COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

A CASE STUDY OF

CADBURY NIGERIA PLC, IKEJA

BY

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

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APPROVAL SHEET

This project has been duly supervised, examined and found acceptable in partial fulfilment of the requirement for the Post-Graduate Diploma in Computer Science of the Federal University of Technology, Minna.

PRINCE R. O. BADMUS
PROJECT SUPERVISOR

DATE

DR. S. A. REJU
HEAD OF DEPARTMENT

DATE

EXTERNAL EXAMINER

DATE

DEDICATION

THIS WORK IS SOLELY DEDICATED TO THE ALMIGHTY GOD

AND MY YOUNGER BROTHER - 'TAYO OLOWOKERE'.

ACKNOWLEDGEMENT

I give God all the glory for the successful completion of this programme.

My sincere appreciation goes to my supervisor, Prince R.O. Badmus of Mathematics and Computer Science Department of the University. He is indeed a wonderful person. I cannot but mention Prof. K.R. Adeboye for his fatherly advice and co-operation through out the programme.

Also, my profound gratitude goes to the lecturers in the department, they are such wonderful people. I appreciate the training and support given to me through out the programme.

I also wish to acknowledge the support of my parents, relations and all my friends here mentioned and unmentioned, without you all, this programme would not have been easy.

I must also acknowledge my classmates, Abu, Abba and Grace, they added great fun to it all.

I also must show my great appreciation to my very good friend Abim and all my other friends who helped me out in one way or the other in the course of running the programme.

Finally, to my parents, brothers and sisters, without them my life would not have been worthwhile.

Thank you very much.

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CHAPTER ONE

1.0 GENERAL PREAMBLE

1.1 INTRODUCTION

As computers have infiltrated the global society, no where have they had more impact than in a manufacturing industry. This is due to the fact that using computers speeds operations, reduces errors in calculations and gives companies efficient and cost effective analysis that would be nearly impossible with manual operations. Also, the dominant effect derived from the usage of computers over emphasizes 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. Some experts even claim that these computer applications are helping to trigger a new type of industrial revolution.

