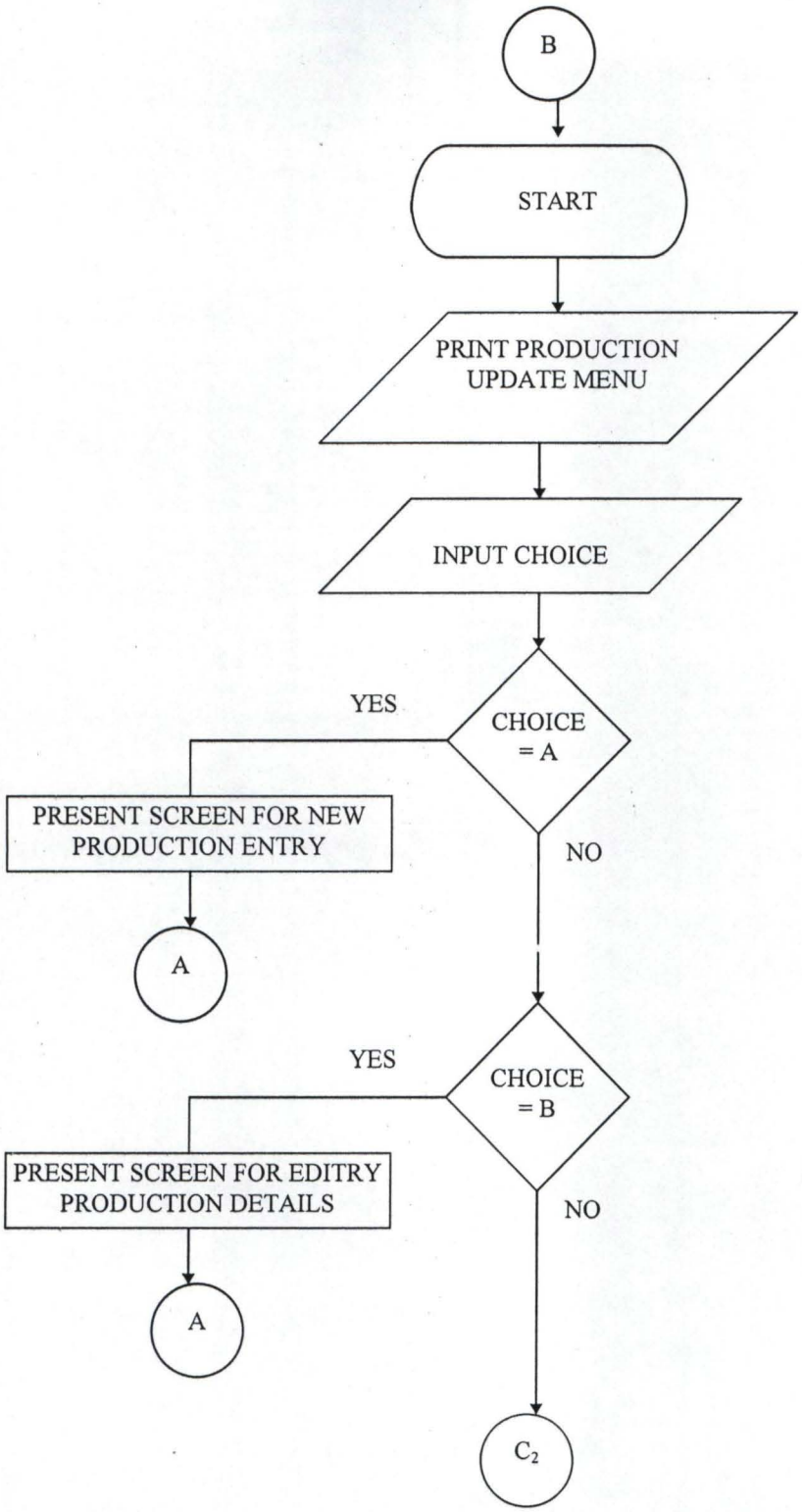
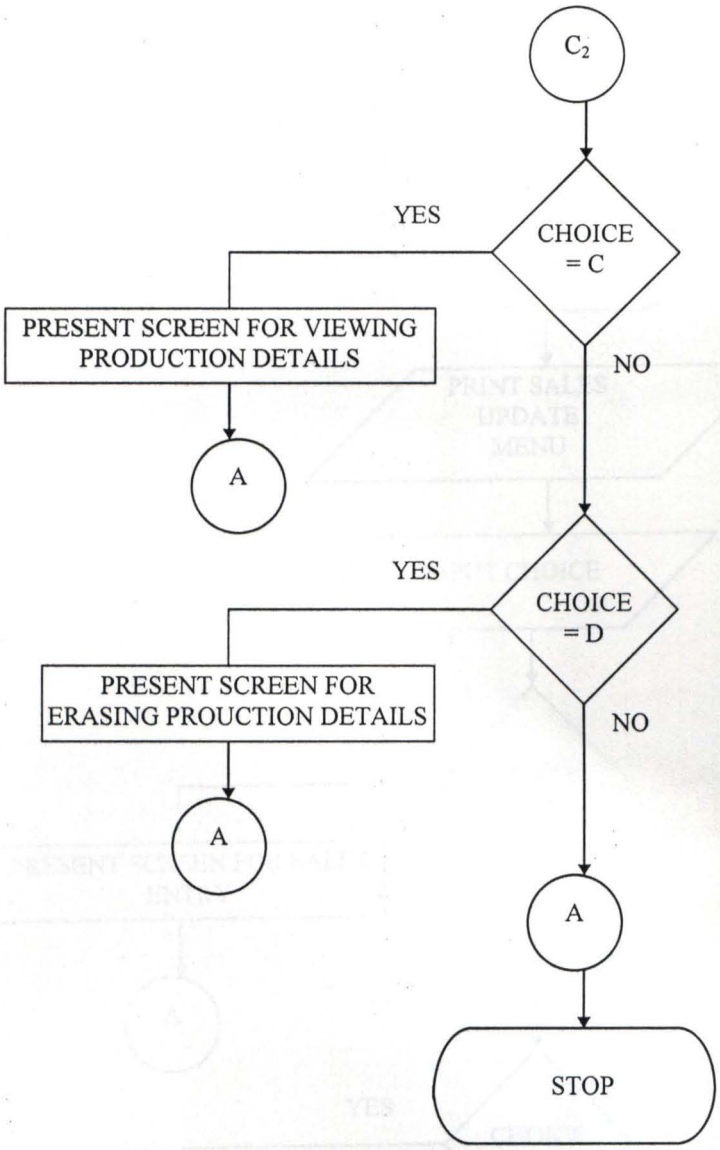
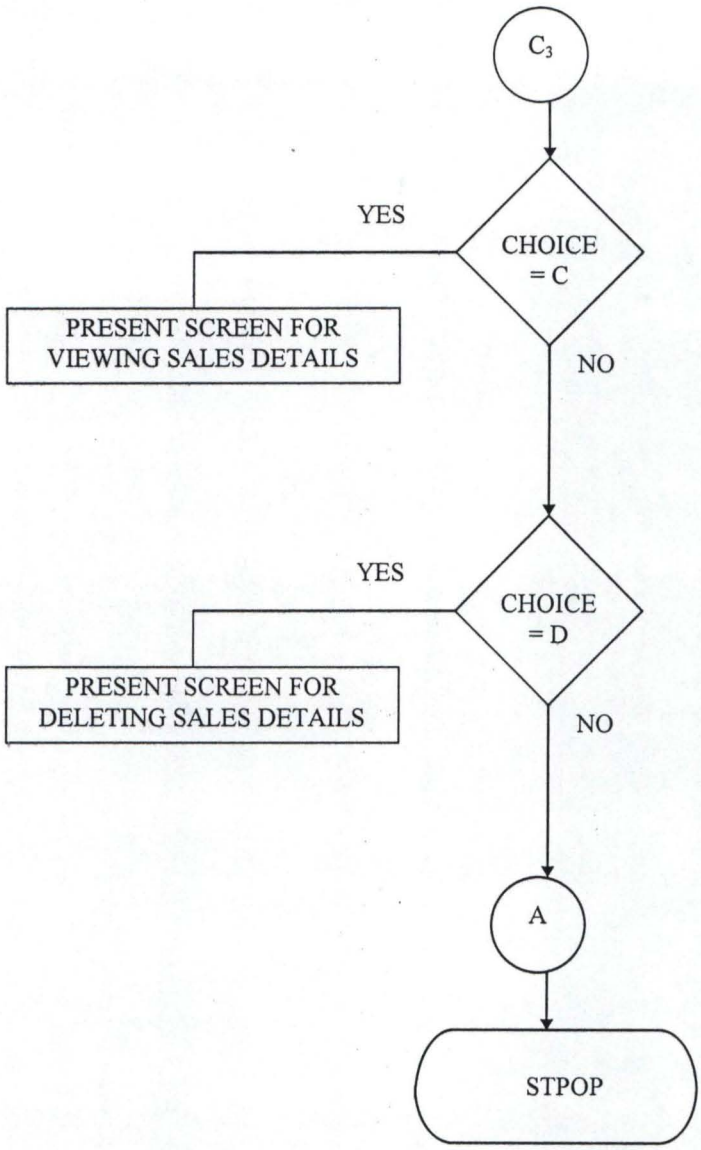
APPENDIX I (SYSTEMS FLOWCHART)

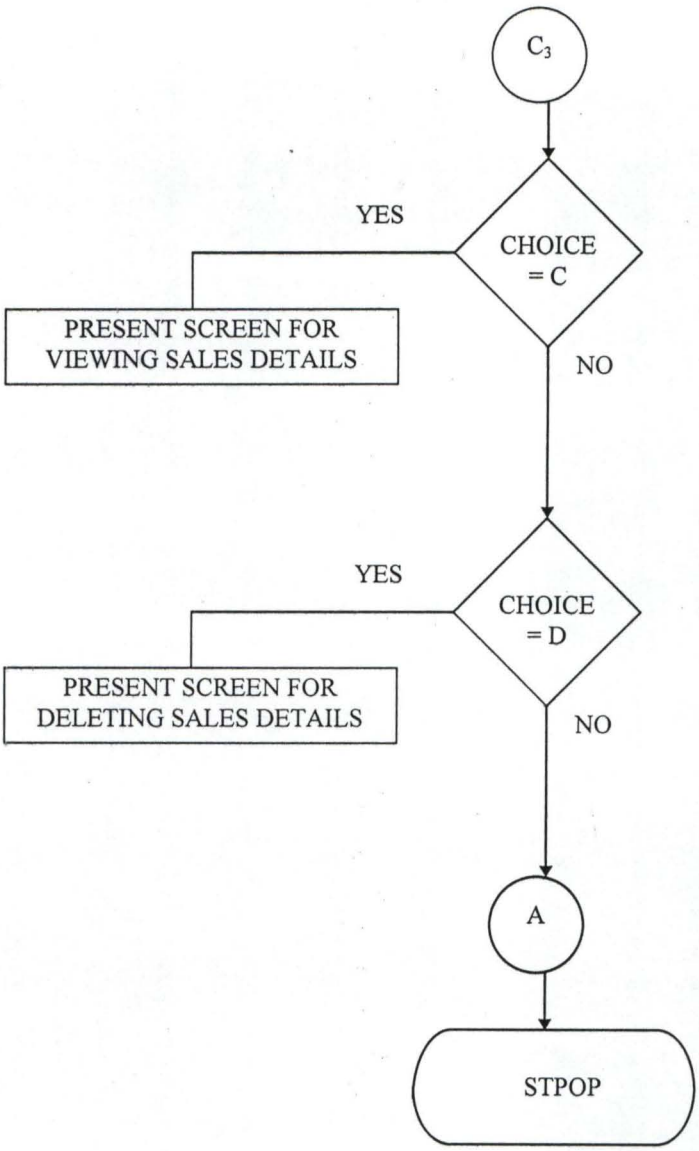


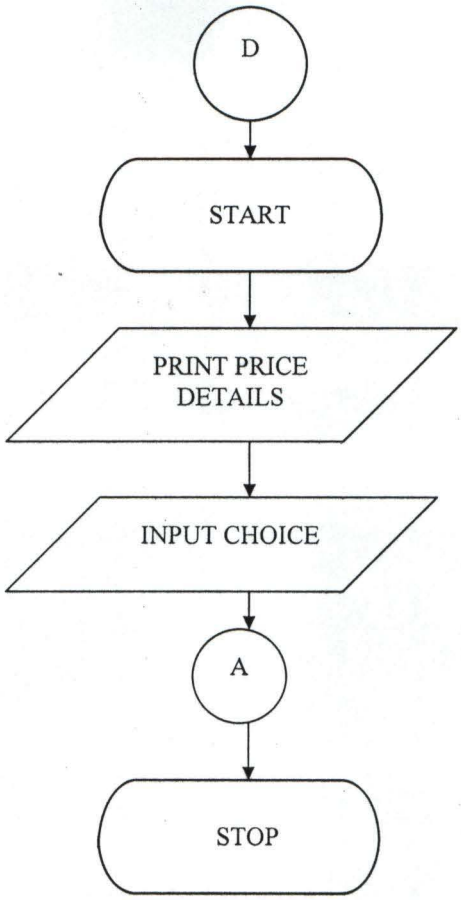

C1
YES
E
CHOICE
= D
NO
YES
F
CHOICE
= E
NO
RETURN
STOP

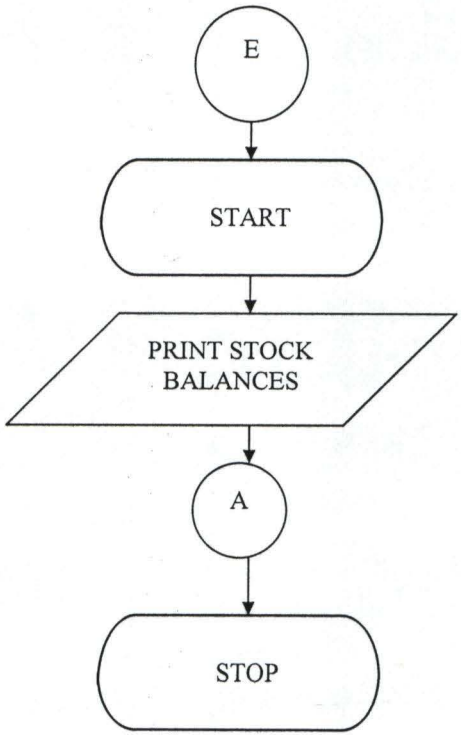

B
START
PRINT PRODUCTION UPDATE MENU
INPUT CHOICE
CHOICE = A
YES
NO
PRESENT SCREEN FOR NEW PRODUCTION ENTRY
