

**COMPUTERISATION OF QUANTITY
SURVEYING PRACTICE IN NIGERIA**

(A CASE STUDY OF DESIGN QUANTS CONSORTIUM – A
REGISTERED QUANTITY SURVEYORS AND PROJECT
MANAGEMENT – KANO)

BY

OZOBULU BONIFACE UCHE

PGD – MCS – 545 - 1998.

Department of Mathematics/Computer Science
Federal University of Technology, Minna.

September, 2000.

COMPUTERISATION OF QUANTITY
SURVEYING PRACTICE IN NIGERIA
A CASE STUDY OF DESIGN QUANTS
CONSORTIUM – A REGISTERED
QUANTITY SURVEYORS AND PROJECT
MANAGEMENT – KANO

BY

OZOBULU BONIFACE UCHE

PGD/MCS/545/1998.

DEDICATION

I dedicate this work to my wife NNEKA and my children, Chukwuemeka, Chukwunaecherum and Chimudindu, I love you all.

CERTIFICATION

This project entitled Computerisation of Quantity Surveying Practice in Nigeria by OZOBULU BONIFACE UCHE of Department of Mathematics, Computer Science, Reg. No., PGD/MCS/545/1998 meets the regulation governing the award of a Post Graduate Diploma Computer Science of the Federal University of Technology, Minna and its approved for its contribution to knowledge and literary presentation.

Name:.....

Date:.....

Signature:.....

(Supervisor)

Name:.....

Date:.....

Signature:.....

(Head of Dept.)

Name:.....

Date:.....

External Examiner:.....

ACKNOWLEDGEMENT

I thank God for all his blessing on us for giving me the direction to undertake this project work.

To God be all the Glory. I also thank my able Supervisor Mallam Audu Isah for the time he spent in going through this project page by page. I thank him so much for his patience even when he was chucked up with other assignment, he still spare time for the work.

My profound gratitude goes to my Head of Department Dr. S.A. Reju. I thank course co-ordinator Mr. L. K. Ezeako for his fatherly advise throughout the period of the programme; Dr. Y. M. Aiyesimi, Prince R. A. Badmus, Mallam Hakim and a host of others for their lectures throughout the programme.

I own immeasurable gratitude to my wife and children for their understanding during the period of this course.

I feel highly indebted to the following friends, Mr. Adamu, Arc. Remi. Mr. P.O Lawal for their love, courage and moral support to me.

I also thank Miss B. Toyin and Mrs. Onuchie who made the production of this possible even when I gave them short notice, my prayer is that God Almighty will reward all in Jesus name Amen.

ABSTRACT

It is an established fact that the wind of information Technology has cut across of all fields of human endeavour. It therefore become challenges to all departments to look inward with a view of discover how it can benefit from this global phenomenon.

This project work is a product of such good thinking. The writer works in an orgnisation whose primary occupation is on professional Quantity Surveying Practice. In such a professional practice, a lot of paper works are involved the activities include Estimation of project work, tendering, vetting of tender, monitoring of the bob, procurement of materials, and general project monitoring.

The software developed in this project work is intended to be used in an evaluation of the percentage of work completed in a building project in Kano State.

TABLE OF CONTENTS

TITLE PAGE
APPROVAL PAGE
DEDICATION
ACKNOWLEDGEMENT
ABSTRACT

TABLE OF CONTENTS

CHAPTER ONE:

1.0	INTRODUCTION.....	1
1.1	QUANTITY SURVEYING PRACTICE AND NATIONAL ECONOMIC DEVELOPMENT.....	2
1.2	PROPOSITION.....	3
1.3	RESEARCH METHODOLOGY.....	3
1.4	AIMS AND OBJECTIVES.....	4
1.5	PROBLEM DEFINITION.....	4 - 5
1.6	SCOPE AND LIMITATION.....	5 - 6

CHAPTER TWO:

LITERATURE REVIEW

2.1	INTRODUCTION.....	7
2.2	HISTORY OF COMPUTER.....	8 - 10
2.3	CLASSIFICATION OF COMPUTER SYSTEM.....	10 - 12
2.4	USES OF COMPUTER.....	12
2.5	FEASIBILITY STUDY.....	13 - 14
2.6	SCOPE OF TEASIBILITY STUDY.....	14

CHAPTER THREE:

SYSTEM ANALYSIS

3.1	INTRODUCTION.....	15
3.2	PROBLEM DEFINITION.....	15

3.3	ANALYSIS OF THE ORGANISATION.....	16
3.4	ORGANISATION AND MANAGEMENT.....	16 - 20
3.5	ANALYSIS OF THE EXISTING SYSTEM.....	20 - 21
3.6	PROBLEMS OF THE EXISTING SYSTEM.....	22
3.7	ANALYSIS OF THE PROPOSED SYSTEM.....	22 - 24
3.8	ADVANTAGES OF THE PROPOSED SYSTEM.....	24
3.9	COMPERATIVE ANALYSIS BETWEEN OLD AND THE PROPOSED SYSTEM.....	25
3.10	BENEFIT OF TE PROPOSED SYSTEM.....	26

CHAPTER FOUR:

SYSTEM DESIGN AND IMPLEMENTATION

4.1	INTRODUCTION.....	27
4.2	DBASE IV.....	27
4.3	SYSTEM CONVERSION.....	28 - 29
4.4	STAFF TRAINING	29
4.5	SYSTEM INSTALLATION.....	30
4.6	REPORT OF THE STUDY.....	30 - 31
4.7	TESTING PROJECT FEASIBILITY.....	31
4.8	SYSTEM DESIGN (PROGRAM).....	32 - 37
4.9	HOW TO RUN THE PROGRAM.....	38 - 41
4.10	INPUT/OUT PUT SPECIFICATION.....	42
4.11	LIFE SPECIFICATION.....	42

CHAPTER FIVE:

5.1	SYSTEM IMPLEMENTATION REVIEW.....	43
5.2	LIMITATION.....	43
5.3	CONCLUSION.....	43

CHAPTER ONE

1.0: INTRODUCTION

The use of computer is now common in almost all sectors of human endeavour such as industries, fields of commerce, Science and Technology. It is an obvious fact that computer and information Technology will surely effect and control our-lives in this new millennium. Thus, it is becoming apparent that no matter whom we are, no matter the nature of our employments or organisations, computer is now an important tool for efficiency improvement and procision of job or task execution. It is on this fact that I wish to look into the quantity surveying practice in Nigeria and computer applications.