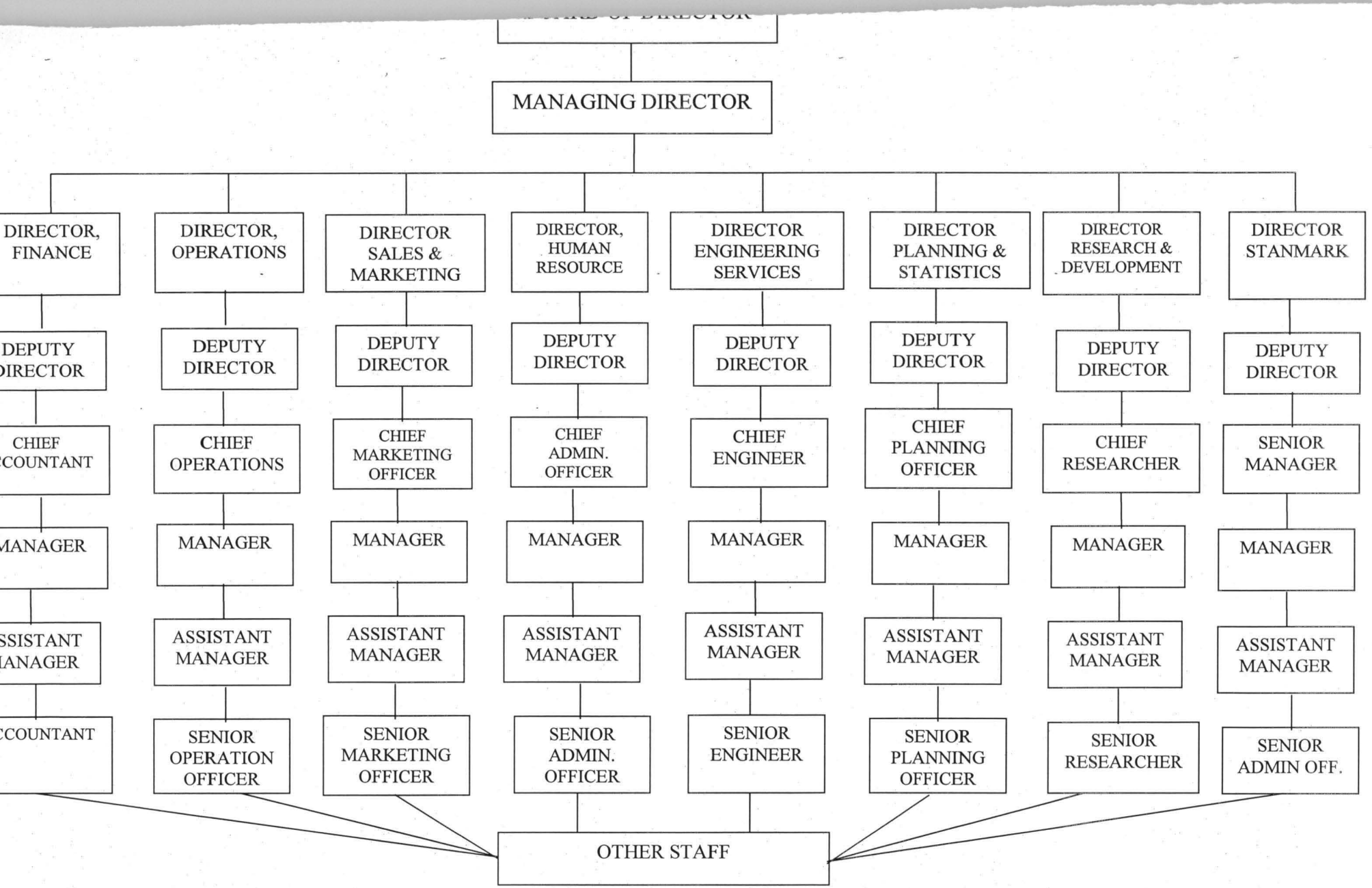
Given the above, the necessity for computerisation arose due to the persistent problem of distribution in manufacturing industries. A lot of retailers and wholesalers are mostly side–tracked during the distribution process. In addition, some distributors are highly concentrated on, while others are neglected. 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.

1.2 BRIEF OVERVIEW OF CADBURY NIGERIA PLC

Cadbury Nigeria Plc. was formally incorporated in 1965 and started operations immediately. Before its incorporation, a trading–post enterprise had been in operation in various forms since 1919.

The company is principally engaged in the manufacture and sales of a wide variety of branded fast-moving consumer goods for both the local and export markets. Each product is carefully designed to offer maximum value and enduring benefits for the users. The core business of the company is run in three strategic business unit streams namely: The Confectionery, Foods and Food Drinks Business Units. A fourth strategic business unit, the Industrial Materials Business Unit produces a range of intermediate products - glucose syrup and sorghum extract - for use by the other business units and for sale to third parties. A purpose-built plant near Jos produces tomato paste for the Food Business Unit.

Its subsidiary undertaking, Stanmark Cocoa Processing Company, Ondo, is a leading export orientated manufacturer of cocoa derivative products. The subsidiary was commissioned in 1993 and it is a joint venture between Cadbury Nigeria Plc. and Stanmark Holdings Limited. The Cadbury stake has grown from 30% at the inception of the venture to 60% today. The introduction of a subsidiary was the next logical move for a company whose place was somewhere in the move. Having been well in the forefront of "Local Sourcing" and having achieved a distinctive high point in this area through the Cereal Conversion Plant, the Stanmark investment was a natural follow-on. Stanmark Company is export oriented and is