A
CHOICE = B
YES
NO
PRESENT SCREEN FOR EDITRY PRODUCTION DETAILS
A
C2

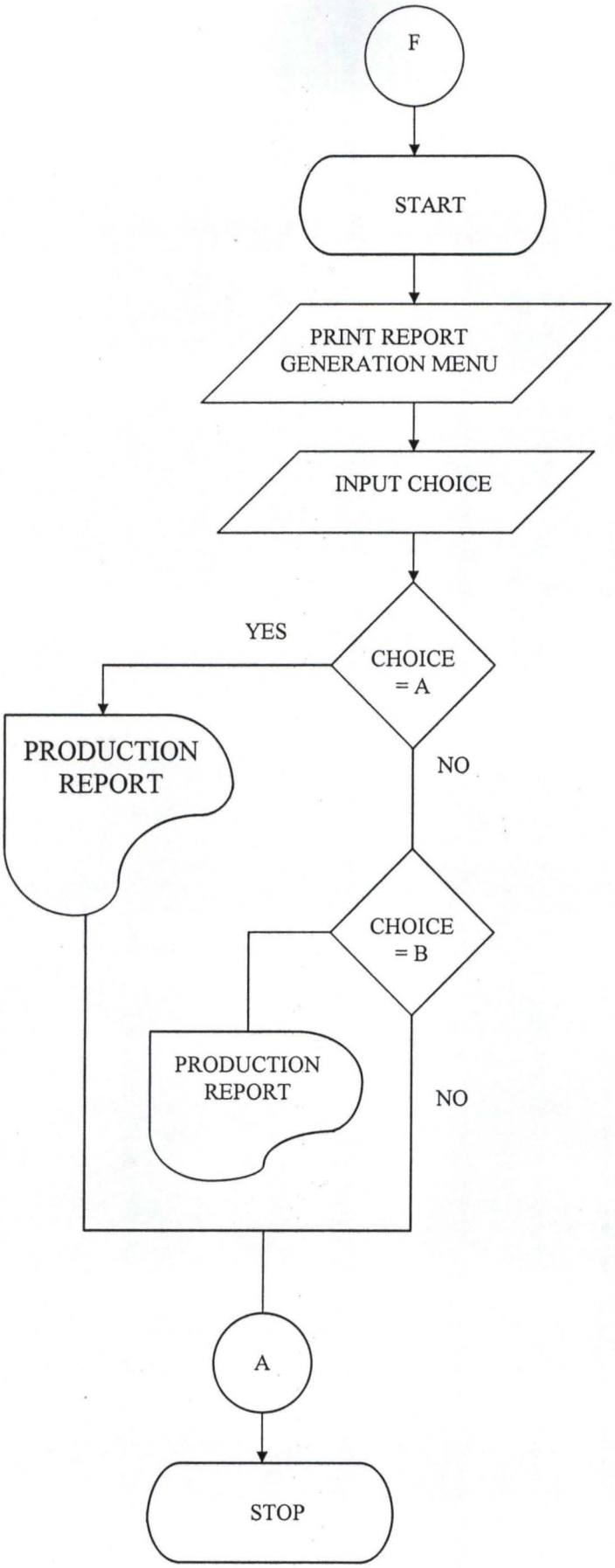

C2
CHOICE = C
YES
NO
PRESENT SCREEN FOR VIEWING PRODUCTION DETAILS
A
CHOICE = D
YES
NO
PRESENT SCREEN FOR ERASING PROUCTION DETAILS
A
A
STOP


C3
CHOICE = C
YES
PRESENT SCREEN FOR VIEWING SALES DETAILS
NO
CHOICE = D
YES
PRESENT SCREEN FOR DELETING SALES DETAILS
NO
A
STPOP


C3
YES
CHOICE = C
PRESENT SCREEN FOR VIEWING SALES DETAILS
NO
YES
CHOICE = D
PRESENT SCREEN FOR DELETING SALES DETAILS
NO
A
STPOP


D
START
PRINT PRICE DETAILS
INPUT CHOICE
A
STOP


E
START
PRINT STOCK BALANCES
A
STOP


F
START
PRINT REPORT
GENERATION MENU
INPUT CHOICE
YES
CHOICE
= A
PRODUCTION
REPORT
NO
CHOICE
= B
PRODUCTION
REPORT
NO
A
STOP

APPENDIX II

```
set talk off
set scor off
set safe off
set bell off
set stat off
set date brit
set proc to general
set devi to scre
do whil .t.