In this project work, I intend to examine the quantity surveying profession and its practice in Nigeria to know whether it intends to remain relevant in current time, or whether it intends to allow recent technological development to wipe it out of relevance through apathy. The institution as a body has not shown any serious intentions that will make members attractive and worthy of emulation. It is generally agreed that advancement in technology particularly information technology will completely change the landscape of what are now known as an established profession in this new millennium.

In order to computerise quantity surveying practice in Nigeria, the work is divided into five parts:-

1. Chapter one deals with the following: Introduction, proposition, research methodology, Aim and Objectives problem definition, scope and limitation.
2. Chapter two talks on litrature review, which is the history and classfication of computer, use of computer, feasibility studies,

reports and testing of the project feasibility and benefit of the proposed system.

3. Chapter three deals with the system analysis:- introduction, problem definition, analysis of quantity surveying practice in Nigeria, Quantity Surveying practice and management, analysis of the existing system, problems of the existing system, analysis of the proposed system, comparative analysis between old and the new system and cost benefits of the proposed system.
4. Chapter four deals with system Design and Implementation:- system configuration, system life cycle, problem description and main process, staff training, system conversion, installation, how to run the program, input and output specification life specification.
5. Chapter five deals with implementation review, limitation and conclusion.

Quantity surveying profession in Nigeria need computer application to be able ^{to} meet up with the recent technological development in the field of environmental studies.

1.1: QUANTITY SURVEYING PRACTICE

Quantity survey^{ors}/are the economics of the building industry. Their major aim is to help their clients get maximum value for their money. The profession also provide a balanced cost in all parts of the building works, as well as an accurately forecast of overall cost. For the purpose of common basis for efficient price competition before construction, the Quantity Surveyors developed the skill of pre-measuring; of taken off quantities from drawings and assembling than in a bill of quantities form for tenders. With the nature of their training. Quantity survey-

Other aspect of Quantity Surveyors work includes Feasibility Studies of capital projects, cost modelling, contract documentation and procurement, contract administration and management, monitoring of capital projects preparation of cost reports, Bills of Quantities Project Management, Facilities Management, Direct Labour projects, Preparing Schedules of Dilapidation, Arbitration and expert witness and so on etc. Construction industry control over 60 percent of nation's economy, hence Quantity Surveyor help the nation to use their resource to the best advantage.

1.2: PROPOSITION

The proposed computerisation of quantity surveying practice in Nigeria shall form the basis of this project. The work is purely academic exercise and will be based only on two firms - DESIGN QUANTS CONSORTIUM AND CONSTRUCTION COST PARTNERSHIP ALL IN KANO.

1.3: RESEARCH METHODOLOGY

In an attempt to computerise any system like quantity surveying practice, data collection is necessary. These are several investigative techniques out of which a researcher must choose, in his attempt to under take the research. The four major methods of data collection are:

- i) Interview method - primary
- ii) Questionnaire - "
- iii) Observation method - "

It is worthy to note that this project is also undertaken via the use of lecture notes, published papers, textbooks, journals and oral interview of the Technical Staff of the professional Quantity Surveying firms in Kano.

1.4: AIM AND OBJECTIVES

It is an established fact that computer technology has taken almost all the task of job execution. Computerisation is one and the first major step quantity surveying practice in Nigeria need to take in order to benefit in this technological information exchange.

My surveying in Kano state has shown that there is luke warm attitude by most quantity surveying firms to computerisation. At present only about 20% of the firms practice or engaged in some form of computerisation in the services they offer to their clients. It was also discovered that out of these 20% only about 10% have gone beyond the use of computer for typing purpose. Others only use standard office spreadsheet software such as Excel and dbase; specialised quantity surveying software are in rear use. Taking-off, Billing of quantities, pricing and analysis are still carried out within per and paper.

The reality now is that times are changing so fast and for the quantity surveying profession to be relevant in this 21st century, it has to move at least to the middle lane of the information surper high way, no other alternative. It is generally agreed by the quantity surveying body, that advancement in technology will completely change the landscape of what are now established in this new millennium.

1.5: PROBLEM DEFINITION.

My surveying on the practice of quantity surveying practice in Kano State shows that the profession is no longer meeting up with the current technological advancement. In trying to undertake the task of designing a new system, there is need to know exactly what is the problem with the existing system. The ability to know what is the problem, the procedure of getting rid of the problem and the required output specification is

The problem definition consist of three basic parts which includes:-

- (a) **Input:-** This describes what input or data that are available, and those that would be needed in order to produce the required output.
- (b) **Algorithm:-** This is a step by step method of solving a problem. With this all the procedure needed to achieve the desired objective are stated. In this case also if there is the need to carry out a calculation, there process is decreibed by the use of an algonthm, likewise recruitment and selection.
- (c) **Output Required:-** All computer or work done by computer is mainly to produce an output. Hence the output that is produced must be tested.

Quantity surveying profession can be regarded as a system which is made up of the felloing sections Principal Partner or Partners in some firms, Technical Staff, Administrative officers and all these sub-systems need computerisation. The aim of writing this project work is to computerize the activities of these sections of the organisation. During the preliminary investigation, the relevant data to the computerization of the system were collected. Apart from the data collections, there is the need to know exactly how they carry out their manual system of operation which is the procedure that is important to computerize this system. Also in order to design the out-put the Quantity Surveying practice output specification has to be provided.

1.6: SCOPE AND LIMITATION.

The work is on the computerization of quantity surveying practice in Nigeria but certain factors that would not allow for conduct of interview

throughout the states of Nigeria hence this work is limited in scope and coverage to the computerization of quantity surveying practice in Kano and Niger states. Also most of the work done in quantity Surveying firms are technical, hence all the work of the quantity surveying practice need to be computerized. The work is intended to cover major areas of work in professional quantity surveying office; contract documentation which include, bills of quantities preparation, tendering processes and the awarding of contracts, contract administration, issues of claims, project management and so on. We also intend to computerize the personal record of the staff and other activities of the firms.

In order to complete this work, there are certain problems that one has to pass through, and these includes;

- (a) The financial difficulties encountered during the project write-up
 - (b) Time consumption in data collection which involved travelling from Minna to Kano and my official duties which takes me outside the state often
 - (c) The other problem is none co-operative attitude of members of the profession even when they know that the project will help the future development of the profession in the country.
 - (d) Insufficient computer knowledge and application is another factor.
- This project work even though has these problems is still anticipated to be of good to the profession in the following ways.
- i) It will be a reference material for future development on the profession in computerization process.
 - ii) It will keep pace for other similar projects of practical importance, now and in future.