MANAGING DIRECTOR
DIRECTOR, FINANCE
DIRECTOR, OPERATIONS
DIRECTOR SALES & MARKETING
DIRECTOR, HUMAN RESOURCE
DIRECTOR ENGINEERING SERVICES
DIRECTOR PLANNING & STATISTICS
DIRECTOR RESEARCH & DEVELOPMENT
DIRECTOR STANMARK
DEPUTY DIRECTOR
DEPUTY DIRECTOR
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DEPUTY DIRECTOR
DEPUTY DIRECTOR
CHIEF CCOUNTANT
CHIEF OPERATIONS
CHIEF MARKETING OFFICER
CHIEF ADMIN. OFFICER
CHIEF ENGINEER
CHIEF PLANNING OFFICER
CHIEF RESEARCHER
SENIOR MANAGER
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SENIOR OPERATION OFFICER
SENIOR MARKETING OFFICER
SENIOR ADMIN. OFFICER
SENIOR ENGINEER
SENIOR PLANNING OFFICER
SENIOR RESEARCHER
SENIOR ADMIN OFF.
OTHER STAFF

The above chart indicates that the Board of Director occupies the topmost hierarchy in the organisation followed by the Managing Director who is accountable to the board. In Cadbury Nigeria Plc., there are seven departments that perform varying functions. A Director heads each of these departments and the subsidiary company (Stanmark Processing Company). These Directors are accountable to the Managing Director of the various activities in their respective departments. Apart from the Director who heads each of the departments, there are other staffs who are professional in their various departments and practice that support the Director in the day-to-day activities of the organisation.

Apart from the departments available, there are some units who are directly under the Managing Director's office who also perform varying functions. These include the Legal Unit and Corporate Unit.

1.5 OBJECTIVES 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, study and analyse the information gathered on distribution process of the company's product in order to pinpoint the problem area.

⇒ To design an improved computerised distribution system that will meet all the products distribution requirement of the organisation.

⇒ To install the required software that will execute the appropriate task.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 OPERATIONS OF MANUFACTURING INDUSTRIES

At first 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 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 break 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 is not the same as fabricating refrigerators, but even company operations of about the same size and manufacturing the same product will find some variations in the process. Most are minor, but some may be quiet 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 what the product. In order to achieve this objective, we must begin with the following steps:

(i) The process must be fully developed and recorded in total detail.

(ii) The operators must be trained to follow the process exactly at all times.

(iii) The process should be automated whenever possible to eliminate operator decision and variations.

(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 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 resources into finished goods. It is regarded as a product conversion cycle and its major purpose is to facilitate the conversion of finished goods. Because 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 products in all stages of development from resources procurement through manufacturing and to final sales. In deciding the method 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 a production process begins with the recognition of the need for finished goods. In custom 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. These are as follows:

(i) What quantity of goods should be produced?

(ii) When should production be schedule?

Production size is based either on the special order (in the case of custom 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 to be 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 products that are moved down the line to the ultimate user. The product is exchanged for some kind of payments, which usually takes the form of money. In most cases, the title to the product or legal ownership also changes hands. Manufacturers 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 the manufacturers can be either of these:

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 direct with the manufacturer. One discovers that, because of buying 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 retailer 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 overcome 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 product.

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 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 supports 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. The 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 distributor request via a 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, their most important benefit derive from various support functions they perform.

All the outlet 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

3.0 SYSTEMS ANALYSIS AND DEVELOPMENT

3.1 ANALYSIS OF THE EXISTING SYSTEM

Cadbury Nigeria PLC is into the sales of various products, which are divided into three categories namely - Food Drinks, Confectionery, and Foods. The 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 Peppersoup 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

enable 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 design using the information gathered on the existing system. This implies that improvement could still be made wherever 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 Product Code that is unique. Equally, each of the distributors is also 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 IV, which is a database management package. It belongs to the category of Database Management System (DBMS).

A 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. The major objectives of DBMS are highlighted as follows:

CONTROLLED REDUNDANCY

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 users of the new system and it is prone 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 design 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 when 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 files describes the content and formats of all the database files require 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 files are as follows:

i. **DISTRIB.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	FIELD NAME	FIELD TYPE	FIELD 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 file 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

iii. 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 each 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 designing for the electronic data processing is very vital and ensure that

the program perform 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-BENEFIT ANALYSIS

The cost-benefit analysis involves the comparison of the cost required to be incurred as gainst the benefits to be derived from the implementation of the new system. This will be discussed under two subheadings 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 ot the cost of software development and purchases of computer hardware as well as cost of training. Below are the details of the development cost.