 clea
 @ 1,10 to 24,69 doub
 @ 0,15 to 2,64 doub
 @ 1,16 say 'COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM'
 @ 3,16 to 5,63
 @ 4,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
 @ 7,35 say 'MAIN MENU'
 @ 8,25 to 20,54
 @ 9,27 say 'A ----- PRODUCTION UPDATE'
 @ 11,27 say 'B ----- SALES UPDATE'
 @ 13,27 say 'C ----- PRICE DETAILS'
 @ 15,27 say 'D ----- STOCK ENQUIRY'
 @ 17,27 say 'E ----- REPORTS GENERATION'
 @ 19,27 say 'Q ----- QUIT'
 @ 22,33 say 'PICK CHOICE:'
 do whil .t.
  resp = ' '
  @ 22,46 get resp pict '!'
  read
  if resp $ 'ABCDEQ'
   exit
  endi
 endd
 do case
  case resp = 'A'
   do prod
  case resp = 'B'
   do sales
  case resp = 'C'
   do price
  case resp = 'D'
   do enquiry
```

```
   case resp = 'E'
     do report
   othe
     exit
  endc
endd
clea
retu


PROC PROD4

sele 1
  use produce
sele 2
  use product
sele 1
do whil .t.
  clea
  @ 2,10 to 20,69 doub
  @ 16,11 to 16,68 doub
  @ 1,16 to 3,63 doub
  @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 5,26 say 'DELETING PRODUCTION DETAILS'
  @ 6,26 to 6,52
  @ 8,12 say 'DELIVERY NOTE NO (Enter "XXXX" To Exit):'
  mdnn = '    '
  @ 8,53 get mdnn pict '@!'
  read
  if mdnn = 'XXXX'
    exit
  endi
  go top
  loca for dnn = mdnn
  if .not. foun()
    @ 18,17 say 'DELIVERY NOTE DOES NOT EXIST - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    loop
  endi
  mqprod = qprod
  mcode = code
  mpno = pnumb
```

```
  mpdate=pdate
  sele 2
  go top
  loca for code=mcode
  mdescr=descr
  mtqty=tqty
  @ 10,12 say 'PRODUCTION NUMBER:' get mpno pict '@!'
  @ 10,40 say 'PRODUCTION DATE:' get mpdate
  @ 12,22 say 'PRODUCT CODE:' get mcode
  @ 12,40 say '-'+' '+mdescr
  @ 14,12 say 'QUANTITY:' get mqprod pict '999,999,999'
  @ 14,35 say 'BALANCE:' get mtqty pict '999,999,999'
  clea gets
  @ 18,20 say 'TO DELETE PRODUCTION DETAILS (Y or N):'
  do whil .t.
    resp=' '
    @ 18,59 get resp pict '!'
    read
    if resp $ 'YN'
      exit
    endi
  endd
  if resp='Y'
    mtqty=mtqty-mqprod
    repl tqty with mtqty
    sele 1
    repl dnn with mdnn,pnumb with mpnumb,pdate with mpdate
    repl code with mcode,qprod with mqprod
  else
    sele 1
  endi
endd
clos all
clea
retu


PROC PROD2

sele 1
  use produce
sele 2
  use product
sele 1
```

```
do whil .t.
 clea
 @ 2,10 to 20,69 doub
 @ 16,11 to 16,68 doub
 @ 1,16 to 3,63 doub
 @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
 @ 5,27 say 'EDITING PRODUCTION DETAILS'
 @ 6,27 to 6,52
 @ 8,12 say 'DELIVERY NOTE NO (Enter "XXXX" To Exit):'
 mdnn = '    '
 @ 8,53 get mdnn pict '@!'
 read
 if mdnn = 'XXXX'
  exit
 endi
 go top
 loca for dnn = mdnn
 if .not. foun()
  @ 18,17 say 'DELIVERY NOTE DOES NOT EXIST - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
 endi
 mqprod = qprod
 mqprod2 = qprod
 mcode = code
 mcode2 = code
 mpno = pnumb
 mpdate = pdate
 sele 2
 go top
 loca for code = mcode
 mdescr = descr
 mtqty = tqty
 @ 10,12 say 'PRODUCTION NUMBER:' get mpno pict '@!'
 @ 10,40 say 'PRODUCTION DATE:' get mpdate
 @ 12,22 say 'PRODUCT CODE:' get mcode
 @ 12,40 say '-' + ' ' + mdescr
 @ 14,12 say 'QUANTITY:' get mqprod pict '999,999,999'
 @ 14,35 say 'BALANCE:' get mtqty pict '999,999,999'
 clea gets
 @ 10,32 get mpno pict '@!'
 @ 10,57 get mpdate
```

```
read
do whil .t.
  @ 12,36 get mcode
  read
  sele 2
  go top
  loca for code=mcode
  if .not. foun()
    @ 18,22 say 'INVALID PRODUCT CODE - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    mcode=' '
    @ 18,20 clea to 18,59
    loop
  endi
  exit
endd
mdescr=descr
mtqty=tqty
@ 12,40 say '-'+' '+mdescr
@ 14,22 get mqprod pict '999,999,999'
read
if mcode=mcode2
  mtqty=mtqty-mqprod2
endi
mtqty=mtqty+mqprod
@ 14,44 get mtqty pict '999,999,999'
clea gets
@ 18,20 say '(S)AVE  or  (A)BANDON  -  Pick Choice:'
do whil .t.
  resp=' '
  @ 18,59 get resp pict '!'
  read
  if resp $ 'SA'
    exit
  endi
endd
if resp='S'
  repl tqty with mtqty
  if mcode<>mcode2
    loca for code=mcode2
    mtqty=mtqty-mqprod2
    repl tqty with mtqty
```

```
    endi
    sele 1
    repl dnn with mdnn,pnumb with mpnumb,pdate with mpdate
    repl code with mcode,qprod with mqprod
  else
    sele 1
  endi
endd
clos all
clea
retu


PROC REPORT

set talk off
set scor off
set safe off
set bell off
set stat off
set date brit
do whil .t.