CHAPTER TWO

2.0: LITERATURE REVIEW2.1: INTRODUCTION

The discovering of computer and its increasing effects on the ways we do things nowadays is important to discuss at this stage. Computer technology is one of the greatest advancement made by man in recent time and its application has gone deep into our day to day activities. Some of these areas are industries, field of commerce, science and technology.

The machine (computer) has an important feature of fast processing of large volume of data and can present same as information in large amount. It is also good for safe keeping of information and can reduce the manpower need of an organisation, although it dose not block human rôles.

In line with the above, it is not however surprising to relate it to the processing of quantity surveying work. Quantity Surveying profession is very important in economic growth of every nation and the important of procession, rapid, and reliability, need not be over emphasized. The quantity surveying profession provide bases for uniform tendering; for the purpose of contract executions, accurate and reliable up to date information are always needed.

This task therefore can not be better achieved without the computerisation of quantity surveying practice in the country. This is why this project aimed at meeting the database requirement of quantity surveying practice. For the successful execution of the project throughout this programme, the master file and table file method of updates were used.

2.2: HISTORY OF COMPUTER DEVELOPMENT

A computer is an electronic machine which is capable of processing data in a wide variety of ways with an extremely high degree of speed and accuracy. It can also be defined as an electronic moving machine equipped with keyboard, input unit, output unit, central processing unit (CPU) which comprises of the control unit, the arithmetic/logic unit (ALU) and the primary storage unit.

The development of tools to help in calculation began with early civilization, people first use sticks, stones, toes, matches on a stick, marks in the sand or knots in a rope to aid in counting. Later, fingers were used to perform simple computations. However, all the processes were hard and extremely difficult to keep accurate record.

One of the earliest calculating devices created by man was the ABACUS, attributed to chines around 500BC is widely used in China up till today. It was however not until 1642 that Blaise Pascal, a French Philosopher and mathematician invented and produced the first mechanical adding and subtracting machine (a calculator). Later in the century Gulfred Wilhem Vonleibniz, a German mathematician designed the SPEPPED RECKONER, a machine that could not only add and subtract numbers, but can also multiply, divide and calculate square root of numbers. This forms the basis for many mechanical calculators. Hence, by 1920, electromagnetic device came into being.

The first machine to perform basic arithmetic operation well enough for commerical purposes was the ARITHNOMETER built by Charles Xavier Thomas in 1820. Charles Babbage, an English mathematician strode to design and develop the analytical engine in 1833 which could add, subtract, multiply and divide in automatic sequence at a rate of 60 additions per minutes.

In the 19th century, key-driven machines were developed by Wilhem S. Burroughs. It was the first commercially adding machine which can do calculations as well as printing, keeping records of data and summarizing information.

Between 1937 - 1944, Howard Aikenes of Haward University, completed his first computer, the Automatic sequence controlled calculator (ASCC), also called MARK I and it was followed by four other mark versions.

From the 19th century onward, significant advances, inventions and discoveries were made. John Attansoff, a mathematician professor of IOWA state college along with his assistant CLIFFORD BERRY completed a proto typed electronic computer in 1939. John V. Attanasoff was the first man to design and develop the first electronic computer.

Three years later, these people completed a working mo~~ve~~ to Attanasoff-Berry Computer (ABC). This fact was absolutely lost to history until 1974 and there has been a claim in many nations of the world as to the first manufacturer of first electronic computer.

The design of the ABC computer obviously influenced the design of the ENIAC (Electronic numerical inlegerator and computer) as the first large scale computer ever built. The ENIAC was designed in response to the U.S.A. army's need for a machine to compute tarjectories during the second world war. Eniac was not only used for babisting, but for forecasting and cosmic ray calculations. It was finally tested on the 2nd October, 1955.

In 1944, the U.S.A. army commissioned the school of electrical engineering to design a faster computer than ENIAC.

This university Automatic Computer UNIVAC) being the first computer denoted to non-military work was produced and delivered to the U.S.

Bureau of census in 1957. The UNIVAC was then used to predict the outcome of the 1952 presidential election by the Columbia Broadcasting Services.

This was the beginning of wide public awareness of computer. The refinement of the computer concept focused on types, hierarchy and purpose of usage level, hence the classification of computer system.

2.3: CLASSIFICATION OF COMPUTER SYSTEM.

Computer came in a wide variety of sizes, ranging from tiny hand-held devices to some that are several meters in height and diameter. Due to the increase in technology the parts are compacted to make computer smaller, but the computers have become increasingly powerful. Computer can be classified in terms of type usage level, purpose and hierarchy.

In terms of types or logic, computer can be divided into three categories:

- i) **ANALOG COMPUTER:-** This type of computer operates on continuous electronic/electrical frequency. Analog computers can process data that varies continuously such as variation in temperature, speed and chemical composition of petroleum products or the amount of current following through an electric conductor. Analog computers do not contain memory since it measures or compares data or value them.
- ii) **DIGITAL COMPUTER:-** Digital computers are used to perform arithmetic operations and access logical decisions according to instructions code on it in advance. The numbers and letters are represented as digits and operates on discrete waves. Some example of digital computers are personal computers, mainframes etc.
- iii) **HYBRID COMPUTER:-** This is the combination of both the analog

and digital processes. It is much big and sophisticated and as such, it is used in solving big problems such as those from the studies of process control, optimization or posture differentiation etc.

In term of size or hierarchy, computers can be divided into four categories:

- i) Super computers or maxicomputers
- ii) Mainframes
- iii) Minicomputers
- iv) Microcomputers

i) SUPER COMPUTERS OR MAXICOMPUTERS

Super computers are the most powerful computers available in the mid 1980s. They are the fastest and the most expensive computers. They are capable of performing at least ten million arithmetic operations per second. It is also known as maxicomputer. Super computers have the capability to perform seismic data gathered during crude oil-seeking explorations. It also enables the simulation of air flow around an airplane at different speeds and altitudes. Meteorologists use supercomputers to study the formation of tornadoes: Physicists also use the supercomputers to study the result of explosion of nuclear weapons.

ii) MAINFRAMES.

Mainframes are large computers commonly used in industries and business places. They are very expensive; one can cost over ₦20,000,000= (Twenty million naira). They are used to solve highly sophisticated problems. They have large memory capacity and are the most powerful computers. They operate also at a very high speed, producing a lot of heat and require cooling systems.

