COMPUTERIZED PRODUCT DISTRIBUTION SYSTEM
A CASE STUDY OF CADBURY NIGERIA PLC
IKEJA – LAGOS

BY

UDOH, DOMINIC PATRICK
PGD/MCS/98/99/744

DEPARTMENT OF MATHEMATICS/COMPUTER SCIENCE
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

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A PROJECT SUBMITTED TO
DEPARTMENT OF MATHEMATICS/COMPUTER SCIENCE
SCHOOL OF SCIENCE/SCIENCE EDUCATION
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF A POST GRADUATE DIPLOMA IN COMPUTER SCIENCE.

APRIL 2002

CERTIFICATION PAGE

This is to certify that this project work has been carried out under my supervision by UDOH, DOMINIC PATRICK of Department of Mathematics/Computer Science, Federal University of Technology, Minna.

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Mallam Isah Audu Date
(Project Supervisor)

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L. N. Ezeako Date
(Head of Department)

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External Examiner Date.

DEDICATION

This project is dedicated to Almighty God for the grace given me to undergo this course and also to my wife and children for their moral support throughout the period of this programme.

ACKNOWLEDGEMENT

To God be the glory for the successful completion of this programme.

My special thanks and appreciation go to the Acting head of department of Mathematics and computer Science, Mr. L.N. Ezeako for his useful advice and encouragement during the period of this programme. The effort, assistance and co-operation of my supervisor Mallam Isah Audu who painstakingly read through the manuscript and offered useful advice and contributions despite his crowded academic programmes is greatly acknowledged and appreciated.

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Lastly and by no means the least, I acknowledge and appreciate in a special way, the effort and moral support of my beloved wife and children.

May God Almighty reward you all abundantly in Jesus Name. Amen.

ABSTRACT

Most manufacturing industries are always faced with the problem of production due to lack of ready-made sales outlets for their products. As a result of this, these industries use agents as distributors for the sale of their products to the wholesalers before the goods get to the ultimate consumers.

Cadbury Nigeria PLC is one of the industries that use distributors as the first channel in the chain of distribution. In this case, a potential distributor is expected to register and deposit some amount with the organisation.

However, the major problem faced by the organisation is lack of monitoring and control of the agents (distributors). The basis of this problem is the manual method of record keeping of activities between the distributors and the organisation. There is improper record keeping technique.

This problem therefore, necessitated the design of a computerised product distribution process for Cadbury Nigeria PLC which is intended to be achieved using a database management package.

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GENERAL INTRODUCTION

1.0 Introduction:

Since the existence of Cadbury Nigeria PLC as an organisation that deals on various types of products, its distribution system has been manually operated. Initially, no problem was encountered as far this manually operated system of distribution is concerned.

Over the years, the company had embarked on a number of significant expansion to add new products to its already existing products. As a result of this, new distributors have joined the fold of Cadbury Nigeria Plc distributors hence the management problem of these distributors. This is evident to the fact that there are inaccurate record keeping, loss of records, etc.

The proposed system, computerized product distribution system is therefore necessary in order to address these anomalies.

The project consists of five chapter. Chapter one deals mainly with computer generally, its general application and its application to industry in particular. Chapter two deals with literature review of the method of product distribution system in Cadbury Nigeria Plc while chapter three is about the product distribution system itself. It gives the analysis of the existing, the development of the proposed system, the choice of software application, Input specification and format, Output specification and format, structure of Database files, physical design of the proposed system and cost and benefit analysis. Chapter four deals with software development and implementation while chapter five concerns itself about the limitation, documentation, conclusion and recommendations of the proposed system.

1.1 Computer

In its ordinary meaning, a computer is an instrument or machine that is used to compute or calculate. It can also be defined as a data processing machine which can store and process data based on the logic supplied by the user.

What makes this machine different from all other data processing machines like the calculator, punched card equipment, etc is the concept of storing, within the machine itself are alterable instruction that will direct the machine to perform automatically the necessary processing steps. Thus, the need for manual interferance between data input and information output is eliminated.

In order to facilitate this concept of automatic processing as well as some communication and storage functions, a computer is made up of various physical and abstract components which put together, constitute a computer system. The physical parts, together, are usually referred to as the hardware system and the abstract components, the software system. In other words, the hardware system is that part of the computer system which can be touched, felt and kicked about while the software system refers to various categories of programs that run on the hardware system.

The computer can be digital, analogue or hybrid, that is combination of digital and analogue. The digital and analogue computers are based on common principles but use different methods to represent information or data in order to achieve their goals and as a result, they are generally suited to different applications. The digital computer manipulates discrete values such as 'O' and '1' whilst analogue computer process continuous variables such as voltage, distance, etc. The analogue computer tends to have limited applications which are found mainly in science and engineering design.

From the above definition and explanations, those who have not come in contact with the computer before, should be able to know what computer is and what it does.

As computer have infiltrated the society globally, nowhere have they had more impact than in manufacturing industries. This is due to the fact that using computer, speed up operations, reduces errors in calculations and gives companies efficient and cost effective analysis that would be nearly impossible with manual operations. The dominant effect derived from the usage of computers is its great impact on the manufacturing industries.

These factors have thereby caused a phenomenal increase in the number and types of computer applications in business and industry.

Given the above scenario, the necessity for computerisation arose due to the persistent problem of distribution in manufacturing industries. A lot of retailers and wholesalers are more often than not side-tracked during the distribution process. In addition, some distributors are highly concentrated on, while others are neglected. in some cases, the activities of some distributors are difficult to extract due to manual operation. This therefore brought about the need to computerise the process of distribution of goods and services.

1.1.1 Application of computer in General

It an arduous task to document all areas where computers have been applied because there are too numerous to list. Nevertheless, some of this areas are discussed below:

a. Research and Education :

The most basic function of a computer is to compute or calculate and that is it greatest asset as it can do so fast and accurately. In the development a

theory or hypotheses, researcher is often confronted with masses of data he wants to theorise on. If he has access to computer, he can store the data somewhere in the computer and make of the high speed of computation offered by the computer to examine as many hypothesis as are possible on the data in his pursuance of a possible theory relating to the data. Statistical analysis of data derived from experiment can be very tedious and cumbersome especially when the quantity of data involved is large and many variable are involved in the analysis. A manual analysis will involve hours and possibly days of computational efforts due to care that needs be taken for accurate results to be obtained and low margin of errors that must be achieved. Computers provide very efficient services when it comes to analysing data. They accuracy can be relied upon.

Computers are also very useful in simulation studies, certain problems are amendable to analytic solution either because they cannot posed as closed form mathematically problem or when they could be so posed, they cannot be solved in reasonable time by any known analytic method.

A programmed instruction set on the computer can be used as learning tool by student such a programmed instruction set is called Computer – Aided Instruction (CAI).

Computers are used extensively in accounting, architecture, engineering, law, medicine, office automation, business, Government, military among others.

In Architecture and Engineering, computers are used to aid in the design of bridges, buildings, machines, and son on, by combining various basic element and evaluating their compatibilities in terms of measurements, physical properties, stresses and so on. Some numerical calculation that can be required in estimating parameters used for

evaluating some of the designs involve large – sized differential equations which are too difficult to solve manually. Computers can used to solve such problems. Also in land surveying, measurement taken on the field in large traverses can be computed to produce coordinates and map of the area conveniently using computers.

In Law, computers are used mostly for information retrieval. Abstracts of cases are stored and indexed in the computer. In Medicine, a popular use of computers is medical reports for storing the history of patients. These records are updated from time to time. Computers are now being used in the office to assist in the office work. The greatest attention has been paid to computer assisting in typing documents and letters including addresses in form of labels to be fixed to envelopes. Word processors and microcomputers are used to store document. Many pages of document could be stored. The Word processor in particular has facilities to format the document in a desirable manner.

Most applications of computers in business houses such as banks, insurance companies, accounting firms, manufacturing firms, etc. are in the area of financial management and management information system (MIS). The use of computers in the military is more prominent in research and development and solving problems on games and operations. The general application of computer is wide that it cannot discussed exhaustively here.

1.2 Application of Computer to Industry

A manufacturing industry is set up with the purpose of manufacturing product(s). Often times, the products are produced or manufactured in a large scale (mass production) to meet the yearning

needs of the teeming users. One aspect is the production while another aspect is the distribution of this product.

To ensure that this product get final or ultimate users or consumers, there are a number of channels for used for the distribution of the products. It begins from the producer or manufacturer to wholesalers and from wholesalers to retailers and from retailers to the ultimate consumers. The above explained system is manually undertaken by most of the manufacturing industries of which Cadbury Nigeria Plc is one of them.

There are a lot of bottle-necks as far as this manually operated system is concerned as a result of this, the researcher decided to look at the possibility of using an automated distribution system to improve the product distribution system as a whole and Cadbury Nigeria Plc in particular.

Computers are used in various units of a manufacturing industry. This ranges from administrative use, preparation of payroll to keeping of personnel records. Stock control is another important application, particularly in those industries in which products are assembled using pre-manufactured parts. It is not unusual for computer terminals to be found on the factory floor, in much the same way that point of sale (pos) are used in stores and supermarkets to record data at source and to obtain information from the system

In some industries, machine tools are driven by computer programs which control their actions. Significant advances are being made in this area of computing. Manufacturing functions from welding to assembly are being carried out in some factories, and there are of complete assembly line production in the car industry Tasks performed by industrials robots include assembly, spraying, welding, casting, finishing, loading, unloading, packing, inspection and eve glass making. Optical systems are

beginning to be built into robots to add "eyes" to guide the "hands". This will bring about yet more applications.