  clea
  @ 4,10 to 21,69 doub
  @ 3,15 to 5,64 doub
  @ 4,16 say 'COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM'
  @ 6,16 to 8,63
  @ 7,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 10,29 say 'REPORT GENERATION MENU'
  @ 11,26 to 17,53
  @ 12,27 say 'A ----- PRODUCTION REPORT'
  @ 14,27 say 'B ----- SALES REPORT'
  @ 16,27 say 'E ----- EXIT'
  @ 19,33 say 'PICK CHOICE:'
  do whil .t.
    resp = ' '
    @ 19,46 get resp pict '!'
    read
    if resp $ 'ABE'
      exit
    endi
  endd
  do case
    case resp = 'A'
```

```
    do rep1
   case resp='B'
    do rep2
   othe
    exit
  endc
endd
clea
retu


PROC PRICE

  clea
  @ 1,10 to 24,69 doub
  @ 0,15 to 2,64 doub
  @ 1,16 say 'COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM'
  @ 3,16 to 5,63
  @ 4,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 7,30 say 'PRICE DETAILS SCREEN'
  @ 8,20 to 19,59 doub
  use product
  @ 9,25 to 11,38
  @ 9,46 to 11,54
  @ 10,26 say 'PRODUCT NAME'
  @ 10,48 say 'PRICE'
  r=11
decl mprice[3]
k=1
do whil .not. eof()
  mprice[k]=price
  mdescr=descr
  r=r+2
  @ r,24 say mdescr
  @ r,45 get mprice[k] pict '999,999.99'
  skip
  k=k+1
endd
clea gets
go top
k=1
r=11
do whil k<=3
  r=r+2
```

```
  @ r,45 get mprice[k] pict '999,999.99'
  read
  k=k+1
endd
@ 21,20 say '(S)AVE  or  (A)BANDON  -  Pick Choice:'
do whil .t.
  resp=' '
  @ 21,59 get resp pict '!'
  read
  if resp $ 'SA'
    exit
  endi
endd
if resp='S'
  go top
  k=1
  do whil .not. eof()
    repl price with mprice[k]
    skip
    k=k+1
  endd
endi
clos all
clea
retu


PROC SALES4

sele 1
  use sales
sele 2
  use product
sele 1
do whil .t.
  clea
  @ 2,5 to 21,74 doub
  @ 17,6 to 17,73 doub
  @ 1,16 to 3,63 doub
  @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 5,29 say 'VIEWING SALES DETAILS'
  @ 6,29 to 6,49
  @ 8,7 say 'INVOICE NO (or Enter "XXXX" To Exit):'
  minvno='    '
```

```
@ 8,45 get minvno pict '@!'
read
if minvno = 'XXXX'
  exit
endi
go top
loca for invno = minvno
if .not. foun()
  @ 19,20 say 'INVOICE DOES NOT EXIST - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
endi
mqsold = qsold
msvalue = svalue
mcode = code
msdate = sdate
mcname = cname
mcaddr = caddr
sele 2
go top
loca for code = mcode
mdescr = descr
mtqty = tqty
mprice = price
@ 10,10 say "CUSTOMER'S NAME"
@ 10,40 say "CUSTOMER'S ADDRESS"
@ 11,7 get mcname pict '@!'
@ 11,36 get mcaddr pict '@!'
@ 13,7 say 'PRODUCT CODE:' get mcode
@ 13,25 say '-' + ' ' + rtrim(mdescr)
@ 13,48 say 'DATE OF SALES:' get msdate
@ 15,13 say 'QUANTITY:' get mqsold pict '999,999,999'
msvalue = mqsold * mprice
mtqty = mtqty-mqsold
@ 15,40 say 'SALES VALUE:'
@ 15,53 say '#'
@ 15,54 get msvalue pict '9,999,999.99'
clea gets
@ 19,20 say 'TO DELETE PRODUCTION DETAILS (Y or N):'
do whil .t.
 resp = ' '
 @ 19,59 get resp pict '!'
```

```
    read
    if resp $ 'YN'
      exit
    endi
  endd
  if resp = 'Y'
    mtqty = mtqty-mqprod
    repl tqty with mtqty
    sele 1
    repl dnn with mdnn,pnumb with mpnumb,pdate with mpdate
    repl code with mcode,qprod with mqprod
  else
    sele 1
  endi
endd
clos all
clea
retu


PROC PROD

set talk off
set scor off
set safe off
set bell off
set stat off
set date brit
do whil .t.
  clea
  @ 2,10 to 23,69 doub
  @ 1,15 to 3,64 doub
  @ 2,16 say 'COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM'
  @ 4,16 to 6,63
  @ 5,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 8,29 say 'PRODUCTION UPDATE MENU'
  @ 9,23 to 19,56
  @ 10,24 say 'A ----- NEW PRODUCTION ENTRY'
  @ 12,24 say 'B ----- EDIT PRODUCTION DETAILS'
  @ 14,24 say 'C ----- VIEW PRODUCTION DETAILS'
  @ 16,24 say 'D ----- ERASE PRODUCTION DETAILS'
  @ 18,24 say 'E ----- EXIT'
  @ 21,33 say 'PICK CHOICE:'
  do whil .t.
```

```
   resp = ' '
   @ 21,46 get resp pict '!'
   read
   if resp $ 'ABCDE'
     exit
   endi
  endd
  do case
   case resp = 'A'
     do prod1
   case resp = 'B'
     do prod2
   case resp = 'C'
     do prod3
   case resp = 'D'
     do prod4
   othe
     exit
  endc
endd
clea
retu


PROC PROD1

sele 1
 use produce
sele 2
 use product
sele 1
do whil .t.
 clea
 @ 2,10 to 20,69 doub
 @ 16,11 to 16,68 doub
 @ 1,16 to 3,63 doub
 @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
 @ 5,30 say 'NEW PRODUCTION ENTRY'
 @ 6,30 to 6,49
 @ 8,12 say 'DELIVERY NOTE NO (Enter "XXXX" To Exit):'
 mdnn = '    '
 @ 8,53 get mdnn pict '@!'
 read
 if mdnn = 'XXXX'
```

```
  exit
endi
go top
loca for dnn=mdnn
if foun()
  @ 18,17 say 'DELIVERY NOTE ALREADY ENTERED - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
endi
mqprod=0
mcode='  '
mpno='      '
mpdate=ctod('  /  /  ')
@ 10,12 say 'PRODUCTION NUMBER:' get mpno pict '@!'