They often serve more than one users at a time, as they are able to support large networks of individual terminals and remote job entry

locations at the same time. These computers can be found in banks, large commercial and industrial companies, government agencies etc.

iii) MINICOMPUTER.

Maincomputers are smaller than mainframes though, they have same capabilities. They are also easier to instale, cost less and smaller storage units. They are usually used on businesses that do not require mainframes.

iv) MICROCOMPUTERS.

Microcomputers are the lowest and the least expensive computers currently available. These are the type of computers often found in small offices, homes and classrooms. The primary storage units of micro-computers are usually small, much smaller than the others mentioned above. The microcomputer can be classified into five major types:-

- i. General Purpose Computers.
- ii. Specific purpose computers
- iii. Real-time computers
- iv. Time-sharing computer systems
- v. Distributed database computer systems.

USES OF COMPUTER

Computer has become increasely used in almost all human activities as has been mentioned above. Some of these activities includes:-

- i. To reduce the complex calculatives into simpler forms.
- ii. To help in efficiently storing, filling and processing of data and information.
- iii. To help in making an easier, accurate, reliable and logical com-
parision between things.
- iv. To ease the cumbarsome of inflow and outflow of data and information

v. In Banking operations, Departmental stores and offices.

2.4: FEASIBILITY STUDY

INTRODUCTION

The feasibility study was carried out with a view to determining whether or not the proposed computerisation of quantity surveying practice in Nigeria is desirable.

After investigation in the existing practice of the profession was carried out, we are able to identify the problems, and we look at the alternative solutions to these problems. It is important also for us to estimate the cost of processing and producing a complete contract document on a particular project and do a cost and benefit analysis, for each alternative solution proposed. Hence the best alternative solution is what will be more profitable to the firm.

During the investigation of the existing practice, it is of importance that clear objectives are laid down before beginning the proposed system and also before the implementation of the proposed system. For the purpose of this project, below are the methods used in obtaining data.

i) **INTERVIEW:-** This is the most widely used method and it yields the most productive results. The facts of the existing system were known, the staff expressed their opinion on both the new and old system. The management decisions to the proposed system were known. At the end it was found that the proposed computerised system was welcomed by all.

ii) **QUESTIONNAIRE:-** This is particularly useful when a little information is needed from a large number of people. We used it to compare alternative solutions and choose the best.

iii) RECORD INSPECTION:- This is the study of the existing information in the office, organisational chart, and staff performance in the past.

This will help in formulating the proposed system

SCOPE OF FEASIBILITY STUDY

Quantity Surveying profession is the economic of the construction industries and hence their work mainly ^{is on} finance between parties. Most of the works are technical although as office dealing with human beings, it also deal with personal matters. This project work therefore deals more on technical aspect of the profession than the human problems, some of the areas to be computerised include method of data processing (contract documentation and procurement, which is preparation of contract estimate, tendering and tendering evaluation, contract administration and managemnt which includes contract monitoring, preparation of variation works and financial reports).

CHAPTER THREE

SYSTEM ANALYSIS3.1: INTRODUCTION

Under this chapter, we intend to analyse all the data and other sundry information so far generated with a view to highlighting further advantages and disadvantages of the existing manual system and the proposed computerised system. This process which forms the major part of computerisation is called paracomputing.

In system analysis and design the concern is usually with man made systems involving input, processes and outputs. A system can be regarded as a set of interacting elements responding to inputs to produce outputs.

Business procedures such as quantity surveying, is an interaction that needs to be managed to achieve this objective. The activities in quantity surveying organisations are as listed under the scope and limitations of chapter one of this project.

3.2: PROBLEM DEFINITION

When designing a new system, there is a need to know exactly what is the problem with the existing manual system. The purpose is to enable us to establish whether there is a need for a new system, and if so, then the existing problem and the new systems are clearly defined.

Some of the problems of the existing system as mentioned before are arithmetic errors, limited speed to meet the current need of today, no solutions for complex problems, too much paper work that occupies spaces etc. These problems made the existing system inefficient and ineffective.

3.3: ANALYSIS OF THE ORGANISATION

The Nigerian Institute of Quantity Surveyors was founded in 1969 by a group of Nigerians who trained, qualified and practiced in the United Kingdom but who upon returning to Nigeria sensed the urgent need to develop the profession of Quantity Surveying in Nigeria by establishing a parallel body to the Royal Institute of Chartered Surveyors of United Kingdom.

The profession of Quantity Surveying is practiced in Nigeria along the same pattern as in the United Kingdom and other Commonwealth countries. In America, they are known as cost Engineers. Quantity Surveying functions are carried out in other countries under a variety of names. Thus, the role is universal.

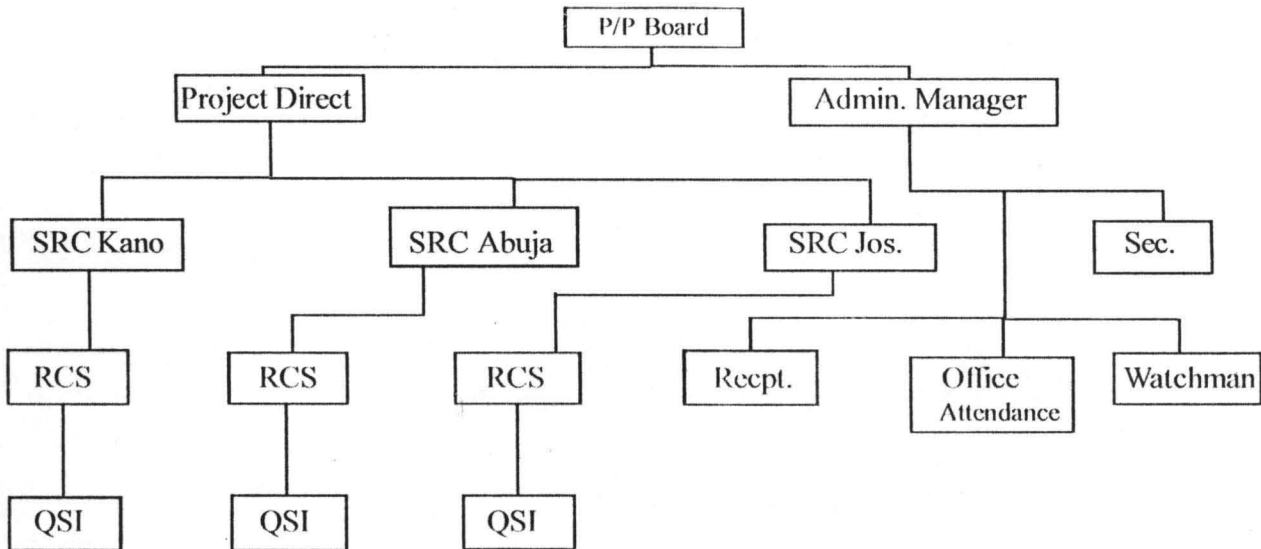
The regulated and other professions (miscellaneous provisions) Act 1978 recognised Quantity Surveying Profession as one of the scheduled professions while the decree No. 31 of 1986 gave legal backing and recognition to the Quantity Surveying Profession and also set up the Quantity Surveyors Registration Board of Nigeria (QSRBN) to regulate the profession.