In some industries, computers are used to control processes without human intervention. The application is classified as process control when the controlling action partly depends on monitoring the progress of the process and taking action according to the observed conditions. Production of various chemical products and oil refining, paper manufacture, rolling and cutting steel to customers' requirement and load control of electricity power station are some of the examples.

In general terms, process control is likely to lead to greater efficiency and in such applications ranging from chemical processing to improved safety standards.

1.3 Operations of manufacturing Industries

Initially, the definition of the manufacturing process seems to be fairly obvious. It can be said to be methods by which a product is made. This is certainly true but not comprehensive enough. A better option is defining a manufacturing process as the methods by which a product is made and all the required effort to be used in search for excellence in managing the process

As a matter of fact, the extent of a process is usually widespread than may be recognised. This lack of recognition is largely by our inability to understand the true nature of a process. Just as the task of management is easy to write in general term but difficult to define precisely, so it is not easy to produce a definition of a process that will apply universally.

Given the above, it is obvious that defining a process is not easy, understanding a process is simple, and it is possible to list most of the requirements of this.

a. It must be repeatable

b. It must not rely on the operator's decision.

c. It must break down into simple steps.

d. It must not require exceptional skills of the operator.

e. It must be able to be recorded in complete details.

From the above analysis, a process can be defined as a step by step procedure required for the purpose of transforming a particular item.

1.4 Setting up the Manufacturing Process

Every manufacturing process differs in some ways. It is quite obvious that making sausage is not the same as fabricating refrigerators but of about the same size and manufacturing, the same product will find some variations in the process. Most are minor but some quite large. These variations come about for many reasons. It may be that the volume or mix of products varies that the equipment used in manufacturing are different, or that management policies or organisation are not the same. Given this maze of variances, there is a straight path that if followed correctly will enable us to arrive at an efficient manufacturing process no matter the product. In order to achieve this objective therefore, we must begin with the following steps.

1. The process must be fully developed and record in total detail.
2. The operators must be trained to follow the process exactly at all times.
3. The process should be automated whenever possible to eliminate operator's decision and variations.
4. A formal maintenance program for tools and equipment must be developed and installed.

5. Materials must be controlled at every step of the process to assume compliance with specifications and not damaged from incorrect handling.
6. Formal correction and preventive action programs have to be developed and installed.

If the product designers have taken into account the manufacturing capability, all the above will be in vain and it will not be possible to develop an efficient manufacturing process.

1.5 Objective of the Study

A study of this nature is aimed at achieving the following objectives:

- To study all the operational activities and target of the organisation.
- To gather information based on distribution process of the company's product in order to pinpoint the problem area (s).
- To design an improved computerised distribution system that will meet all the product distribution requirement of the organisation.
- To install the required software that will execute the appropriate task.
- To build a product system Algorithms.
- To adopt a distribution system implementation.
- To recommend the appropriate environment for the proper execution of the newly designed system.
- To provide a good documentation manual for reference purpose.

1.6 Scope and Limitation of the Study

Computerisation of this nature is a project that spans through so many areas, which always cover a long period of design. In recognition of this,

the scope of this work shall be limited to computer application to managing record of the Cadbury Nigeria Plc's distributors.

Specially, the major limitations are as follows.

a. Non-availability of sufficient records to cover the project work as the few available ones appear scanty and difficult to come by.

b. Lack of time constitute a serious limitation because a study of this type requires a long period of time for software development, installation and training.

c. Problem of convincing the company of the need to computerise her activities may arise. This is as a result of the high initial outlay to meet up expenditure such as hardware procurement, employment of professionals and operators, cost of training, cost of consumables, etc.

1.7. Method of Data Collection

It has been observed that in carrying out feasibility study of an efficient computerised system of products distribution process, a lot of research and data collection and personal interaction are necessary. In recognition of this, primary and secondary sources of data collection were used in this study.

The primary source of data involves information collected directly by the Researcher. In this case, observation and interview were adopted in collecting data. The secondary sources used are the review of already published texts. The use of newspapers, magazines, textbooks, professional journals, pamphlets, seminar and conference papers, government publications and a host of other materials that considered relevant to this study.

CHAPTER TWO

2.0 LITERATURE REVIEW

Every product is produced or manufactured with the intention of sales. How the products reach the final consumers is often times a tedious exercise to undergo manually hence the effort of the Researcher to attempt to find out how computers can be applied to product distribution system in order to ameliorate the burden encountered by manufacturing firms to make sure that manufactured goods reach the final consumers.

Before applying the product distribution system to Cadbury Nigeria Plc. Ikeja which is the company under case study here, it is pertinent to review the various channels of product distribution system and relate these to computers application.

2.1 Operations of Manufacturing Industries.

The manufacturing process can be said to be methods by which a product is made. This is certainly true but not comprehensive enough. A better option in defining a manufacturing process is said to be the methods by which a product is made and all the required effort to be used in search for excellence in managing the process.

As a matter of fact, the extent of a process is usually widespread than may be recognised. This lack of recognition is largely by our inability to understand the true nature of a process. Just as the task of management is easy to write in general terms but difficult to define precisely, so it is not easy to produce a definition of a process that will apply universally.

Given the above, it is obvious that defining a process is not easy, understanding the nature of a process is simple, and it is possible to list most of the requirements for this.

- It must be repeatable

- It must not rely on the operator`s decision.
- It must be able to be recorded in complete details.
- It must be such that can be broken down into simple steps.
- It must not require exceptional skills of the operator.

From the above analysis, a process can be defined as a step by step procedures required for the purpose of transforming a particular item.

2.2 Setting up the Manufacturing Process

Every manufacturing process differs in some ways. It is quite obvious that making sausage rolls is not the same as fabricating refrigerators but every company operations of about the same size and manufacturing of the same product will find some variation in the process. Most are minor but some may be quite large. These variations come about for many reasons. It may be that the volume or mix of products varies are different, or that management policies or organisations are not the same. Given this maze of variances, there is a straight path that if follow correctly will enable us to arrive at an efficient manufacturing process no matter what product is involved. In order to achieve this objective, we must begin with the following steps:

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(iv) A formal maintenance program for tools and equipment must be developed and installed.

(v) Materials must be controlled at every step of the process to assume compliance with specifications and not damage from incorrect handling.

(vi) Formal correction and preventive action programs have to be developed and installed .

If the product designers have not taken into account the manufacturing capability, all the above will be in vain and it will not be possible to develop an efficient manufacturing process.

2.3 Relationship between Distribution and Production.

Production involves the processing of raw materials and other resource into finished goods.

It is regarded as product conversion cycle and its major purpose is to facilitate the conversion of finished goods. This cycle emphasizes the raw materials resources, it may also be called Raw materials management cycle. The key objectives within this broad purpose are to ensure that:

i. Adequate raw materials and other resources are available for production while the investment in such resources is minimized.

ii. Finished goods are completed and warehoused or shipped on schedule.

iii. Established levels of product quality and after sales services are attained.

iv. Costs for each order or process are accumulated fully and accurately.

Distribution involves movement of product in all stages of development from resources procurement through manufacturing and to final sales. In deciding the methods to be adopted in distributing these products, the company takes into consideration the type of goods, the

durability (expire date), and handling in which the raw materials always constituted.

The initiation of the production process begins with the recognition of the need for finished goods. In customer based manufacturing firms, an order from a customer creates the need. In other manufacturing firms, the need arises when the quantity of finished goods inventory on hand falls below a determined replenished level. Similar in concept to the raw material re-order point, is based on such factors as expected future demands from customers and production lead times. Upon recognising the need, two decisions must be made and these are as follows:-

a. What quantity of goods should be produced?

b. When should production be scheduled?

Production size is based either in the special order (in the case of customer based manufacturing) or on set-up costs, direct production costs, and level of expected demand (in the case of job inventory replacement).

The initiation of distribution process begins with the recognition of the need for distributing the finished goods. The process of distribution and production are closely related as distribution is the movement of raw materials to finished goods and the movement of finished goods to sales outlets. In choosing the method and process of distribution, some factors are considered which include.

i. When to ship the goods

ii. Where to ship the goods

iii. The quantity to be distributed.

However, it is observed that production and distribution are closely related and their processes complement each other.

2.4 Channel of Distribution

Channel of distribution is the description of the route taken by a product and its title as it moves from the resource producer through the producer to the ultimate consumers. It is made up of all intermediaries that perform the functions that serve to put products into the hands of consumers. As it moves through these channels, the product may stop at a service of intermediate points whose number and nature may greatly differ from one product to another. In some cases, the path taken by product itself may be different from that taken by the ownership of the product or title.

As products move from producer to ultimate consumers, various exchange transactions take place. in the process, a number of tangible and intangible items are passed from one channel member to the next. First, of course, there is the product or services itself. Raw materials are sold to manufacturers which in turn produce finished product that are moved down the line to the ultimate user. The product is exchanged for some kind of payments which usually take the form of money. In most cases, the title to the product or legal ownership also change hands. Manufactures promote not only to consumer markets but also to channel members. Throughout the distribution channel, there are variety of exchange products, payment, title and information both forward and backward.

Distribution from manufacturers can be either of these:

Distribution via wholesalers is the method by which manufacturer shipped directly to the wholesaler and the product will reach the retailer and the final consumer from the wholesalers.

ii. Distribution via the retailer. This is more cost – effective and it makes goods available to the consumers on time.