@ 10,40 say 'PRODUCTION DATE:' get mpdate
read
@ 12,22 say 'PRODUCT CODE:'
do whil .t.
  @ 12,36 get mcode
  read
  sele 2
  go top
  loca for code=mcode
  if .not. foun()
    @ 18,22 say 'INVALID PRODUCT CODE - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    mcode='  '
    @ 18,20 clea to 18,59
    loop
  endi
  exit
endd
mdescr=descr
mtqty=tqty
@ 12,40 say '-'+'  '+mdescr
@ 14,12 say 'QUANTITY:' get mqprod pict '999,999,999'
read
mtqty=mtqty+mqprod
@ 14,35 say 'BALANCE:' get mtqty pict '999,999,999'
clea gets
```

```
 @ 18,20 say '(S)AVE  or  (A)BANDON  -  Pick Choice:'
 do whil .t.
   resp=' '
   @ 18,59 get resp pict '!'
   read
   if resp $ 'SA'
     exit
   endi
 endd
 if resp='S'
   repl tqty with mtqty
   sele 1
   appe blan
   repl dnn with mdnn,pnumb with mpno,pdate with mpdate
   repl code with mcode,qprod with mqprod
 else
   sele 1
 endi
endd
clos all
clea
retu


PROC SALES1

sele 1
 use sales
sele 2
 use product
sele 1
do whil .t.
 clea
 @ 2,5 to 21,74 doub
 @ 17,6 to 17,73 doub
 @ 1,16 to 3,63 doub
 @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
 @ 5,32 say 'NEW SALES ENTRY'
 @ 6,32 to 6,46
 @ 8,7 say 'INVOICE NO (or Enter "XXXX" To Exit):'
 minvno='    '
 @ 8,45 get minvno pict '@!'
 read
 if minvno='XXXX'
```

```
  exit
endi
go top
loca for invno = minvno
if foun()
  @ 19,20 say 'INVOICE ALREADY ENTERED - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
endi
mqsold = 0
msvalue = 0
mcode = '  '
msdate = ctod('  /  /  ')
mcname = spac(25)
mcaddr = spac(35)
@ 10,10 say "CUSTOMER'S NAME"
@ 10,40 say "CUSTOMER'S ADDRESS"
@ 11,7 get mcname pict '@!'
@ 11,36 get mcaddr pict '@!'
read
@ 13,7 say 'PRODUCT CODE:'
do whil .t.
  @ 13,21 get mcode
  read
  sele 2
  go top
  loca for code = mcode
  if .not. foun()
    @ 19,22 say 'INVALID PRODUCT CODE - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    mcode = '  '
    @ 19,20 clea to 19,59
    loop
  endi
  exit
endd
mdescr = descr
mtqty = tqty
mprice = price
@ 13,25 say '-' + '  ' + rtrim(mdescr)
```

```
@ 13,48 say 'DATE OF SALES:' get msdate
read
@ 15,13 say 'QUANTITY:' get mqsold pict '999,999,999'
read
msvalue = mqsold * mprice
mtqty = mtqty-mqsold
@ 15,40 say 'SALES VALUE:'
@ 15,53 say '#'
@ 15,54 get msvalue pict '9,999,999.99'
clea gets
@ 19,20 say '(S)AVE  or  (A)BANDON  -  Pick Choice:'
do whil .t.
  resp = ' '
  @ 19,59 get resp pict '!'
  read
  if resp $ 'SA'
    exit
  endi
endd
if resp = 'S'
  repl tqty with mtqty
  sele 1
  appe blan
  repl invno with minvno,code with mcode,sdate with msdate
  repl svalue with msvalue,qsold with mqsold,cname with mcname
  repl caddr with mcaddr
else
  sele 1
endi
endd
clos all
clea
retu


PROC REP1

@ 9,26 clea to 20,53
@ 14,17 say 'ENTER MONTH TO PRINT (PRESS "99" TO EXIT):'
do whil .t.
 mth = 0
 @ 14,60 get mth pict '99'
 read
 if mth = 99
```

```
  clea
  retu
 endi
 if mth > = 1 .and. mth < = 12
   exit
 endi
endd
if mth = 99
 clea
 retu
endi
if mth = 1
 cmth = 'JANUARY'
endi
if mth = 2
 cmth = 'FEBRUARY'
endi
if mth = 3
 cmth = 'MARCH'
endi
if mth = 4
 cmth = 'APRIL'
endi
if mth = 5
 cmth = 'MAY'
endi
if mth = 6
 cmth = 'JUNE'
endi
if mth = 7
 cmth = 'JULY'
endi
if mth = 8
 cmth = 'AUGUST'
endi
if mth = 9
 cmth = 'SEPTEMBER'
endi
if mth = 10
 cmth = 'OCTOBER'
endi
if mth = 11
 cmth = 'NOVEMBER'
endi
```

```
if mth = 12
  cmth = 'DECEMBER'
endi
use produce
loca for month(pdate) = mth
if .not. foun()
  use
  clea
  retu
endi
use produce
sort on pdate,code to temp.dbf
use
sele 1
  use temp
sele 2
  use product
set devi to prin
@ 1,22 say 'PRODUCTION DETAILS AS AT ' + cmth
sele 1
loca for month(pdate) = mth
mcode = code
sele 2
go top
loca for code = mcode
mdescr = descr
mtqty = tqty
@ 3,0 say 'PRODUCT TYPE: ' + mdescr
@ 5,0 say repl('-',80)
@ 6,0 say 'S/NO | DATE OF PRODUCTION | DELIVERY NOTE NO | PRODUCTION
NO'
@ 6,61 say '| QTY PRODUCED'
@ 7,0 say repl('-',80)
sno = 0
r = 7
sele 1
do whil .not. eof()
  r = r + 1
  sno = sno + 1
  mdnn = dnn
  mpno = pnumb
  mpdate = pdate
  mcode = code
  mqprod = qprod
```

```
 @ r,1 say sno pict '999'
 @ r,5 say '|'
 @ r,11 say mpdate
 @ r,26 say '|'
 @ r,33 say mdnn
 @ r,45 say '|'
 @ r,50 say mpno
 @ r,61 say '|'
 @ r,67 say mqprod
 skip
 if code< >mcode
  r=r+1
  @ r,0 say repl('-',80)
  r=r+1
  @ r,20 say 'BALANCE IN STOCK -'
  @ r,50 say mtqty pict '999,999,999'
  r=r+1
  @ r,0 say repl('=',80)
  qty=0
  ejec
  mcode=code
  sele 2
  go top
  loca for code=mcode
  mdescr=descr
  mtqty=tqty
  sele 1
  set devi to scre
  @ 12,22 say 'INSERT ANOTHER PAPER - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  set devi to prin
  @ 1,22 say 'PRODUCTION DETAILS AS AT '+cmth
  @ 3,0 say 'PRODUCT TYPE: '+mdescr
  @ 5,0 say repl('-',80)
  @ 6,0 say 'S/NO | DATE OF PRODUCTION | DELIVERY NOTE NO |
PRODUCTION NO'
  @ 6,61 say '| QTY PRODUCED'
  @ 7,0 say repl('-',80)
  r=7
  sno=0
 endi
endd
```

```
ejec
set devi to scre
@ 12,19 say 'PRINTING JOB IS COMPLETED - PRESS ANY KEY'
clos all
clea
retu


PROC SALES

set talk off
set scor off
set safe off
set bell off
set stat off
set date brit
do whil .t.