3.4: ORGANIZATION AND MANAGEMENT

A registered and practicing Quantity Surveying firm is governed either by a Principal Partner or Partners. This is followed by Associate Partners or General Manager in certain firms; then the technical staff and the administration staff. These departments are:-

- i. Project manager
- ii. Administrative manager.

Below is the organisation chart of Design Quants Consortium - a registered and practicing Quantity Surveying firm with head office address is in Kano.



The firm has board of 3 directors including the Principal Partner who is the Chief Executive. The board is responsible for the formulation of firm policies and bring of jobs to the firm. They also determine the condition of service of the firm.

The other two sections; Technical section is headed by project Director while the Administrative section is headed by Administrative Manager.

After the Administrative Manager are the three Senior Residence consultants, with their Residence consultants and Quantity Surveyor I. This follows by the Secretary of the firm, and after the secretary, the Receptionist, then Office Attendance and the watch man. These segments work together for the firm to achieve it major objective.

3.5 FUNCTIONS OF QUANTITY:

- A. The most important function of Quantity Surveyor includes. Contract Documentation and Procurement, that is tendering procedures and contractual arrangements; Preparation of Bills of Quantities and

other documents for obtaining tenders for the purpose of contract

i) administration and (ii) tender evaluation, analysis and reporting.

B. Other major functions are the Contract Administration and Management, that is (i) preparation of interim valuation for the purpose of monthly payment to contractors, (ii) adjustment and measurement of changes in scope of works (iii) Management of cost implications of contractual issues and (iv) cost control-preparing financial statements (v) cash flow and (vi) final accounts.

C. Cost Modelling - which includes cost estimates and budgeting, cost planning, monitoring and control to ensure that clients' budget is not exceeded and cost studies and research of construction resources.

Other functions are as follows:-

D. Feasibility studies of capital projects.

- i) Budgetary Planning for annual, medium and perspective development plans.
- ii) Capital investment policy advice
- iii) Advice on financial plans and procurements
- iv) Cash flow forecasts and analysis
- v) Profitability studies and sensitivity analysis
- vi) Value analysis and management and cost benefit studies
- vii) Life cycle studies and cost in use
- viii) Time effect on costs and profitability.

E. Monitoring of capital projects

- i) Programme management
- ii) Project auditing
- iii) Monitoring and evaluation of developments

F. quantity Surveyors prepare cost reports and priced Bills of Quantities and appropriate documentation for.

- i) Capital allowance and taxation advice
- ii) Bank loans and facilities.
- iii) capital Market finance proposals.
- iv) Planning approvals.

G. Project Management.

Project Management reinforces client control over the complexities of modern developments. The project manager is the client's expert representative responsible for co-ordinating the whole development process to ensure timely completion within budget and performance requirements.

As Quantity Surveyors have been specially trained in economic, financial, management, legal and contractual aspect of construction, they are particularly well qualified for the role of project manager.

Some areas they offer services includes;

- i) Identification of client's objectives and priorities.
- ii) Development and preparation of the brief
- iii) Prepare an optim/feasibility studies
- iv) Execute a risk analysis exercise
- v) Establish the budget and the total project programme.
- vi) Advise on the design team selection
- vii) Establish and manage integrated communication and information systems.
- viii) Conduct tender evaluation and selection and selection contractors.
- ix) Establish the post contract time, cost and quality control and management systems.
- x) Control, monitor and report through to the project completion, commissioning and occupation.

As prime consultants, Quantity Surveyors perform project management

H. Direct Labour Projects.

- i) Preparation of labour and material schedules to determine the quantity of labour and materials required on a particular project
- ii) Supervision of actual purchasing of the materials using the appropriate inventory modelling techniques
- iii) cost control during the construction process by ensuring adherence to programme and plans - Time management.

I. Arbitration.

- i) sitting as an arbitrator or an umpire.
- ii) Preparation of proof of evidence.
- iii) preparation of an award

J. Expert witness - Provision of expert opinion on construction disputes.

K. Dilapidation

- i) Preparing schedules of condition for abandoned projects or renovation works
- ii) Preparing, measuring and pricing schedules of dilapidations.
- iii) Negotiation and settlement of land lord or tenant.
- iv) Expert evidence in cases of disputes.

There are others works such as Fire Insurance Assessment, Facilities Management, that is activities under maintenance/rehabilitation project and facilities management.

3.6: ANALYSIS OF THE EXISTING SYSTEM

The functions of Quantity Surveyors are many as listed above and also to complex; dealing with costs and control. Other aspect of the works carried out in office is administration dealing with staff

matters, office organisations and function.

When new work is gotten in the office, for instance on contract documentation, /procurement and contract administration and management, a technical staff is assigned for the project. The document is stamped and numbered by the receptionist indicating the date and month of receiving the work and serial number and the secretary opens a file for the project.

The project underwent the following processes;

- i) Taking off of the quantities
- ii) Abstracting
- iii) Bills of quantities
- iv) Pricing of the Bills of Quantities
- v) Arrangement and invitation for tender
- vi) Tender evaluation analysis and reporting.

When the contract is awarded the following works is carried out,

- i) preparation of interim valuation for monthly payment
- ii) adjustments and measurement of changes in scope of works.
- iii) Measurement of cost implication of contractual matters.
- iv) Cost control (preparation of financial statement)
- v) Cash flow
- vi) Preparation of final accounts.

Each project file is usually numbered and kept on wooden or metal shelves in the office. When the need arises for a particular file to be used it is traced manually, one after the other. When it is seen and dispensed with, it is returned back to its normal place.

Hence all operations from the first day of getting the work until the completion and handing over of the work are done manually.