2.5 Factors Affecting Distribution Methods

The choice of which distribution method to adopt will depend upon many factors. Marketing manager with a new product to bring to the market must weigh each factor carefully before he decides his policy. Very often, the entire success of one's marketing depends upon the selection of the right distribution method. The factors to be considered may be summarized as follows:

i. The Nature of the product to be marketed:

The nature of the product one is marketing will have considerable bearing on the particular distribution channel which will prove most suitable. For example, there are many grocery items which could be of highly economical for the single product manufacturer to distribute to each of the thousands of grocery outlets in the country. For some products, wholesale distribution remains essential. Small scale producers such as farmer and market gardeners are clearly not in a position to distribute their own produce.

ii. The scope of the market:

The type of market into which one is selling will have an important influence upon the choice of distribution method to be adopted. If it is anticipated that a large proportion of one's total output will find its way to the consumer through such major outlets as chain and departmental stores, supermarkets or co-operatives stores, then one must be prepared to supply direct to these distributors. Large retail business of this nature usually prefers to deal directly with the manufacturer. One discovers that because of the purchasing power, they will often insist upon doing so. Perhaps one of the most obvious reasons why so many manufacturers are preparing to set up their own selling organisation and to deal directly with the retailers

is that they find the wholesalers reluctant to adopt new product line and new selling techniques.

iii. Current Distribution Pattern:

The manufacturer with a brand new product for the market may decide to ignore the distribution pattern which currently exist for that class of product. In doing so, however, he runs certain risks, like individual consumers tend to be conservative and a new product usually will have enough obstacle to over come without inviting the resistance which can result from a marketing policy which tends to flout trade custom.

iv. Production Cost.

The cost of production of the product must also have a bearing on the choice of distribution method. The more sophisticated a product manufactured has become, the greater will be the manufacturer's investment in expensive plant and equipment. The need for high capitalization has resulted in limiting the number of manufacturer making any one class of products.

v. The Size of Existing Force.

The increasing cost of labour which has become a feature of all advanced societies, makes the creation of an independent sales force a very expensive undertaking. We have seen that good salesmen are always at premium. To obtain an economic return on his investment in the sales force, the manufacturer needs to maximize the use of salesmen.

vi. The Amount of the Advertising Appropriation:

It has been said that advertising alone does not sell goods. It mainly creates an awareness and interest that subsequently must be converted into a demand by other marketing methods. The amount of money one has to spend on advertising however, will influence one's distribution

policy because there are certain distribution channel which rely more heavily on advertising support than others.

2.6 Computer as an Aid to Effective Distribution Process

One of the main aims of manufacturing industries is to make their goods available at every outlet in their environment. Computer can be applied to distribution process through the process of networking. Numerous computer networks are currently in use. Many are employed by firms to collect valued transaction data from remote locations and process the data either locally or centrally. For instance, a firm might collect and process transaction data arising from sales, purchases, distribution, production operations via its computer networks.

Computer can be used as an aid to effective distribution process and this process is called "Point of sales system". Computer-based point of sales system are revolutionizing the information system of retailing firms, especially those having numerous repay outlets.

In point of sales system, the terminal transmits the distribution request via centralized networks to a central processor. Through a communication device called a share controller, all of the terminals in each branch are connected to the central processor.

Most point of sales systems do more than simply collect and summarize distribution sales data. In fact, there are most important benefits derived from various support functions they perform.

All the outlets can be connected and the distribution process can be co-ordinated and the goods will be available in every outlet at all time.

CHAPTER THREE
PRODUCT DISTRIBUTION SYSTEM

3.0 Introduction

Distribution generally, involves movement of products in all stages of development from resources procurement through manufacturing to final sales.

In this project work, the researcher talks about the distribution of finished products in Cadbury Nigeria Plc.

In deciding the method to be adopted in distributing its products, Cadbury Nigeria Plc takes into consideration the type of products, the durability (expire date) and the handling of these products. The system of distribution currently in use after having considered the above criteria is the manual system and this has been in operation not without some bottle-necks. It is in the process of finding ways to remove these bottle-necks that compelled the researcher to see how a computerised distribution system can be introduced into the distribution system of Cadbury Nigeria Plc

It is the fervent belief of the researcher that if Cadbury Nigeria plc embraces this new system, the problem of distribution of the various products in the company would be a thing of the past.

3.1 Analysis of the Existing System

Cadbury Nigeria PLC is into the production and sales of various products which are divided into three categories namely; Food Drinks, Confectionery and foods. Key brands in each category include:

FOOD DRINKS

Bournvita, Pronto, Richoco, and Chocolate Drink

CONFECTIONERY

Tom Tom, Buttermint, Eclairs, Malta sweet, Hacks, Trebor mints, etc.

FOODS

Knorr seasoning cubes, Tomapep, Cheff pepper soup Cubes and Dadawa.

Each of the above products is supplied to their registered distributors depending on quantity and time of request.

The existing practice is mainly manual procedure where a file is opened for each distributor and necessary entries are made as items are supplied to them. The file also contains information about the financial position of the distributor which is important because of the availability of credit facilities for the distributors. This enables a distributor to collect items and makes the payment either fully or partially at a later date.

3.2 Development of the Proposed System

Based on the analysis made on the existing system; the next stage is the design of the proposed system which is expected to be a computer-based system. The electronic data processing system is designed using the information gathered on the existing system. This implies that improvement could still be made whenever there is an added information that could be helpful.

The system is designed for the file maintenance of all the distributors, products and allocation of products to the distributors.

In order to achieve an appropriate systems design, each of the products is assigned a unique Registration Number for the purpose of identification.

3.3 Choice of Software Application

The software for the design of the proposed system is DBASE V which is a database management package. It belongs to the category of database management system (DBMS)

A Database management system (DBMS) is a highly complex software package for creating, updating and extracting information from a computer oriented database. DBMS provides an interface between the user and the data in the database. It also provides an interface with user programs and allocates storage to data. Major objectives of DBMS are highlighted as follows.

CONTROLLED REDUNDACY

DBMS Keeps statistics of the use made of the data in the database. This allows redundant data to be removed. The more frequently used data is kept in a readily accessible form so that much time is saved in accessing and retrieving information

DATA INTEGRATION

Data from several files are co-ordinated, accessed and operated upon as if from one single file. As a result of this, data from different files can be accessed at the same time. In addition, several application programs can share similar data.

DATA INTEGRITY

In a database system, an update of a record status is reflected in all files thereby reducing the time used for record update as well as eliminating the risk of corruption of data in cases where there is risk of data duplication.

DATA INDEPENDENCE

This is an insulation of data from application programs. DBMS acts as an interface between data and the application programs. Thus a physical change to data records in the life of a file does not necessitate a change to program accessing such data and vice versa.

3.4 Input Specification and Format

Input refers to the data that are supposed to be entered into the new system. The input design is the point of contact for the user of the new system and it is proven to error.

Considering the above premise, the input design of the new system is online where entry of data is made through question and answer approach in which the system prompts the users for data entry. The new system is equally designed to reject possible errors. This is achieved using coding system such that non-existing codes are rejected outright. However, the input data into the new system is the field report of the sales officers that are contained in a source document.

Specifically, there are two points of data entry into the system. The first point is the registration of new distributor. In this case details such as.

- Distributor code
- Name of Distributor
- Address of distributor
- Phone number
- Date of registration
- Deposit paid.

The second point is during product registration which a new product will be introduced into the system. In this regard information on the following will be requested

- Product code
- Name of product
- Unit of measurement
- Price of product

3.5 Output Specification and Format

Output is regarded as the result of processing data through a system that generate information. It is basically required to communicate the result of processing to users and more so provide a hard copy for consultation.

The new system was designed to generate a report which will contain detailed up to date information about all the company's distributors. It is to contain information such as:

- Name of distributor
- Address
- Account status
- Etc.

3.6 Structure of Database Files

A database file is a file that store data in a DBMS environment. Therefore, the structure of database file describes the content and formats of all the database files required for effective execution of the proposed system.

The system consists mainly of three database files namely:

(i) DISTRIB .DBF

(ii) PRODUCT.DBF

(iii) ALLOCATE. DBF

However, the description of contents and structure of each file are as follows:

(i) DISRIB .DBF

This file contains the details of all the distributors of the products of Cadbury Nigeria PLC. It contains information such as name of distributor, address, phone number, deposit paid and date of registration. Each of this information is represented as field in the database file. Its structure is as shown below:

S/NO	FILED NAME	FILED TYPE	FILED WIDTH
1	REGNO	CHARACTER	7
2	NAME	CHARACTER	30
3	ADDRESS	CHARACTER	40
4	PHONE	CHARACTER	11
5	DEPOSIT	NUMERIC	9/2
6	DATE	DATE	8

(ii) PRODUCT .DBF

For the purpose of reference to the details of each Cadbury's products, a table is required. This is the basic importance of this file and it contains details such as product description, unit of measurement and the price of product. The file structure is as outlined below:

S/NO	FIELD NAME	FIELD TYPE	FIELD WIDTH
1	PRONO	CHARACTER	5
2	DESCR	CHARACTER	25
3	UNIT	CHARACTER	7
4	RATE	NUMERIC	9/2

(ii) ALLOCATE .DBF

This is a file that shows the up –to-date information about product distribution at any point in time. The file stores data such as distributor identification number, product code, name of supplier, quantity of such product supplied and amount. The structure of the file is detailed below:

S/NO	FIELD NAME	FIELD TYPE	FIELD WIDTH
1	REGNO	CHARACTER	7
2	PRONO	CHARACTER	5
3	RATE	NUMERIC	9/2
4	QUANTITY	NUMERIC	6
5	AMOUNT	NUMERIC	9/2

3.7 Physical Design of the New System

The physical design of the new system has to do with program specification for output, input, files and processing. This is also referred to as software design. Software design for the electronic data processing is very vital and ensure that the program performs the desired tasks and allowing for modification whenever the need arises. The documentation of the program specification is contained in Appendix II

3.8 Cost and Benefit Analysis

The cost benefit analysis involves the comparison of the cost required to be incurred against the benefits to be derived from the implementation of the new system. This will be discussed under two sub-headings namely

- Cost analysis of the system
- Benefit of the system

3.8.1 Cost Analysis of the System

The operation of the new system required two categories of cost to be incurred. These are the development cost and system operating cost. Each of these are discussed below:

(a) DEVELOPMENT COST

The development cost consists of the cost of software development and purchase of computer hardware as well as cost of training.