  clea
  @ 2,10 to 23,69 doub
  @ 1,15 to 3,64 doub
  @ 2,16 say 'COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM'
  @ 4,16 to 6,63
  @ 5,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 8,31 say 'SALES UPDATE MENU'
  @ 9,25 to 19,53
  @ 10,26 say 'A ----- NEW SALES ENTRY'
  @ 12,26 say 'B ----- EDIT SALES DETAILS'
  @ 14,26 say 'C ----- VIEW SALES DETAILS'
  @ 16,26 say 'D ----- ERASE SALES DETAILS'
  @ 18,26 say 'E ----- EXIT'
  @ 21,33 say 'PICK CHOICE:'
  do whil .t.
    resp = ' '
    @ 21,46 get resp pict '!'
    read
    if resp $ 'ABCDE'
      exit
    endi
  endd
  do case
    case resp = 'A'
      do sales1
    case resp = 'B'
      do sales2
```

```
   case resp='C'
     do sales3
   case resp='D'
     do sales4
   othe
     exit
  endc
endd
clea
retu


PROC SALES3

sele 1
  use sales
sele 2
  use product
sele 1
do whil .t.
  clea
  @ 2,5 to 21,74 doub
  @ 17,6 to 17,73 doub
  @ 1,16 to 3,63 doub
  @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 5,29 say 'VIEWING SALES DETAILS'
  @ 6,29 to 6,49
  @ 8,7 say 'INVOICE NO (or Enter "XXXX" To Exit):'
  minvno='    '
  @ 8,45 get minvno pict '@!'
  read
  if minvno='XXXX'
    exit
  endi
  go top
  loca for invno=minvno
  if .not. foun()
    @ 19,20 say 'INVOICE DOES NOT EXIST - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    loop
  endi
  mqsold=qsold
```

```
 msvalue = svalue
 mcode = code
 msdate = sdate
 mcname = cname
 mcaddr = caddr
 sele 2
 go top
 loca for code = mcode
 mdescr = descr
 mtqty = tqty
 mprice = price
 @ 10,10 say "CUSTOMER'S NAME"
 @ 10,40 say "CUSTOMER'S ADDRESS"
 @ 11,7 get mcname pict '@!'
 @ 11,36 get mcaddr pict '@!'
 @ 13,7 say 'PRODUCT CODE:' get mcode
 @ 13,25 say '-' + ' ' + rtrim(mdescr)
 @ 13,48 say 'DATE OF SALES:' get msdate
 @ 15,13 say 'QUANTITY:' get mqsold pict '999,999,999'
 msvalue = mqsold * mprice
 mtqty = mtqty-mqsold
 @ 15,40 say 'SALES VALUE:'
 @ 15,53 say '#'
 @ 15,54 get msvalue pict '9,999,999.99'
 clea gets
 @ 19,21 say 'VIEWING SALES DETAILS - PRESS ANY KEY'
 set cons off
 wait
 set cons on
 sele 1
endd
clos all
clea
retu


PROC REP2

@ 9,17 clea to 20,63
@ 12,9 say 'ENTER DATE TO START FROM (PRESS "99/99/99" TO EXIT):'
do whil .t.
 mdate = spac(8)
*  mdate = dtoc('  /  /  ')
 @ 12,62 get mdate pict '99/99/99'
```

```
read
if mdate='99/99/99'
  clea
  retu
endi
use sales
loca for sdate>=ctod(mdate)
if .not. foun()
  @ 12,7 clea to 12,71
  @ 12,21 say 'RECORDS NOT AVAILABLE - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
 endi
 exit
endd
@ 12,7 clea to 12,71
use sales
sort on sdate,code to temp.dbf
use
sele 1
 use temp
sele 2
 use product
set devi to prin
cmth=cmonth(ctod(mdate))
@ 1,20 say 'SALES DETAILS AS AT '+cmth
sele 1
loca for sdate>=ctod(mdate)
mcode=code
sele 2
go top
loca for code=mcode
mdescr=descr
mtqty=tqty
@ 3,15 say 'PRODUCT TYPE: '+mdescr
@ 5,15 say repl('-',50)
@ 6,15 say 'S/NO | DATE OF SALES | QUANTITY SOLD | SALES VALUE'
@ 7,15 say repl('-',50)
sno=0
r=7
sele 1
do whil .not. eof()
```

```
r=r+1
sno=sno+1
minvno=invno
msdate=sdate
mcode=code
mqsold=qsold
msvalue=svalue
@ r,16 say sno pict '999'
@ r,20 say '|'
@ r,24 say msdate
@ r,36 say '|'
@ r,39 say mqsold
@ r,52 say '|'
@ r,54 say msvalue
skip
if code<>mcode
 r=r+1
 @ r,15 say repl('-',50)
 r=r+1
 @ r,20 say 'BALANCE IN STOCK -'
 @ r,50 say mtqty pict '999,999,999'
 r=r+1
 @ r,15 say repl('=',50)
 qty=0
 ejec
 mcode=code
 sele 2
 go top
 loca for code=mcode
 mdescr=descr
 mtqty=tqty
 sele 1
 set devi to scre
 @ 12,22 say 'INSERT ANOTHER PAPER - PRESS ANY KEY'
 set cons off
 wait
 set cons on
 set devi to prin
 @ 1,20 say 'SALES DETAILS AS AT '+cmth
 @ 3,15 say 'PRODUCT TYPE: '+mdescr
 @ 5,15 say repl('-',50)
 @ 6,15 say 'S/NO | DATE OF SALES | QUANTITY SOLD | SALES VALUE'
 @ 7,15 say repl('-',50)
 sno=0
```

```
  r=7
  sele 1
 endi
endd
ejec
set devi to scre
@ 12,19 say 'PRINTING JOB IS COMPLETED - PRESS ANY KEY'
clos all
clea
retu


PROC REP

set talk off
set scor off
set safe off
set bell off
set stat off
set date brit
do whil .t.