3.7: PROBLEMS OF THE EXISTING SYSTEM

The existing practice of quantity surveying profession has the following disadvantages:

INEFFICIENCY:- There are some errors due to human incapability. Some project are complex and involves large figures; there are some arthimatic errors and most of the times the tender figure are not accurate.

TIME CONSUMING:- Time as an important factor has to be considered in carrying out any business activities, but of time to finish a particular project.

COST:- The aim of any organisation or firm is to maximize profit and minimize cost, but by using the manual system, minimization of cost is not all that possible. Manual operations involve more staff and some time, over time are paid to meet up the demand on some projects.

COMMUNICATION:- The correspondences between the client, contractors and other consultants are not fast with manual operated system.

LACK OF SECURITY:- A document kept in file jackets and shelves may be accessed by unathorized person and total contract sum of a project under tendering may be known.

Secondly these files may be distroyed by fire or by other means some files may be missing or misplaced and all the information contained lost.

3.8: ANALYSIS OF THE PROPOSED SYSTEM

The computerization of Quantity Surveyoring practice in Nigeria is to develop an overall plan for an integrated Quantity Surveying practice system. As the plan proves economically and technologically

feasible, particular phases of the integrated system can be computerized in a planned sequence.

This approach entails integration by using the system approach and multiple files (including the feasibility studies of the proposed project, cost modelling, contract documentation and procurement, contract administration and management).

This also attempt to keep up-to-date information so that enquires may be answered timely and accurately. It also help to eliminate duplications and inconsistencies in existing files.

Therefore, the propose system implies the application of computer in part or full to manually maintained data processing with specific reference to Quantity Surveying practice. This system will be analyse using the following methods:-

- i) method of information generation
- ii) method of file organization
- iii) method of information dissemination
- iv) method of data processing
- v) security and safety of files.

The method of information generation is similar to the old system since it is the same type of documents that will be used. The computer operator will eliminate the use of paper for keeping information, but entering them directly into the PC through the keyboard.

The method of data processing adopted in this system is that each project is given an identification(ID) number by which the project is uniquely identified. Once a project is given the identification number, (ID) all other information on the project is gotten or supplied through ID. This safe the trouble of having separate files for each project on the same type of data information, instead it is placed in a single file

for all. This is often referred to as data base file.

The usual file organisation and storage is that a single database is created for the whole projects in the office with a given name to the file. This file name is necessary any time certain information is to be sorted.

Hence, the file describes the cabinet, while the content describes what the file contained. For the movement of files and information dissemination two methods used are; having a file view of the information on the display, by issuing queries that will actually lead to specific information requirement or in the alternative, issue query as to when necessary and print the required information on paper. The two methods of accessing can be done either remotely in a network environment without any other human involvement except the person looking for the telephone line or direct cabling of terminals. If the telephone is over a long distance, it is referred to as WIDE AREA NETWORK (WAN). However, for a short distance, it is called LOCAL AREA NETWORK (LAN). The second method involves the use of a single user computer and no resources of the computer is with any other person whatever.

3.9: ADVANTAGES OF THE PROPOSED SYSTEM

The advantages of the proposed system includes:-

- i. **SPEED:-** The obvious benefit of using a computer is speed. The computer can perform calculation and process data quicker than the alternative method does. Work that can take human beings months or years might be accomplished with computer within seconds or minutes.
- ii. **ACCURACY:-** The computerized quantity surveying office with accurate data will produce an intended work with a very high degree of accuracy. The computer does exactly what the program tells it to do.

In addition, the computer does not get bored or fatigued.

- iii) **RETENTION:-** The computer can store, search massive files of data and program in no time, and the content of the file does not fade.
- iv) **ECONOMY:-** The advantage of speed and accuracy can be related and translated into money savings, usually the per unit cost of processing data.
- v). **RELIABILITY:-** The computer can work reliably for 24 hours in a day for years with a little time out for maintenance. Modern electronic computer perform at a high level of reliability and equipment failure are minimal.
- vi) **WIDE APPLICABILITY:-** A computer can be used not only for quantity surveying work, but also to solve a wide variety of problems that arise in science and business world. The boundaries of what computer can do are limited only by the ability and imagination of its users.
- vii) it also reduce the paper in the office and the spaces occupied by files.

3.10: SECURITY FACILITIES IN THE NEW SYSTEM

There is protection of works through the use of "PASSWORD". This is a situation where by all the users in a network have a separate "password", or each staff in an office with different computers has separate "Password" with which to access their information from a file. If the "password" is not known, even if the file name is known, accessibility to the information is not possible. The new system has facility for backup files against unauthorized users. This allow for more than one copy of a file or program. That is files on the hard Disks are copied to a floppy disk to serve as backups, so that in the event of fire, flood

or other disaster, the other copies can be accessed. The new system also has subdirectory protection through "password". For example Dr.-DOS (multiple users) provide a file called password Exe, which protects other users to have access to the protected subdirectory.

It has facility of logging via user's identification number (ID). The program protects data in a network against others users as they cannot temper with the data stored in a computer memory without the ID.

There is also the facility that makes it possible for database file to be encrypted. And once a data file is encorypted, the data in it is converted to ASCII values.

3.11: COMPARATIVE ANALYSIS BETWEEN THE OLD AND NEW SYSTEM

The analysis done so far show that there are a lot of similarities and differences between the old and the new system. Each of the two systems has its distinct characteristics that makes it different from one another.

Having viewed the advantages of the old and the proposed sytem, it is obvious that the proposed system is far more better than the old system.

3.12: COST - BENEFIT ANALYSIS

In formulating the techniques for comparing development and planning options, there are two techniques applicable to the planning and designing of a project.

These are as follows:-

The first technique is concerned with the best means to a given end, that is the best strategy or design from the point of view of value of

money to solve a given panning problem. These techniques are as fellows:-

- i) Cost-in-use
- ii) Life cycle costing
- iii) Total cost
- iv) Ultimate cost analysis

These are independently developed as analytical solutions to slightly different problems

The second technique include:-

- i) cost benefit analysis
- ii) cost effectiveness. This is concerned with the "ENDS as well as "means"

These technique are concerened with servicing the cost of construction, maintenance and other servicing cost over the life of a development against the benefit of function, convenience and appearance. As far as possible each cost and benefit is evaluated in money terms.

COST-BENEFIT ANALYSIS (C.B.A.)

For the purpose of this research work, cost-Benefit analysis technique is use to compare the old and the new system. This is based on the following reasons:-

- i. This does not just concerned with which alternative gives the best value for money but also with which alternative gives the best return on capital.
- ii. It can be used to determine which of the possible projects to finance in order to maximize the return from a given amount of capital or public resources.