Below are the details of the development cost

(i) System Analysis & design	150,000.00
(ii) Software development & implementation	65,000.00
(iii) Equipment:	
• Computer system Pentium 600 MHZ 128 MB RAM 20 GB Hard Disk 3.5 inches diskette drive SVGA Monitor Window 95 key bard Mouse	₦120,000.00
• Computer printers 1 NO. Epson printers (L Q 2170)	₦65,000.00
• Uninterrupted power supply (UPS) 1 NO APC Back up pro	₦25,000.00
• Personnel Training: 2 Operators #12,500.00 for 2 months	₦25,000.00
Total Development cost	₦450,000.00

(b) SYSTEM OPERATING COST

The system operating cost consists of the cost of maintaining both the software and hardware as well as the cost of the expenses to be incurred as the software is executed. The details of the this cost are as follows:

(i)	Program maintenance per Annum	₦ 75,000.00
(ii)	Equipment Maintenance per Annum	₦ 120,000.00
(iii)	Supplies of computer stationery items	₦ 120,000.00
(iv)	Miscellaneous expanses	₦ 25,000.00
	Total system operating cost	₦340,000.00

Grand Total of (a) and (b) = ₦790,000.00

3.8.2 Benefits of the System

Specifically the Cadbury Nigeria PLC, Ikeja will derive the following benefits from this newly designed system.

i. Enhance the efficiency operation of the industry in terms of production and distribution of products.
ii. Creation of speedy ways of responding to enquiry in order provide ways of formulating policy.
iii. Avoidance of regular problems such as loss of data, fraud, etc as it is currently being experienced.
iv. Creation of speed and automatic ways of generating hard copy reports from the system for the purpose of reference.
v. Maintenance of data security and confidentiality.
vi. Allow for the possibility of carrying out major changes in the design of the system as the need arises. This is because the new system is fully documented.

CHAPTER FOUR

SYSTEM DEVELOPMENT AND IMPLEMENTATION

4.1 Introduction.

The system implementation and application stage is the stage of the system development where the conceived requirement of the new system and its overall objectives become real and visible. The system implementation stage equally meant to prove the extent of the success of the new system and also given the user the desired confidence to operate the system.

4.2 Hardware Configuration Requirement.

The hardware configuration requirement is the computer configuration needed for the new system. Computer configuration is a collection of hardware for a complete computer system. However, the selection is done to meet both the present and future needs of the organisation while considering the volume and types of data to be processed.

A computer of the configuration below is recommended.

Pentium II 600 MHZ

128 MB RAM

20 GB Hard disk

1½ inches diskette drive

SVGA Monitor

Windows 2000 keyboard

Mouse.

The above specification is required because of the nature and volume of data, efficiency and for future expansion.

Apart from the specification above, a dot matrix printer is recommended for producing the hard copy of the result. Specifically, EPSON LQ 2170 is recommended for this purpose along with an Uninterrupted power supply (UPS) for support against power interruption.

4.3. Type of Software Required

Software is defined as a suite of program used to direct the options of a computer. This is important because it is used to drive the computer hardware to achieve various objectives.

For the purpose of this study, the operating system used is windows 2000.

For the proposed system, dbase V for windows (a database package) would be required. This will be used to modify the workings of the system as the need arises.

Other software such as Microsoft 2000 for text and report preparation, Excel 2000 for data analysis and calculation and Desktop publisher for simple design and graphic would have to be installed. The installation of the above software would enhance the operations of the product distribution unit of Cadbury Nigeria PLC.

4.4 Choice of Software Package and Programming Language

In selecting a software package, certain criteria needed to be considered. The criteria used for the choice of software package and programming language for this project work are:

1. The effectiveness and efficiency of the package with regard to the functions of the developed programmes.
2. The facilities for different types of files processing
3. The security of the records in the files.

4. The facilities for maintaining of the files, e.g adding new records, easy retrieval of records, modifying of records, etc.
5. The flexibility of the packages.
6. Users friendliness of the packages.

Based on the above outlined criteria and the types of files that will be required for processing, two applications software packages will be adopted for this project. These are Microsoft word 2000 and Dbase V for Windows. The operating system will be Windows 2000.

4.4.1. Features of Dbase V for Windows

Dbase V for Windows is similar to Dbase III plus in DOS. In addition to other facilities, it has all the facilities that are available in Dbase III plus in DOS. Dbase V is an organised integrated relational Dbase management software package. This is complex and flexible software, which constructs, expands and maintains the database. It also provides a full relational database environment to users. In addition to file maintenance program, which allows the DBMS to maintain the data in the pool by adding new records, detecting 'need' records and amending records, it provides an interface with user's programs.

This means that with Dbase V for windows, users can develop and run his own application programs. In this case, the programming language will be Dbase programming language.

Another advantage of this software package is that a large number of built functions are provided including mathematical function and storing manipulation functions. The programming language includes command to perform conditional branching, looping, calculations, sort record, format input screen, output records, etc. Dbase V for Windows also has

the function of providing security for the data, the main aspects of this are:-

a. Protecting data against unauthorized corruption.
b. Protecting data against unauthorized accessed.
c. Protecting recovery and restart facilities after a hardware or software failure.

4.4.2. Data Structure

For purpose of this study, both the input and output data information are kept in files. To create any file in a database, there is need for data structure. Data structure in database management system has to do with arrangement of data into fields to create a data structure for a file. The following particulars about the records in the file must be known.

1. The field name
2. Field type
3. Field width
4. The decimal

4.5 Operational Manual

The programming process is not complete until the programs have been written and thoroughly field tested for a substantial period of time, the programs are said to be operational when they have thoroughly tested and completely documented. Documentation involves unity of the operational manual, the junctions agreed modular program and change over procedure.

As already mentioned, the user's application software for this project was developed in Dbase V for windows environment.

Below is simple instructional guideline to be followed.

Step 1 Boot the system. A successful booting will lead the user to windows.

Step 2 With the aid of the mouse, move the cursor to START and Single click and direct it, this will display all the menu.

Step 3 Move the cursor to program, this will highlight all the application software under program.

Step 4 Move the cursor to dbase V and lift click it. This will open the dbase V environment.

Step 5 On the menu bar of the environment, select file and click it. This will lead you to the pull down menu.

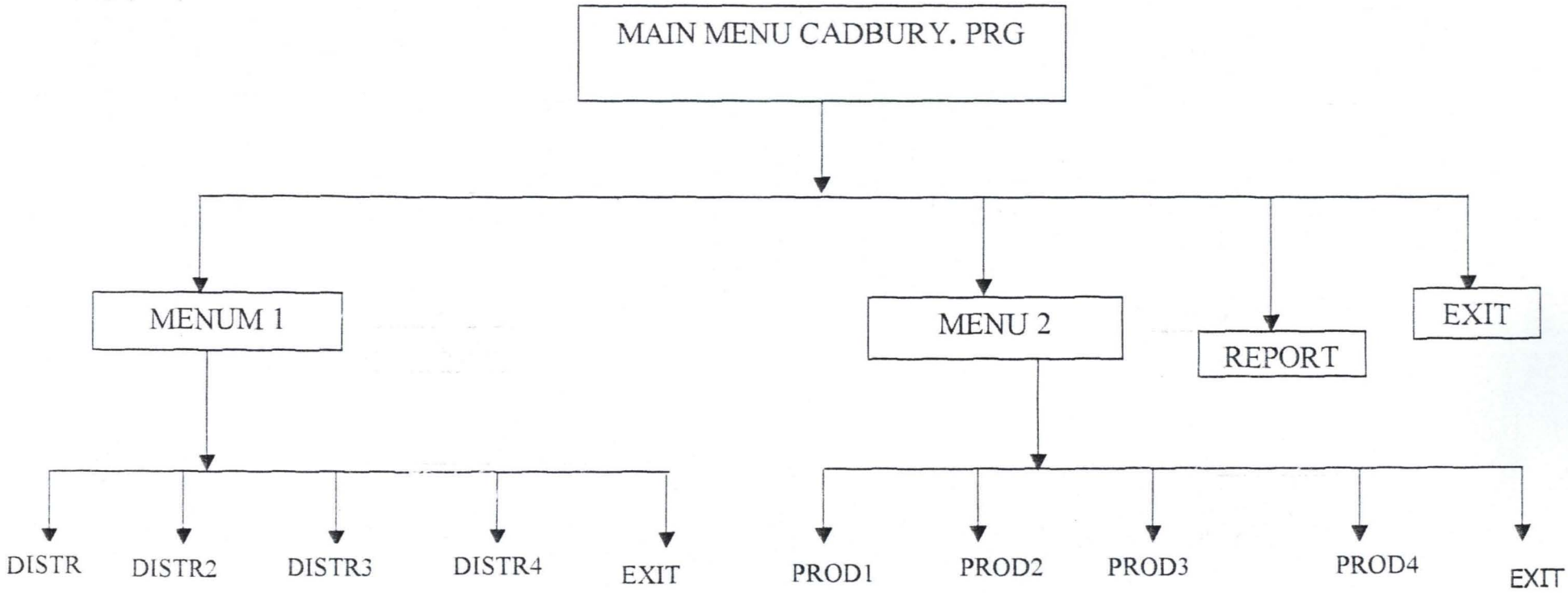
Step 6 At this sub-menu, select, open, and click it. This will display the dbf files, then move your cursor to the pull down point and click it, it will display all various types of files under Dbase V. Then select program file and click it. This will display all the program files.