 clea
 @ 2,10 to 23,69 doub
 @ 1,15 to 3,64 doub
 @ 2,16 say 'COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM'
 @ 4,16 to 6,63
 @ 5,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
 @ 8,34 say 'REPORT MENU'
 @ 11,26 to 17,53
 @ 12,27 say 'A ----- PRODUCTION REPORT'
 @ 14,27 say 'B ----- SALES REPORT'
 @ 16,27 say 'E ----- EXIT'
 @ 21,33 say 'PICK CHOICE:'
 do whil .t.
  resp=' '
  @ 21,46 get resp pict '!'
  read
  if resp $ 'ABE'
   exit
  endi
 endd
 do case
  case resp='A'
   do rep1
```

```
   case resp = 'B'
     do rep2
   othe
     exit
  endc
endd
clea
retu


PROC PROD3

sele 1
  use produce
sele 2
  use product
sele 1
do whil .t.
  clea
  @ 2,10 to 20,69 doub
  @ 16,11 to 16,68 doub
  @ 1,16 to 3,63 doub
  @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
  @ 5,27 say 'VIEWING PRODUCTION DETAILS'
  @ 6,27 to 6,52
  @ 8,12 say 'DELIVERY NOTE NO (Enter "XXXX" To Exit):'
  mdnn = '    '
  @ 8,53 get mdnn pict '@!'
  read
  if mdnn = 'XXXX'
    exit
  endi
  go top
  loca for dnn = mdnn
  if .not. foun()
    @ 18,17 say 'DELIVERY NOTE DOES NOT EXIST - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    loop
  endi
  mqprod = qprod
  mcode = code
  mpno = pnumb
```

```
 mpdate=pdate
 sele 2
 go top
 loca for code=mcode
 mdescr=descr
 mtqty=tqty
 @ 10,12 say 'PRODUCTION NUMBER:' get mpno pict '@!'
 @ 10,40 say 'PRODUCTION DATE:' get mpdate
 @ 12,22 say 'PRODUCT CODE:' get mcode
 @ 12,40 say '-'+' '+mdescr
 @ 14,12 say 'QUANTITY:' get mqprod pict '999,999,999'
 @ 14,35 say 'BALANCE:' get mtqty pict '999,999,999'
 clea gets
 @ 18,19 say 'VIEWING PRODUCTION DETAILS - PRESS ANY KEY'
 set cons off
 wait
 set cons on
 sele 1
endd
clos all
clea
retu


PROC ENQUIRY

 clea
 @ 1,10 to 24,69 doub
 @ 0,15 to 2,64 doub
 @ 1,16 say 'COMPUTERISED PRODUCTION AND STOCK CONTROL SYSTEM'
 @ 3,16 to 5,63
 @ 4,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
 @ 7,30 say 'STOCK ENQUIRY SCREEN'
 @ 8,20 to 19,59 doub
 use product
 @ 9,25 to 11,38
 @ 9,46 to 11,54
 @ 10,26 say 'PRODUCT NAME'
 @ 10,47 say 'BALANCE'
 r=11
do whil .not. eof()
 mtqty=tqty
 mdescr=descr
 r=r+2
```

```
 @ r,24 say mdescr
 @ r,45 get mtqty pict '999,999,999'
 skip
endd
clea gets
@ 21,25 say 'VIEWING RECORD - PRESS ANY KEY'
set cons off
wait
set cons on
use
retu


PROC SALES2

sele 1
 use sales
sele 2
 use product
sele 1
do whil .t.
 clea
 @ 2,5 to 21,74 doub
 @ 17,6 to 17,73 doub
 @ 1,16 to 3,63 doub
 @ 2,17 say 'NIGER STATE DETERGENT INDUSTRIES LIMITED, BIDA'
 @ 5,30 say 'EDITING SALES ENTRY'
 @ 6,30 to 6,48
 @ 8,7 say 'INVOICE NO (or Enter "XXXX" To Exit):'
 minvno = '    '
 @ 8,45 get minvno pict '@!'
 read
 if minvno = 'XXXX'
  exit
 endi
 go top
 loca for invno = minvno
 if .not. foun()
  @ 19,20 say 'INVOICE DOES NOT EXIST - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  loop
 endi
```

```
mqsold = qsold
msvalue = svalue
mcode = code
msdate = sdate
mcname = cname
mcaddr = caddr
@ 10,10 say "CUSTOMER'S NAME"
@ 10,40 say "CUSTOMER'S ADDRESS"
@ 11,7 get mcname pict '@!'
@ 11,36 get mcaddr pict '@!'
@ 13,7 say 'PRODUCT CODE:'
@ 13,21 get mcode
read
sele 2
go top
loca for code = mcode
mdescr = descr
mtqty = tqty
mprice = price
@ 13,25 say '-' + ' ' + rtrim(mdescr)
@ 13,48 say 'DATE OF SALES:' get msdate
@ 15,13 say 'QUANTITY:' get mqsold pict '999,999,999'
msvalue = mqsold * mprice
mtqty = mtqty-mqsold
@ 15,40 say 'SALES VALUE:'
@ 15,53 say '#'
@ 15,54 get msvalue pict '9,999,999.99'
clea gets
@ 19,20 say '(S)AVE  or  (A)BANDON  -  Pick Choice:'
do whil .t.
  resp = ' '
  @ 19,59 get resp pict '!'
  read
  if resp $ 'SA'
    exit
  endi
endd
if resp = 'S'
  repl tqty with mtqty
  sele 1
  repl invno with minvno,code with mcode,sdate with msdate
  repl svalue with msvalue,qsold with mqsold
else
  sele 1
```

```
  endi
endd
clos all
clea
retu
```