i.	Systems Analysis/Design	150,000.00
ii.	Software Development & Implementation	85,000.00
iii.	Equipments	

*	Computer System Pentium 300MHz 32MB RAM 4.1GB Hard Disk 3.5 inches diskette drive SVGA Monitor Windows 95 keyboard Mouse	180,000.00
*	Computer Printers 1 No. Epson Printers (LQ 2170)	85,000.00
*	Uninterrupted Power Supply 1 No. APC Back Up Pro	45,000.00
*	Personnel Training 2 Operators @ 12,500 for 2 months	25,000.00
	Total Development Cost	**#570,000.00**

(b) **SYSTEM OPERATING COST**

The system operating cost consists of the cost 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 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 Stationeries	120,000.00
iv.	Miscellaneous expenses	25,000.00
	Total System Operating Cost	**#340,000.00**

Grand Total of (a) and (b) = #910,000

3.8.2 BENEFITS OF THE SYSTEM

Specifically the Cadbury Nigerian 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 to 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 speedy and automatic ways of generating hardcopy reports from the system for the sake 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

4.0 SYSTEM IMPLEMENTATION AND APPLICATION

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 becomes real and visible. The system implementation stage equally meant to prove the extent of the success of the new system and also give the user the desired confidence to operate the system.

For the sake of proper analysis, this chapter states the basic requirement for the successful application of the new 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 300MHz

32MB RAM

4.1GB Hard Disk

3.5 inches diskette drive

SVGA Monitor

Windows 95 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 for support against power interruption.

4.3 TYPES 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 proposed system, dBASE IV (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 Word Processor for text and report preparation, Spreadsheet 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 SYSTEM CONVERSION

File conversion into the required database files and changeover is not completed until the actual changeover from the existing system to the new system takes place. This is important and its expected to be done before the new system can be tested.

Therefore, the database files were set up using data modelling technique, which does not allow for duplication. The set up was done at the Control Centre of dBASE IV since the concept of computerised product system is new in the organisation.

Changeover 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 CHANGEOVER

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

PARALLEL CHANGEOVER

In this case, the old and new system 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 CHANGEOVER

This involves a gradual replacement of the old system by the new one. The bit by bit changeover 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 for Cadbury Nigeria Plc given the sensitivity of computerised operation is the parallel running. This method allows the processing data by both the existing system and the new system concurrently.

This allows for comparison of results of the two results thereby promoting the confidence of the user on the new system.

4.5 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 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 that the new system is working to suit the purpose for which it is designed.

4.6 DOCUMENTATION

Documentation is the process of describing the workings of a system in order to aid easy interaction by the potential users. It also serves as a reference points in case an error occurs. For the purpose of this, the documentation of the new system will be discussed in two sections namely – Starting the system and Description of the menu structure.

4.6.1 STARTING THE SYSTEM

This describes the method require to activate the system for use. The new system can be activated in a dBASE IV environment after the installation of the system. The user would then be expected to type DO CADBURY + <ENTER> key. Once this is done, the first level menu appears on the screen.

4.6.2 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 I. At this point, the system prompts the users for choice selection. Once a choice is made, an appropriate action is invoked.

However, the options in the main menu are:

Distributor Registration Data

Product Allocation

Product Data Update

Report Production

System Exit

Each of this and their respective submenu are described below:

DISTRIBUTOR 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 of an existing distributor, REGISTRATION DATA VIEWING for displaying information about the specified distributor, REGISTRATION DATA DELETION for removing the details of the specified distributor from the master file and SUBMENU EXIT for moving out of the submenu. All these are represented in Charts III – VI attached to the appendix.

PRODUCT ALLOCATION

This option is activated when products are supplied to a distributor. This option when activated will enable the user to enter the full details of the supplies into the system. This is represented by Chart VII in the appendix.

PRODUCT DATA UPDATE

This is an option that enables the user to manipulate information such as the price of a product in case there is a change in price. It has a submenu which contain five

options as displayed in Chart VIII in the appendix. The options are PRODUCT DATA ENTRY for entering details of a new product, PRODUCT DATA EDITING for modifying the details of any of the existing product, PRODUCT DATA VIEWING for displaying the details of a product, PRODUCT DATA DELETION for removing the details of a product from the system and SUBMENU EXIT for exiting the submenu. The format for all these are represented by Charts IX – XII.