Step 7. Use the mouse to point to Cadbury .prg and left click to open it.

Step 8. Select program on menu bar, left click it, that will display the sub-menu, select, do and left click, this will run the Cadbury. Prg.

Step 9. From this point, the user simply continue to follow instruction given on the screen.

A FLOW CHAT OF THE MODULAR PROGRAMS



4.6 Functions of the modular programs

(i) Main Menu Program (Cadbury.prg): This is one of the major modular programs that made up the software. This program displays submenus. These are Distributors' registration submenu, Product allocation submenu and Report.

(ii) Distributor Registration Menu (Menu1.prg): This program displays all the tasks that can be performed on Registration file. These are Entering of new Record, Editing of record, Viewing of record and Deleting of record. It also leads the user to any of the program that assist the computer to carry out the task

(iii) Product Allocation Program (Menu2.prg): This program displays all the tasks that can be performed on product allocation file. These are: Entering of new record, Editing of record, Viewing of record and Deleting of record. The program also links the user to any of the program that will perform any of the tasks

(iv) Report Program (Report1.prg): This program enhances the generation of reports on both distributors registration and product allocation on quarterly bases.

(v) Distributor Registration Data Entry Program (Distr.prg): This modular program when run display distributor registration data entry form that will be used to entry new record.

(vi) Distributor Registration Data Editing Program (Distr.prg.): This modular program when run displays any record that the user may wish to modify in the distributor registration file.

(vii) Distributor Registration Data Viewing Program (Distr3.prg): This modular program when run displays any record that the user may wish to view in the distributor registration file.

(viii) Distributor Registration Data Deleting Program (Distr4.prg): This modular program when run enables the user to deleting any record of his choice in the distributor registration file.

(ix) Product Allocation Data Entry Program (Prod1.prg): This modular program enables the user to enter new record into the product allocation file.

(x) Product Allocation Data Editing Program (Prod2.prg): This modular program enables the user to modify any of the record in the product allocation file.

(xi) Product Allocation Data Viewing Program (prod3.prg): This enables the user to view any record of his/her choice in the product allocation file.

(xii) Product Allocation Data Deleting Program (prod4.prg): This enables the user to delete any record of his/her choice in the product allocation file.

4.7 System Conversion

File conversion into the required database files and change over is not completed until the actual change over from the existing system to the new system takes place. This is important and it is expected to be done before the new system can be tested. Therefore, the database files were set up using data modeling technique, which does not allow for duplication. The set up was done at the control centre of Dbase V. since the concept of computerised product system is new in the organisation.

Change over is the process of conversion from the old system to the new system. This can be done in any of the following three ways.

i. Direct Change Over.

ii. Parallel running

iii. Pilot running.

Direct Change over

In the direct change over, the old system is discontinued immediately while the new system becomes operational. This form of change over allows for complete replacement of the old system with the new one. Direct change over is good for small and simple project. The cost of change over in this case is low

Parallel Change over

In this case, the old and new systems run concurrently using the same inputs so that the output from the two systems can be compared and reasons for differences resolved. Output from the old system continues to be distributed until the new system has proved satisfactory. At this point, the old system is discontinued and the new one takes its place.

Pilot Change over

This involves a gradual replacement of the old system with the new one. The bit by bit change over continues until the old system is completely replaced. Pilot running is always recommended for large computerisation in order to reduce its complexity.

However, the most appropriate system for Cadbury Nigeria PLC given the sensitivity of computerised operation is parallel running. This method allows the processing of data by both the existing and the new system concurrently. The advantage is that it allows for comparison of the two results thereby promoting the confidence of the user on the new system.

4.8 System Testing

This is a very vital stage in system implementation. It has to do with the use of tested data on the new system to ensure its accuracy and efficiency before the real operation commences. At this point of system

testing, the logical design and physical design are properly examined to make sure that it can work.

However, the proposed system was tested with data covering a period of six months (July-December, 1998). At the end of the testing period, the result obtained is the same with what was earlier generated with manual processing.

As a result of the above, it was confirmed and concluded that the new system is working to suit the purpose for which it is designed.

CHAPTER FIVE

CONCLUSION

5.0 Introduction

This chapter is final the chapter of this project work. It deals with the limitation, documentation conclusion and recommendations.

5.1 Limitation

The various constraints faced by the researcher constituted a limitation to this project work.

5.1.1 Financial Constraint

To carry out a thorough and a very successful project work of this nature needs a large capital outlay and this was not readily available.

5.1.2 Time constraint

Time factor was another major constraint that constituted limitation to this project work. The researcher undertook the PGD programme in computer science on a part-time basis. As a result of this, there was no enough time for the researcher to cover a wider scope in his scope of study of this project work.

5.2 Documentation

Documentation is the process of describing the workings of a system in order to aid easy interaction by the potential user. It also serves as a reference point in case an error occurs.

For the purpose of this therefore, the documentation of the new system will be discussed in two sections namely:

(i) Starting the system

(ii) Description of the menu structure.

5.2.1 Starting the System

This describes the method required to activate the system for use. The new system can be activated in a dbase v environment after the installation of the system. The user will then be expected to type DO CADBURY + < ENTER> Key. Once this is done, the first level menu will appear on the screen.

5.2.2 Description of the Menu structure

This describes each of the menus and submenus in the new system. Specifically, the first level menu consists of five options as represented by chart I in Appendix II. At this point, the system prompts the users for choice selection. Once a choice is made, an appropriate action is involved.

However, the options in the main menu are:

Distributor Registration Data

Product Allocation

Product Data Update

Report Production

System Exit

Each of the above and their respective submenu are described below:

DISTRIBUTION REGISTRATION DATA

This option is used to manipulate the details of distributors as the need arises. It contains five options in its submenu as displayed in chart II in the appendix.

These options are:

REGISTRATION DATA ENTRY for registering new distributors into the system, REGISTRATION DATA EDITING for modifying the details

5.4 Recommendations

Since we are in the computer era and more convenient and easy ways are sought to carry out operations in organisations, the following recommendations are made and these can be improved upon by further research works on this particular project topic.

In order to alternate the problem of lateness and misplacement of records and information, more so the bureaucratic bottle-neck that has become a stigma of the sales department, it is recommended therefore that the department as a whole be computerised. This research work has been able to develop a data processing program that can be used at the distribution unit of the sales department of Cadbury Nigeria PLC. Though the program is developed based on the information made available to the Researcher, all the same, it could serve as a basis for further improvement especially in a case where more relevant information are readily available.

There is a greater need for the training of staff and exposing them to the computer world.

Though there is this argument that the electronic data processing device tends to dehumanise the management process but this can be proved with numerous instances where its application have considerably improved the operations of most organisations.