COST: As far as this project is concerned, this system will run on a personal computer (PC)

BENEFIT: The system will be expected to assist in coping with peaks and reduce the need for overtime, temporary staff in meeting up on a given project and reduce paper work.

A COST-BENEFIT ANALYSIS OF THE PROPOSED SYSTEM

This can be divided into two:-

- i. Old system
- ii. New system

OLD SYSTEM

1.	DEVELOPMENT COST	₹
	Installation and delivery cost	20,000.00
2.	OPERATION COST	
i.	Maintenance cost	
	Environmental cost	20,000.00
	(Air conditioning, fire extinguisher)	
ii.	IMPLEMENTATION COST	
	Staff training	50,000.00
	Staff salary/wages	200,000.00
iii.	STAFF FACILITIES COST	
	Furniture	60,000.00
	Transportation	40,000.00
	Electrical appliances	<u>30,000.00</u>
	Total	<u>₹420,000.00</u> =====

TOTAL ANALYSIS COST.

Development cost + Operation cost
 (maintenance cost) + Implementation cost
 + staff facility cost

NEW SYSTEM COST	
1.	DEVELOPMENT COST
	SYSTEM ANALYSIS COST
-	Installation delivery cost
	₦ 45,000.00
II	PERSONAL SYSTEM SOFTWARE PACKAGE
-	Window 96 + 98
	25,000.00
-	Vector
	50,000.00
-	MS DOS
	15,000.00
-	dBase IV package
	25,000.00
-	Other software such as word perfect.
	<u>50,000.00</u>
	Total =
2.	OPERATION COST
i.	MAINTENANCE COST
-	Environmental cost
	100,000.00
-	Software modification cost
	15,000.00
-	System servicing
	40,000.00
ii.	IMPLEMENTATION COST
-	Staff training
	50,000.00
-	Staff salary/wages
	100,000.00
iii.	HARDWARE COST
-	Electrical appliance
	100,000.00
-	Monitor, processor and key board
	150,000.00
iv.	STAFF FACILITIES COST
-	Furniture
	25,000.00
	Transportation
	<u>45,000.00</u>
	<u>₦735,000.00</u>
	=====

TOTAL COST ANALYSIS

Development cost + Operation cost

where,

Development cost = Total System Analysis cost +
Total Quantity Surveying Software Package Cost

and

Operation cost = Total Maintenance cost + total implementation cost +
Total hardware cost + Total Staff Facilities Cost.

Although the cost of computerisation far exceeds the cost of running the old manual system (in terms of physical cash), the benefits to be derived from it will outweigh the cost to be incurred. This fact coupled with the inadequacies of the manual system will convince the relevant authority to effect a computerisation.

CHAPTER FOUR

SYSTEM DESIGN AND IMPLEMENTATION

4.1 INTRODUCTION:

System design and implementation is to design an application software package capable of meeting users requirement and the process of making the designed system fully operational.

This involve the use of the results obtained from the analysis presented in chapter three, which essentially is a requirement specification and this will be used to produce a "System Specification". The System Specification consists of the design elements, which are used to design the system.

For the smooth functioning of this program, man, computer and procedures must be coordinated and made to work together; that is to transfer the computerized system into physical reality.

4.2 DBASE IV:

A database is an organised collection of related information (data). A database management system is a software system capable of supporting and managing an integrated database. It is responsible for validation and control procedures in the database environment. Dbase IV is a version of database package developed by **Ashton – Tate**. It comprises an ASSIST MENU OR CONTROL CENTER AND A DOT PROMPTS working environment.

Dbase IV is a relational database manager data in more than one file at once, and these files are created as tables with row and columns. A relational database package is one that can relate the data in one table for (or file) to data in another table through the use of a common field.

4.3 SYSTEM CONVERSION:

The aim of system conversion is to recommend to the user of the system suitable method by which the organisation's operation will shift from the old to the new system. There are quite a number of ways by which this can be accomplished depending on the situation at hand. A list of methods that can be applied and a brief explanation on their application are shown below.

- (i) Parallel Approach: In this approach both old and the new system are run simultaneously. This is done for a short time from where the user is made to appreciate the new system and gradually sell off the old system, giving way to the new system until a time when it will be only the new system is in operation. This approach is always used where the users have no experience on the new system.
- (ii) Phase by Phase: This is a method of applying the new system to a section of the organisation operation at a time while the rest of the operation is run on the old. By the time the first section of operation proves to be compatible with the new system, then another section can be considered. These are a gradual shift from the old to the new system.
- (iii) Direct Change Over: Here it is assumed that the computer operators are literate and experienced in the field and the management has high confidence on them, a direct change over is advised.
- (iv) Pilot Approach: In this method, a working version of the system is implemented in one of the section of the organisation operation and based on the result got, necessary changes are made. Then installation of the system for the whole organisation would be effected either in part or all at once.

- (v) *The Choice:* After careful study of the above alternative approach, the designer choice parallel changes over.

First for the simple reason that the Design Quarts Consortium are not experienced. Secondly the system has to be monitored for some months to correct any deficiency that might have been discovered during the period.

4.4 STAFF TRAINING:

For the efficient handling of the new system, the organisation should train at list two middle level officers on the application of the system. The two officers so trained can pass on the idea to other members in future. The followings are the Areas to be covered initially.

- Computer Appreciation.
- Window 95.
- Word Processing.
- Spread Sheet.
- Vector.
- Element of Dbase IV.
- The Application of the New Software.
- Element of Computer Installation and Maintenance.

The Computer appreciation and other basic aspect of the training are included because of the understanding that organisation is moving from manual system to computerized system. The users are assumed to have no relevant experience and must therefore be brought to a level of appreciating the computer system.

The Word processor, Spreadsheet, Desktop Publishing Packages are included to give the user a wide range of utility. The basic Dbase IV is also included to enable them have idea on system maintenance. This does not mean that the users can make any modification on the system without the prior knowledge of the System Engineer.

4.5 INSTALLATION:

Installation can be classified into two main parts; first is the hardware installation while the second is software installation.