REPORT PRODUCTION

This option is used to produce the output indicating the result of an operation. The output is designed to meet the requirement of the output specification discussed earlier.

SYSTEM EXIT

This is an option used for quitting the system.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

Based on the findings made, the following conclusion can possibly be drawn from it.

Admittedly, the sales department of Cadbury Nigeria Plc deals majorly with data/information placed in paper forms that are expected to be documented and retrieved whenever they are needed. However, going by the findings made at the Cadbury Nigeria Plc, Ikeja, the manual process of documentation seems to be less reliable as files containing vital documents sometimes miss in transit. This in other word can affect the timely needs of documents or information required for urgent management decisions.

Secondly, as a result of manual calculation of distributor's balance, many have suffered incorrect balances because of possible omissions and error common to manual calculations. More so, manipulations and frauds had become rampant through the use of manual methods, thereby placing the credibility, integrity and name of the organisation at stake. To this end, one might rightly conclude that accurate and reliable information seems difficult to come by in manually organised sales department.

In the organisation of documents, some files are kept in a separate file cabinet in order to ensure their security and to avoid unnecessary retrieval. In this vein, one can equally conclude that information security becomes vital in the personnel department, particularly in a banking set up.

As a result of the above, the newly computerised product distribution system is expected to proffer solution to the problems. This is the basis for which most organisations are embarking on computerisation of their operations.

5.2 RECOMMENDATIONS

The following are therefore recommended:

In order to alternate the problem of lateness and misplacement of records and information, more so the bureaucratic bottleneck 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 however developed 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 basement for further improvement in the case where more relevant information are readily available. More so, there is a need for the training of staff and exposure into computer world.

Though some have argued that the electronic data processing device tends to dehumanise the management process, but it can be proved with numerous instances where its application have greatly improved the operations of most organisations.

Hence, the sales department with a computerised product distribution system can process accurate, objective, relevant and analytical information and yet meet up with societal expectation and standards. Above all, the much needed security of data is ensured with a computerised sales department.

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APPENDIX I

MENU STRUCTURE

CADBURY NIGERIA PLC, IKEJA.

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

MAIN MENU

1 ..... DISTRIBUTOR REGISTRATION DATA

2 ..... PRODUCT ALLOCATION

3 ..... PRODUCT DATA UPDATE

4 ..... REPORT PRODUCTION

0 ..... SYSTEM EXIT

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

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

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA ENTRY FORM

REGISTRATION NO (ENTER 99/9999 TO EXIT): NG/0022

NAME OF DISTRIBUTOR: ALHAJI TANKO ZUBAIR

ADDRESS: BOSSO LOWCOST, MINNA

PHONE NO: 066/223344

DEPOSIT :100,000.00 DATE OF REGISTRATION:12/12/98

SAVE DATA (Y/N):

Chart III

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA EDITING FORM

REGISTRATION NO (ENTER 99/9999 TO EXIT): NG/0022

NAME OF DISTRIBUTOR: ALHAJI TANKO ZUBAIR

ADDRESS: BOSSO LOWCOST, MINNA

PHONE NO: 066/223344

DEPOSIT :100,000.00 DATE OF REGISTRATION:12/12/98

SAVE DATA (Y/N):

Chart IV

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA VIEWING FORM

REGISTRATION NO (ENTER 99/9999 TO EXIT): NG/0022

NAME OF DISTRIBUTOR: ALHAJI TANKO ZUBAIR

ADDRESS: BOSSO LOWCOST, MINNA

PHONE NO: 066/223344

DEPOSIT :100,000.00 DATE OF REGISTRATION:12/12/98

PRESS ANY KEY TO CONTINUE

Chart V

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

REGISTRATION DATA DELETING FORM

REGISTRATION NO (ENTER 99/9999 TO EXIT): NG/0022

NAME OF DISTRIBUTOR: ALHAJI TANKO ZUBAIR

ADDRESS: BOSSO LOWCOST, MINNA

PHONE NO: 066/223344

DEPOSIT :100,000.00 DATE OF REGISTRATION:12/12/98

DELETE DATA (Y/N):