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APPENDIX I

```
        * TITLE PROGRAM: CADBURY.PRG *

      SET TALK OFF
      SET STATUS OFF
      SET SCOREBOARD OFF
      SET ECHO OFF
      CC = SPACE(1)

   DO WHILE .T.
    CLEA
    @ 0,25 to 2,54 DOUBLE
    @ 0,10 to 22,69 DOUBLE
    @ 1,27 say "CADBURY NIGERIA PLC, IKEJA"
    @ 3,22 say "COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
    @ 7,17 to 18,62
    @ 4,22 to 4,62
    @ 6,37 say "MAIN MENU"
    @ 8,19 say "1.....DISTRIBUTOR REGISTRATION DATA"
    @ 10,19 say "2.....PRODUCT ALLOCATION"
    @ 12,19 say "3.....REPORT PRODUCTION"
    @ 16,19 say "0.....SYSTEM EXIT"
    @ 20,26 say "PICK YOUR CHOICE(1,2,3 OR 0)"
    @ 20,58 get CC
    Read
    IF CC = "1"
     DO MENU1
    ENDIF
     IF CC ="2"
      DO MENU2
     ENDIF
      IF CC = "3"
       DO report1
      ENDIF
       IF CC = "0"
        CLEA
        EXIT
       ENDIF
   ENDDO
   RETURN

*PROCEDURE MENU1*

    DO WHILE .T.
    CLEAR
    TT = SPACE (1)
  @ 0,10 TO 22,69 DOUBLE
  @ 3,20 SAY "COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
  @ 4,20 TO 4,60
```

```
@ 6,23 SAY "DISTRIBUTOR REGISTRATION DATA MENU"
@ 7,19 TO 18,60
@ 8,21 SAY "1..... REGISTRATION DATA ENTRY"
@ 10,21 SAY "2..... REGISTRATION DATA EDITING"
@ 12,21 SAY "3..... REGISTRATION DATA VIEWING"
@ 14,21 SAY "4..... REGISTRATION DATA DELETION"
@ 16,21 SAY "0..... SUBMENU EXIT"
@ 20,26 SAY "PICK YOUR CHOICE (1,2,3,4 OR 0)"
@ 20,58 GET TT
  READ
IF TT = "0"
  EXIT
ENDIF
IF TT = "1"
  DO DISTR
ENDIF
IF TT = "2"
  DO DISTR2
ENDIF
IF TT = "3"
  DO DISTR3
ENDIF
IF TT = "4"
  DO DISTR4
ENDIF
ENDDO
RETURN


*PROCEDURE MENU2*

    DO WHILE .T.
      CLEAR
    MM = SPACE (1)

  @ 0,10 TO 22,69 DOUBLE
  @ 3,20 say "COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
  @ 4,20 to 4,60
  @ 6,28 say "PRODUCT ALLOCATION MENU"
  @ 7,19 to 18,60
  @ 8,21 say "1..... PRODUCT DATA ENTRY"
  @ 10,21 say "2..... PRODUCT DATA EDITING"
  @ 12,21 say "3..... PRODUCT DATA VIEWING"
  @ 14,21 say "4..... PRODUCT DATA DELETION"
  @ 16,21 say "0..... SUBMENU EXIT"
  @ 20,26 say "PICK YOUR CHOICE'(1,2,3,4, OR 0)"
  @ 20,58 get MM
   Read
  IF MM = "O"
```

```
  EXIT
 ENDIF
  IF MM = "1"
    DO prod1
 ENDIF
  IF MM = "2"
    DO prod2
 ENDIF
  IF MM = "3"
    DO prod3
 ENDIF
  IF MM = "4"
    DO prod4
 ENDIF
 IF MM = "0"
 Exit
 ENDIF
ENDDO
RETURN


*PROCEDURE MENU3*

      DO WHILE .T.
       CLEAR
       NN = SPACE(1)
       @ 0,10 TO 22, 69 DOUBLE
       @ 3,20 SAY" COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
       @ 4,20 TO 4,60
       @ 6,28 SAY"PRODUCT DATA UPDATE MENU"
       @ 7,19 TO 18, 60
       @ 8,21 SAY "1.....PRODUCT DATA ENTRY"
       @ 10,21 SAY "2.....PRODUCT DATA EDITING"
       @ 12,21 SAY"3.....PRODUCT DATA ViEWING"
       @ 14,21 SAY"4.....PRODUCT DATA DELETION"
       @ 16,21 SAY"0.....SUBMENU EXIT"
       @ 20,26 SAY"PICK YOUR CHOICE (1,2,3,4 OR 0)"
       READ
       IF NN ="0"
       EXIT
       ENDIF
        IF NN = "1"
         DO PRODUCT1
        ENDIF
         IF NN ="2"
          DO PRODUCT2
         ENDIF
          IF NN ="3"
           DO PRODUCT3
          ENDIF
```

```
        IF NN= "4"
         DO PRODUCT4
        ENDIF
     ENDDO
     RETURN


*DISTR1.PRG*

     USE REG.DBF
    DO WHILE .T.
     CLEAR
     MREGNO = SPACE(7)
     MNAME = SPACE (30)
     MADDRESS = SPACE (15)
     MDATE = SPACE(10)
     MDEPOSIT = 0
     MPHONE = SPACE(10)
     FF = SPACE(1)
     MPRODUCT = SPACE(30)
     IF = SPACE(1)
   @ 0,18 TO 2,61
   @ 0,8 TO 22,71 DOUBLE
   @ 1,20 SAY "COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
   @ 5,30 SAY "REGISTRATION DATA ENTRY FORM"
   @ 6,10 TO 18,69
 @ 8,12 SAY "REGISTRATION NO ENTER(98/9898) TO EXIT" GET MREGNO
PICT "XXXXXXX"
     READ
    IF MREGNO = "98/9898"
     EXIT
    ENDIF
   @ 10,12 SAY "NAME OF DISTRIBUTOR:" GET MNAME
   @ 12,12 SAY "ADDRESS:" GET MADDRESS
   @ 14,12 SAY "PHONE NO:" GET MPHONE
   @ 16,12 SAY "DEPOSIT:" GET MDEPOSIT
   @ 16,37 SAY "DATE OF REGISTRATION:" GET MDATE PICTURE "99/99/99"
   @ 18,12 SAY "TYPES OF PRODUCTS" GET MPRODUCT
   @ 20,30 SAY "SAVE DATA (Y/N):"
   @ 20,47 GET FF PICTURE "!"
    READ
   IF FF = "Y"
   APPEND BLANK
   REPL REGNO WITH MREGNO
   REPL NAME WITH MNAME
   REPL ADDRESS WITH MADDRESS
   REPL PHONE WITH MPHONE
   REPL DEPOSIT WITH MDEPOSIT
   REPL PRODUCT WITH MPRODUCT
```

```
  REPLACE DATE WITH MDATE
  ENDIF
  Ch = space(1)
  @ 22,10 say "ANY OTHER RECORD TO BE ENTERED, (Y/N)?" get Ch pict
"@!"
  Read
  If Ch = "Y"
  Loop
  Endif
  If Ch = "N"
  Exit
  Endif
 ENDDO
 USE
 CLEAR
 RETURN



*DISTR2.PRG*

          USE REG.DBF
      DO WHILE .T.
       CLEA
       MREGNO = SPACE(7)
       @ 0,18 TO 2,61
       @ 0,8 TO 22,71 DOUBLE
       @ 1,20 SAY "COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
       @ 5,29 SAY "REGISTRATION DATA EDITING FORM"
       @ 6,10 TO 18,69
  @ 8,12 SAY "REGISTRATION NO(98/9898) TO EXIT" GET MREGNO
PICTURE "XXXXXXX"
       READ
         IF MREGNO = "98/9898"
         EXIT
         ENDIF
         LOCATE FOR MREGNO = REGNO
         MNAME = NAME
         MADDRESS = ADDRESS
         MPRODUCT = PRODUCT
         MPHONE = PHONE
         MDEPOSIT = DEPOSIT
        MDATE = DATE
       FF = SPACE(1)
       @ 10,12 SAY "NAME OF DISTRIBUTOR:" GET MNAME
       @ 12,12 SAY "ADDRESS:" GET MADDRESS
       @ 14,12 SAY "PHONE NO:" GET MPHONE
       @ 16,12 SAY "DEPOSIT:" GET MDEPOSIT
       @ 16,37 SAY "DATE OF REGISTRATION:" GET MDATE PICTURE
"99/99/99"
```

```
      @ 18,12 SAY "TYPES OF PRODUCTS" GET MPRODUCT
      @ 20,30 SAY "SAVE DATA (Y/N):"
       @ 20,47 GET FF PICTURE "!"
READ
IF FF = "Y"
REPLACE REGNO WITH MREGNO
REPLACE NAME WITH MNAME
REPLACE ADDRESS WITH MADDRESS
REPLACE PHONE WITH MPHONE
REPLACE DEPOSIT WITH MDEPOSIT
REPLACE DATE WITH MDATE
REPLACE PRODUCT WITH MPRODUCT
ENDIF
ENDDO
USE
CLEAR
RETURN


*DISTR3.PRG*

USE Reg.dbf
DO WHILE .T.
CLEAR
MREGNO = SPACE(7)
@ 0,18 TO 2,61
@ 0,8 TO 22,71 DOUBLE
@ 1,20 SAY "COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
@ 5,29 SAY "REGISTRATION DATA VIEWING FORM"
@ 6,10 TO 18,69
@ 8,12 SAY "REGISTRATION NO(98/9898) TO EXIT" GET MREGNO PICTURE
"XXXXXXX"
READ
IF MREGNO = "98/9898"
EXIT
ENDIF
LOCATE FOR MREGNO = REGNO
IF FOUND()
MNAME = NAME
MADDRESS = ADDRESS
MPHONE = PHONE
MDEPOSIT = DEPOSIT
MPRODUCT = PRODUCT
MDATE = DATE
FF = SPACE(1)
@ 10,12 SAY "NAME OF DISTRIBUTOR:" GET MNAME
@ 12,12 SAY "ADDRESS:" GET MADDRESS
@ 14,12 SAY "PHONE NO:" GET MPHONE
@ 16,12 SAY "DEPOSIT:" GET MDEPOSIT
@ 16,37 SAY "DATE OF REGISTRATION:"
```

```
@ 16,59 GET MDATE PICTURE "99/99/99"
@ 18,12 SAY "TYPE OF PRODUCTS" GET MPRODUCT
READ
ELSE
@ 10,5 SAY "RECORD NOT FOUND"
ENDIF
WAIT
ENDDO
USE
CLEAR
RETURN


*DISTR4.PRG*

USE REG.DBF
DO WHILE .T.
CLEAR
MREGNO = SPACE(7)
@ 0,18 TO 2,61
@ 0,8 TO 22,71 DOUBLE
@ 1,20 SAY "COMPUTERISED PRODUCT DISTRIBUTION SYSTEM"
@ 5,29 SAY "REGISTRATION DATA DELETING FORM"
@ 6,10 TO 18,69
@ 8,12 SAY "REGISTRATION NO(98/9898) TO EXIT" GET MREGNO PICTURE
"XXXXXXX"
READ
IF MREGNO = "98/9898"
EXIT
ENDIF
LOCATE FOR MREGNO = REGNO
IF FOUND()
MNAME = NAME
MADDRESS = ADDRESS
MPHONE = PHONE
MDEPOSIT = DEPOSIT
MPRODUCT = PRODUCT
MDATE = DATE
FF = SPACE(1)
@ 10,12 SAY "NAME OF DISTRIBUTOR:" GET MNAME
@ 12,12 SAY "ADDRESS:" GET MADDRESS
@ 14,12 SAY "PHONE NO:" GET MPHONE
@ 16,12 SAY "DEPOSIT:" GET MDEPOSIT
@ 16,37 SAY "DATE OF REGISTRATION:" GET MDATE
@ 18,12 SAY "TYPES OF PRODUCTS" GET MPRODUCT
@ 20,29 SAY "DELETE DATA (Y/N):"
@ 20,48 GET FF PICTURE "!"
READ
IF FF = "Y"
DELETE
```

```
*PACK
ENDIF
ELSE
@ 10,12 SAY "RECORD NOT FOUND"
        WAIT
ENDIF
ENDDO
USE
CLEAR
RETURN


PROD1.PRG*

    #define TRINSTR(n)ltrin/str (n)
    create session
      Clear
      Use Alloc.dbf

     DO WHILE .T.
     Clea
      Store 0 to MQTY, MUPRICE, MAMOUNT
      MREGNO = SPACE (4)
      MNAME = SPACE (15)
      MADDRESS = SPACE (30)
      MPHONE = SPACE (12)
      MDATE = SPACE (8)
      MPRODUCT = SPACE (10)
       CC = SPACE (1)
    @ 5,24 say "PRODUCT DATA ENTRY FORM"
    @ 6,10 TO 17,72
    @ 8,12 say "REGNO" get mregno
    @ 8,24 say "CUST.NAME" get mname
    @ 10,12 say "ADDRESS" get maddress
    @ 10,53 say "PHONE NO." get mphone
    @ 12,12 say "DATE" get mdate
    @ 12,28 say "PRODUCT" get mproduct
    @ 14,12 say "QUANTITY" get mqty
    @ 14,35 say "PRICE PER CTN" get muprice
    @ 15,12 say "AMOUNT" get mamount
    @ 19,25 say "SAVE DATA (Y/N)" get CC piet "@!"
      Read
       If CC = "Y"
       APPEND BLANK
      Repl regno with mregno
      Repl name with mname
      Repl address with maddress
      Repl phone with mphone
      Repl date with mdate
      Repl qty with mqty
```

```
Repl uprice with muprice
Repl product with mproduct
Repl amount with mamount
Endif
Ch = Space(1)
@ 21,10 say "ANY OTHER RECORD TO ENTER, (Y/N)?" get ch pict "@!"
Read
Do case
 Case Ch = "Y"
 Loop
 Case Ch = "N"
 Exit
Endcase
*If Ch = "Y"
*Loop
*Endif
 *If Ch = "N"
 *Exit
 *Endif
ENDDO
  Clea
  CLOSE DATABASE
RETURN
```

PRODUCT DATA EDITING PROGRAM

```
#define TRINSTR(n)ltrin/str (n)
create session
  Clear
  Use Alloc.dbf

  DO WHILE .T.
  Clea
  Store 0 to MQTY, MUPRICE, MAMOUNT
  MREGNO = SPACE (4)
  MNAME = SPACE (15)
  MADDRESS = SPACE (30)
  MPHONE = SPACE (12)
  MDATE = SPACE (8)
  MPRODUCT = SPACE (10)
   CC = SPACE (1)
   @ 3,12 say "REGNO" get mregno
   Read
   Locate for regno = mregno
   If found()
   mname = name
   maddress = address
   mphone = phone
```

```
        mdate = date
        mproduct = product
        mqty = qty
        muprice = uprice
        mamount = amount
    @ 5,24 say "PRODUCT DATA EDITING FORM"
    @ 6,10 TO 17,76
    @ 8,12 say "REGNO" get mregno
    @ 8,24 say "CUST.NAME" get mname
    @ 10,12 say "ADDRESS" get maddress
    @ 10,53 say "PHONE NO." get mphone
    @ 12,12 say "DATE" get mdate
    @ 12,28 say "PRODUCT" get mproduct
    @ 14,12 say "QUANTITY" get mqty
    @ 14,34 say "PRICE PER CTN" get muprice
    @ 15,12 say "AMOUNT" get mamount
    @ 19,25 say "SAVE DATA (Y/N)" get CC pict "@!"
      Read
       If CC = "Y"
      Repl regno with mregno
      Repl name with mname
      Repl address with maddress
      Repl phone with mphone
      Repl date with mdate
      Repl qty with mqty
      Repl uprice with muprice
      Repl product with mproduct
      Repl amount with mamount
      Endif
      Else
      @ 10,5 say "RECORD NOT FOUND"
      Endif
      Ch = Space(1)
   @ 21,10 say "ANY OTHER RECORD FOR MODIFICATION, (Y/N)?" get ch
pict "@!"
   Read
     If Ch = "Y"
     Loop
     Endif
      If Ch = "N"
      Exit
      Endif
   ENDDO
     Clear
     CLOSE DATABASE
   RETURN
```

```
*PRODUCT DATA VIEWING PROGRAM*

    #define TRINSTR(n)ltrin/str (n)
    create session
      Clear
      Use Alloc.dbf

      DO WHILE .T.
      Store 0 to MQTY, MUPRICE, MAMOUNT
      MREGNO = SPACE (4)
      CC = SPACE (1)
       @ 3,12 say "REGNO" get mregno
       Read
       Locate for regno = mregno
       If found()
    @ 5,24 say "PRODUCT DATA VIEWING FORM"
    @ 6,10 TO 17,72
    @ 8,12 say "REG. NO."
    @ 8,22 say regno
    @ 8,28 say "CUST. NAME"
    @ 8,40 say name
    @ 10,12 say "ADDRESS"
    @ 10,21 say address
    @ 10,53 say "PHONE NO."
    @ 10,64 say phone
    @ 12,12 say "DATE"
    @ 12,18 say date
    @ 12,28 say "PRODUCT"
    @ 12,37 say product
    @ 14,12 say "QUANTITY"
    @ 14,22 say qty
    @ 14,30 say "PRICE PER CTN"
    @ 14,45 say uprice
    @ 15,12 say "AMOUNT"
    @ 15,20 say amount
      Else
      @ 10,5 say "RECORD NOT FOUND"
      Endif
      Ch = Space(1)
    @ 19,10 say "ANY OTHER RECORD TO VIEWING, (Y/N)?" get Ch pict "@!"
      Read
      If Ch = "Y"
      Loop
      Endif
       If Ch = "N"
       Exit
       Endif
      ENDDO
      Clear
```

```
CLOSE DATABASE
RETURN


*PRODUCT DATA DELETING PROGRAM*

#define TRINSTR(n)ltrin/str (n)
create session
  Clear
  Use Alloc.dbf

  DO WHILE .T.
   MREGNO = SPACE (4)
   CC = SPACE (1)
   @ 3,12 say "REGNO" get mregno
   Read
   Locate for regno = mregno
   If found()
@ 5,24 say "PRODUCT DATA DELETING FORM"
@ 6,10 TO 17,72
@ 8,12 say "REGNO" get regno
@ 8,24 say "CUST.NAME" get name
@ 10,12 say "ADDRESS" get address
@ 10,53 say "PHONE NO." get phone
@ 12,12 say "DATE" get date
@ 12,28 say "PRODUCT" get product
@ 14,12 say "QUANTITY" get qty
@ 14,30 say "PRICE PER CTN" get uprice
@ 15,12 say "AMOUNT" get amount
@ 19,25 say "DELETE THE RECORD (Y/N)" get CC pict "@!"
  Read
   If CC = "Y"
   DELETE
   *PACK
   Endif
   Else
   @ 10,5 say "RECORD NOT FOUND"
   Endif
   Ch = Space(1)
@ 21,10 say "ANY OTHER RECORD TO BE DELETED, (Y/N)?" get Ch pict "@!"
  Read
   If Ch = "Y"
   Loop
   Endif
   If Ch = "N"
   Exit
   Endif
ENDDO
   Clea
   CLOSE DATABASE
```

```
  RETURN


*QUARTERLY REPORT GENERATION PROGRAM*
    Clea
    USE ALLOC.DBF
    qua = space (12)
    myear = space (4)
   Store 0 to mamount
  @ 2,5 say "YEAR" get myear
  @ 3,5 say "QUARTER" get qua
    Read
    Clea
    Set device to printer
  @ 3,30 say qua
 @ 3,22 say "CADBURY NIGERIA PLC PRODUCT ALLOCATION TO
DISTRIBUTORS FOR"
  @ 3,101 say myear
  @ 4,20 say replicate ("_",79)
  @ 5,5 say replicate ("_",136)
  @ 6,11 say "REG.NO."
  @ 6,19 say "NAME OF DISTRIB."
  @ 6,37 say "ADDRESS"
  @ 6,57 say "PRODUCT"
  @ 6,73 say "QTY IN CATN"
  *@ 6,86 say "PRICE PER CATN"
  *@ 6,101 say "AMOUNT"
  *@ 6,114 say "DATE ALLOCATED"
  *@ 7,5 say replicate ("_",117)
    row = 7
    DO WHILE .NOT. EOF ()
      row = row+1
  @ row,11 say regno
  @ row,19 say name
  @ row,37 say address
  @ row,57 say product
  @ row,73 say qty
  *@ row,86 say uprice
  *@ row,101 say amount
  *@ row,114 say date
     mamount = mamount+amount
     Skip
    ENDDO
     row = row+1
     *@ row+1,101 say mamount
     *@ row+2,101 say replicate ("_",12)
      set device to screen
  RETURN
```