Chart VI

COMPUTERISED PRODUCT DISTRIBUTION SYSTEM

PRODUCT DATA ENTRY FORM

PRODUCT NO (ENTER 99/99 TO EXIT): FD/01

DESCRIPTION TOM TOM

UNIT OF MEASUREMENT: PACKET

RATE: 120.00

SAVE DATA (Y/N)

Chart IX

APPENDIX II

PROGRAM DOCUMENTATION

CADBURY.PRG

```
SET TALK OFF
SET STATUS OFF
SET SCOREBOARD OFF
SET ECHO OFF
CC = SPACE(1)
DO WHILE .T.
CLEAR
@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 ..... PRODUCT DATA UPDATE"
@14,19 SAY "4 ..... REPORT PRODUCTION"
@16,19 SAY "0 ..... SYSTEM EXIT"
@20,26 SAY "PICK YOUR CHOICE (1,2,3,4 OR 0)"
@20,58 GET CC
 READ
 IF CC = "1"
  DO MENU1
 ENDIF
IF CC='2'
  DO MENU2
ENDIF
  IF CC = "3"
```

```
   DO MENU3
ENDIF
 IF CC = "4"
   DO MENU4
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 DISTR1
ENDIF
IF TT = "2"
        DO DISTR2
ENDIF
IF TT = "3"
        DO DISTR3
ENDIF
IF TT = "4"
        DO DISTR4
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)"
@20,58 GET NN
 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
```

PRODUCT1.PRG

```
DO WHILE .T.
CLEAR
CC = SPACE(1)
MPRONO= SPACE(5)
```

```
ENDIF
ENDDO
USE
CLEAR
RETURN
```

PRODUCT3.PRG

```
DO WHILE .T.
CLEAR
CC = SPACE(1)
MPRONO= SPACE(5)
 @3,18 TO 5,62
 @3,10 TO 21,69 DOUBLE
 @4,20 SAY 'COMPUTERISED PRODUCT DISTRIBUTION SYSTEM'
 @7,23 SAY ' PRODUCT DATA VIEWING FORM'
 @8,18 TO 17,61
 @9,20 SAY 'PRODUCT NO (ENTER 99/99 TO EXIT):' GET MPRONO
PICTURE "XX/99"
 READ
  IF MPRONO='99/99'
   EXIT
  ENDI
 LOCATE FOR PRONO=MPRONO
 MDESCR =DESCR
 MUNIT =UNIT
 MRATE =RATE
 @11,20 SAY 'DESCRIPTION' GET MDESCR
 @13,20 SAY 'UNIT OF MEASUREMENT:' GET MUNIT
 @15,20 SAY 'RATE:'GET MRATE PICTURE "999,999.99"
```

```
@19,30 SAY 'PRESS ANY KEY TO CONTINUE'
SET CONSOLE OFF
WAIT
SET CONSOLE ON
ENDDO
USE
CLEAR
RETURN
```

PRODUCT4.PRG

```
DO WHILE .T.
CLEAR
CC = SPACE(1)
MPRONO= SPACE(5)
 @3,18 TO 5,62
 @3,10 TO 21,69 DOUBLE
 @4,20 SAY 'COMPUTERISED PRODUCT DISTRIBUTION SYSTEM'
 @7,23 SAY ' PRODUCT DATA DELETING FORM'
 @8,18 TO 17,61
 @9,20 SAY 'PRODUCT NO (ENTER 99/99 TO EXIT):' GET MPRONO
PICTURE "XX/99"
 READ
  IF MPRONO='99/99'
   EXIT
  ENDI
 LOCATE FOR PRONO=MPRONO
 MDESCR =DESCR
 MUNIT =UNIT
 MRATE =RATE
```

```
@11,20 SAY 'DESCRIPTION' GET MDESCR
@13,20 SAY 'UNIT OF MEASUREMENT:' GET MUNIT
@15,20 SAY 'RATE:'GET MRATE PICTURE "999,999.99"
@19,24 SAY 'DELETE DATA (Y/N)' GET CC PICTURE '!'
READ
IF CC = "Y"
DELETE
PACK
ENDIF
ENDDO
USE
CLEAR
RETURN
```