APPENDIX II

MENU STRUCTURE

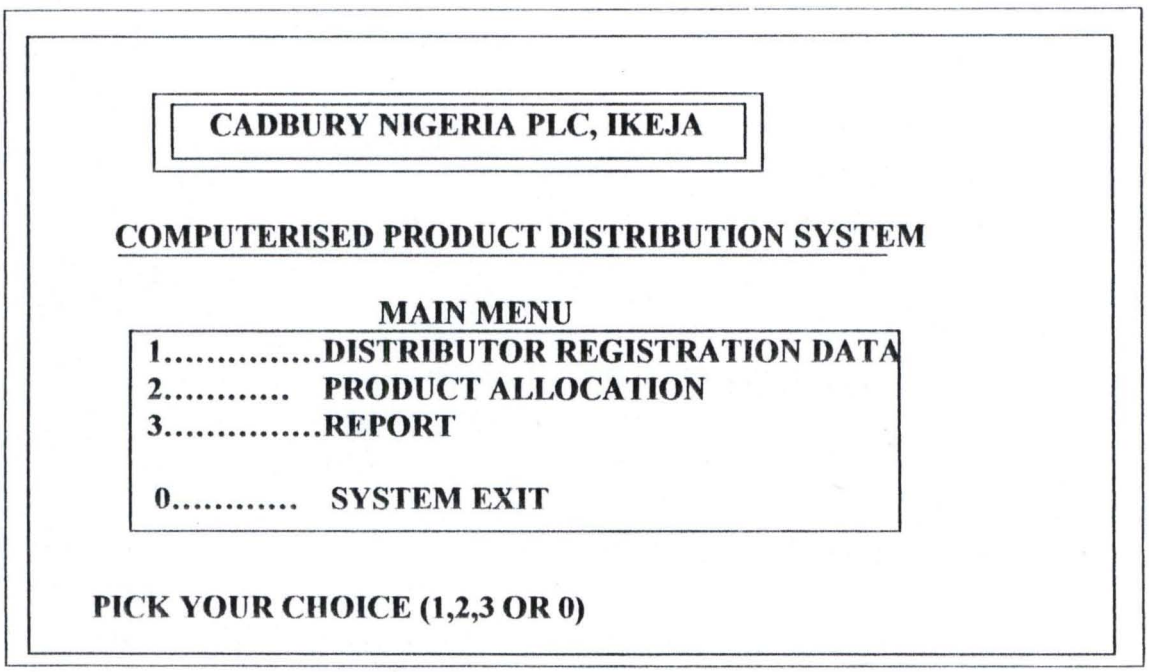

CHART I

CADBURY NIGERIA PLC, IKEJA

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

DISTRIBUTOR REGISTRATION DATA MENU

1- REGISTRATION DATA ENTRY
2 – REGISTRATION DATA EDITING
3 – REGISTRATION DATA VIEWING
4 – REGISTRATION DATA DELETION
0 – SUBMENU EXIT

PICK YOUR CHOICE (1,2,3,4 OR 0)

CHART II

CADBURY NIGERIA PLC, IKEJA

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

PRODUCT ALLOCATION MENU

1 ----------	**PRODUCT DATA ENTRY**
2 ----------	**PRODUCT DATA EDITING**
3 ----------	**PRODUCT DATA VIEWING**
4 ----------	**PRODUCT DATA DELETION**
0 ----------	**SUBMENU EXIT**

PICK YOUR CHOICE (1,2,3,4 OR 0)

CHART III

CADBURY NIGERIA PLC, IKEJA

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

PRODUCT DATA UPDATE / MENU

1------- PRODUCT DATA ENTRY
2 ------- PRODUCT DATA EDITING
3 ------- PRODUCT DATA VIEWING
4 ------- PRODUCT DATA DELETION
0 ------- SUBMENU EXIT

PICK YOUR CHOICE (1,2,3,4 OR 0)

CHART IV

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA ENTRY FORM

REGISTRATION NO. ENTER (98/9898) TO EXIT 0002

NAME OF DISTRIBUTOR: Alh. Ibn Umar

ADDRESS: Minna

PHONE NO: 066/222335

DEPOSIT: 1000000.00 **DATE OF REGISTRATION: 15/01/01**

TYPES OF PRODUCTS: Tom tom, Dawa dawa, and Bournvita

SAVE DATA (Y/N):

CHART V

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA EDITING FORM

REGISTRATION NO. ENTER (98/9898) TO EXIT 0002

NAME OF DISTRIBUTOR: Alh. Ibn Umar

ADDRESS: Minna

PHONE NO: 066/222335

DEPOSIT: 1000000.00 **DATE OF REGISTRATION: 15/01/01**

TYPES OF PRODUCTS: Tom tom, Dawa dawa, and Bournvita

SAVE DATA (Y/N)

CHART VI

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA VIEWING

REGISTRATION NO. ENTER (98/9898) TO EXIT 0002

NAME OF DISTRIBUTOR: Alh. Ibn Umar

ADDRESS: Minna

PHONE NO: 066/222335

DEPOSIT: 1000000.00 **DATE OF REGISTRATION: 15/01/01**

TYPES OF PRODUCTS: Tom tom, Dawa dawa, and Bournvita

CHART VII

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA DELETING FORM

REGISTRATION NO. ENTER (98/9898) TO EXIT 0002

NAME OF DISTRIBUTOR: Alh. Ibn Umar

ADDRESS: Minna

PHONE NO: 066/222335

DEPOSIT: 1000000.00 DATE OF REGISTRATION: 15/01/01

TYPES OF PRODUCTS: Tom tom, Dawa dawa, and Bournvita

DELETE DATA (Y/N):

CHART VIII

PRODUCT DATA ENTRY FORM

REG. NO.: 0012 **CUST. NAME Shehu Mohammed**

ADDRESS: Kaduna **PHONE: NO. 062/255663**

DATE: 22/01/02 **PRODUCT: Bournvita**

QUANTITY: 100 **PRICE PER CTN: 5000.00**

AMOUNT: 500000.00

SAVE DATA (Y/N)

CHART IX

PRODUCT DATA EDITING FORM

REG. NO.: 0012 **CUST. NAME Shehu Mohammed**

ADDRESS: Kaduna **PHONE: NO. 062/255663**

DATE: 22/01/02 **PRODUCT: Bournvita**

QUANTITY: 100 **PRICE PER CTN: 5000.00**

AMOUNT: 5000

SAVE DATA (Y/N)

CHART X

PRODUCT DATA VIEWING

REG. NO.: 0002 **CUST. NAME: Alh Ibn Umar**

ADDRESS: Minna **PHONE: NO. 066/222335**

DATE: 20/01/01 **PRODUCT: Tom tom**

QUANTITY: 500 **PRICE PER CTN: 800.00**

AMOUNT: 400000.00

CHART XI

PRODUCT DATA DELETING FORM

REG. NO.: 0012 CUST. NAME Shehu Mohammed

ADDRESS: Kaduna PHONE: NO. 062/255663

DATE: 22/01/02 PRODUCT: Bournvita

QUANTITY: 100 PRICE PER CTN: 5000.00

AMOUNT: 500000.00

DELETE THE RECORD (Y/N)

CHART XII

REGISTRATION OF PRODUCTS DISTRIBUTORS

Reg. no.	Name	Address	Phone	Deposit	Date	Product
0001	Moses Afolabi	Lagos	01-224654	1,000,000.00	15/01/02	Tom tom, Dawa dawa, and Bournvita
0002	Alhaji Ibn umar	Minna	066-223366	1,000,000.00	20/01/02	Tom Tom, Dawa dawa and Bournvita
0003	Nelson Bilyork	Jos	073-463966	1,500,000.00	20/01/02	Tom tom, Dawa dawa and Bournvita
0004	Alhaji Shehu Malik	Kaduna	062-224715	2,000,000.00	20/01/02	Tom tom, Dawa dawa and Bournvita
0005	Green Newday	Port Harcourt	084-333685	1,500,000.00	22/01/02	Tom tom and Bournvita
0006	Etim Uko	Uyo	085-202472	3,000,000.00	16/01/02	Tom tom and Bournvita
0007	Mal. Shettima Oman	Maiduguri	075-232356	2,000,000.00	20/01/02	Tom tom Dawa dawa and Bournvita
0008	Effiong Henshaw	Calabar	087-220296	3,000,000.00	20/01/02	Tom tom and Bournvita
0009	Chukwu Maduka	Enugu	042-253380	2,000,000.00	20/01/02	Tom tom and Bournvita
0010	Peter Unongo	Makurdi	044-533258	1,600,000.00	22/01/02	Tom tom Dawa dawa and Bournvita
0011	Alhaji Umar Sokoto	Sokoto	060-232194	2,000,000.00	15/01/02	Tom tom, Dawa dawa and Bournvita
0012	Badejo Ayodele	Ibadan	022-552266	3,000,000.00	18/01/02	Tom tom, Dawa dawa and Bournvita

CADBURY NIGERIA PLC PRODUCTION REPORT (ALLOCTION TO DISTRIBUTORS FOR 1ST QUARTER 2002)

Regno	Name	Address	Phone	Date last Suppl	Product	Quantity	Price per Ctn	Amount
0001	Moses Afolabi	Lagos	01-224654	20/01/02	Bournvita	100 Ctns	5000	500000
0002	Alhaji Ibn Umar	Minna	066-223366	25/01/02	Dawa Dawa	200 Ctns	500	100000
0003	Nelson Bilyork	Jos	073-463966	25/01/02	Bournvita	100 Ctns	5000	500000
0004	Alhaji Shehu Malik	Kaduna	062-224715	25/01/02	Bournvita	100 Ctns	5000	500000
0005	Green Newday	Port Harcourt	084-333685	25/01/02	Tom tom	500 Ctns	500	250000
0006	Etim Uko	Uyo	085-202472	20/01/02	Bournvita	100 Ctns	5000	500000
0007	Mal. Shettima Oma	Maiduguri	076-232356	25/01/02	Bournvita	50 Ctns	5000	250000
0008	Effiong Henshaw	Calabar	087-220296	25/01/02	Bournvita	100 Ctns	5000	500000
0009	Chukwu Maduka	Enugu	042-253380	25/01/02	Tom tom	200 Ctns	500	100000
0010	Peter Unongo	Makurdi	044-533258	25/01/02	Bournvita	100 Ctns	5000	500000