DISTR1.PRG

```
USE DISTRI
DO WHILE .T.
CLEAR
MREGNO =SPACE(7)
MNAME =SPACE(30)
MADDRESS =SPACE(40)
MPHONE = SPACE(11)
MDEPOSIT =0
MDATE =CTOD(' / / ')
ff= 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 99/9999 TO EXIT):' GET MREGNO
PICTURE "XX/9999"
READ
IF MREGNO='99/9999'
EXIT
ENDIF
@10,12 SAY 'NAME OF DISTRIBUTOR:'GET MNAME
@12,12 SAY 'ADDRESS: 'GET MADDRESS
@14,12 SAY 'PHONE NO:'
@14,22 GET MPHONE PICTURE "999/9999999"
@16,12 SAY 'DEPOSIT :'
@16,21 GET MDEPOSIT PICTURE "999,999.99"
@16,37 SAY ' DATE OF REGISTRATION:'
@16,59 GET MDATE PICTURE "99/99/99"
@20,30 SAY 'SAVE DATA (Y/N):'
@20,47 GET FF PICTURE '!'
 READ
IF FF= "Y"
  APPEND BLANK
  REPLACE REGNO WITH MREGNO
  REPLACE NAME WITH MNAME
  REPLACE ADDRESS WITH MADDRESS
  REPLACE PHONE WITH MPHONE
  REPLACE DEPOSIT WITH MDEPOSIT
  REPLACE DATE WITH MDATE
ENDIF
ENDDO
USE
CLEAR
RETURN
```

DISTR2.PRG

```
USE DISTRI
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 EDITING FORM'
@6,10 TO 18,69
@8,12 SAY 'REGISTRATION NO (ENTER 99/9999 TO EXIT):' GET MREGNO
PICTURE "XX/9999"
READ
IF MREGNO='99/9999'
EXIT
ENDIF
LOCATE FOR MREGNO=REGNO
MNAME=NAME
MADDRESS=ADDRESS
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:'
@14,22 GET MPHONE PICTURE "999/9999999"
@16,12 SAY 'DEPOSIT :'
@16,21 GET MDEPOSIT PICTURE "999,999.99"
@16,37 SAY ' DATE OF REGISTRATION:'
```

```
@16,59 GET MDATE PICTURE "99/99/99"
@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
ENDIF
ENDDO
USE
CLEAR
RETURN
```

DISTR3.PRG

```
USE DISTRI
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 (ENTER 99/9999 TO EXIT):' GET MREGNO
PICTURE "XX/9999"
```

```
READ
IF MREGNO='99/9999'
EXIT
ENDIF
LOCATE FOR MREGNO=REGNO
MNAME=NAME
MADDRESS=ADDRESS
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:'
@14,22 GET MPHONE PICTURE "999/9999999"
@16,12 SAY 'DEPOSIT :'
@16,21 GET MDEPOSIT PICTURE "999,999.99"
@16,37 SAY ' DATE OF REGISTRATION:'
@16,59 GET MDATE PICTURE "99/99/99"
@20,30 SAY 'PRESS ANY KEY TO CONTINUE'
SET CONSOLE OFF
WAIT
SET CONSOLE ON
ENDDO
USE
CLEAR
RETURN
```

DISTR4.PRG

```
USE DISTRI
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 (ENTER 99/9999 TO EXIT):' GET MREGNO
PICTURE "XX/9999"
READ
IF MREGNO='99/9999'
EXIT
ENDIF
LOCATE FOR MREGNO=REGNO
MNAME=NAME
MADDRESS=ADDRESS
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:'
@14,22 GET MPHONE PICTURE "999/9999999"
@16,12 SAY 'DEPOSIT :'
@16,21 GET MDEPOSIT PICTURE "999,999.99"
@16,37 SAY ' DATE OF REGISTRATION:'
```