- (a) HARDWARE INSTALLATION: The responsibility of hardware installation falls on the shoulder of the System Engineer or Vendor in some cases. This involves the computer room, which is sizable enough, with at least 1No. 2HP Air Conditioner. The room should be moderately furnished as well. A compartment must be built to house the computer; that is a reading table sized cubicle having two drawers each side. The monitor and the processor's seat must be provided with a two door safe. The UPS and Voltage regulator should also be mounted. It is important to note that each of these computer peripheral hardware installed a software must exist for is (that is driver).
- (b) SOFTWARE INSTALLATION: Most IBM and IBM Compatible machines supplied this days come hardly with the Window 95 or Window 98 operating system. Other software installed will depend on the user's requirement. For this project work installation of the following software's recommended. The word-processing package like Microsoft word perfect, word star, spreadsheet, vector, Dbase IV and so on.

4.6 REPORT OF THE STUDY:

During the periods of investigation, a lot of informations were collected on the operation of the existing system. The report on the information gathered show that for the profession to remain relevant in the near future, even presently, the following areas need to be improved:

- i. The existing system allows a lot of errors. When calculation becomes complex and cumbersome, there may be a lot of arithmetic errors.

- ii. The speed with which data are collected and processed is not fast enough to meet the challenges of today.
- iii. There are a lot of paper works contract documents that occupied spaces in the offices.
- iv. The produced documents in most cases are not tidy with what is obtained currently other professions.

4.7 TESTING PROJECT FEASIBILITY:

The project feasibility tests were carried out in two different ways; Operational Feasibility and Technical Feasibility.

- a. OPERATION FEASIBILITY: The operational feasibility of the proposed system was conducted and it was discovered that the new system proposed is operationally feasible. There is high demand for a change by members of staff. Secondly the principal partner of most firms accepted the idea of computerization.
- b. TECHNICAL FEASIBILITY: It was also discovered that the proposed system could be handled with the existing staff in the offices. They only need to start with two staff training that will help others – indoors training. Purchase of one or two personal computer and little software technology.
- c. **ECONOMIC FEASIBILITY:**
BENEFITS OF THE PROPOSED SYSTEM: The benefits of the proposed system need not be over emphasised. Some of these benefits are as follows:
 - (i) The profession will become modern and current with other professional bodies throughout the world.
 - (ii) High degree of accuracy is achieved.

- (iii) Reduction in space occupied by files and cabinets.
- (iv) Reduction in the time spent in searching and storing of data.
- (v) Reduction in time spent in processing data.
- (vi) A faster means of data processing and information presentation.
- (vii) More efficient reliable and effective presentation of work.

d. This is to find out whether the aforementioned equipment can be afforded by the organisation, whether it will be beneficial and whether the ends will justify the means.

A critical look at cost benefit analyst of computerization will justify this claim, where the project has a long time benefit to the organisation.


```
SET STATUS OFF
SET TALK OFF
SET SCORE OFF
SET ECHO OFF
SET CENTURY ON
```

```
DO MAIN_DEF
DO TITLE
ACTIVATE POPUP MAINMENU
```

```
PROCEDURE MAIN_DEF
DEFINE POPUP MAINMENU FROM 7,27 TO 14,60
DEFINE BAR 1 OF MAINMENU PROMPT "=====MAIN MENU===== " SKIP
DEFINE BAR 2 OF MAINMENU PROMPT " PROJECT EVALUATION ";
MESSAGE "Enter Data for New Project"
DEFINE BAR 3 OF MAINMENU PROMPT " MODIFY RECORD(S) ";
MESSAGE "Make changes to existing record(s)"
DEFINE BAR 4 OF MAINMENU PROMPT " DELETE RECORD(S) ";
MESSAGE "Remove existing record(s)"
DEFINE BAR 5 OF MAINMENU PROMPT " REPORT ";
MESSAGE "Output report to screen,printer or file"
DEFINE BAR 6 OF MAINMENU PROMPT " EXIT ";
MESSAGE "Leave the program"
ON SELECTION POPUP MAINMENU DO MAIN
RETURN
```

```
PROCEDURE MAIN
DO CASE
CASE BAR() = 2
DO ADDREC
CASE BAR() = 3
DO MODIFREC
CASE BAR() = 4
DO DELREC
CASE BAR() = 5
DO REPREC
CASE BAR() = 6
CLEA
QUIT
ENDCASE
RETURN
```

```
PROCEDURE TITLE
CLEAR
SET CLOCK TO 1,60
@1,12 SAY DATE()
@2,24 TO 5,60 DOUBLE COLOR R+
@2,23 FILL TO 5,61 COLOR W+/B+
SET COLOR TO R+/B+
@3,27 SAY " PROJECT EVALUATION"
@4,27 SAY " "
SET COLOR TO
@17,10 TO 20,70
@18,20 SAY "Use the UP and DOWN ARROW keys to make selection"
@19,20 SAY " and press ENTER key "
SET COLOR TO
```

RETURN

THIS IS FOR THE HEADING *

PROCEDURE HEAD
GET COLOR TO W+/B+, , R+
LEA
0,8 SAY DATE()
GET CLOCK TO 0,62
1,0 TO 1,19 DOUBLE
1,61 TO 1,79 DOUBLE
0,20 TO 3,60 PANEL
1,25 SAY "PROJECT EVALUATION"
RETURN

THIS IS FOR ADDING RECORD*

PROCEDURE ADDR
ANS="Y"
DO WHILE ANS="Y"
DO HEAD
DO EVALUATE
2,30 SAY "NEW INFORMATION"

DO STORE SPACE(15) TO MCONT
DO STORE SPACE(15) TO MPRO
DO STORE SPACE(15) TO MLOC
DO STORE CTOD(" / / ") TO MSTARTD
DO STORE CTOD(" / / ") TO MFIND
DO STORE CTOD(" / / ") TO MEXPD
DO STORE SPACE(10) TO MMONTH
DO STORE 0 TO MNOS, MNOSC, MPER1, MNOF, MNOFC, PER2, MNUF, MNUFC, PER3, MNOSC, MNOSCC, PER4
DO STORE 0 TO MNR, MNRC, PER5, MNBW, MNBWC, PER6, MNW, MNWC, PER7, MND, MNDC, PER8, MNFP, MNFPFC
DO STORE 0 TO PER9, MNP, MNPDC, PER10, MNC, MNCFC, PER11, MNFF, MNFFC, PER12, MNPI, MNPIC
DO STORE 0 TO PER13, MNEI, MNEIC, PER14, MNEW, MNEWC, PER15

4,2 SAY "MONTH:" GET MMONTH PICT "@!"
LEAD
IF MMONTH=SPACE(4)
@15,10 SAY "NULL RECORD NOT ALLOWED O.K."
WAIT ""

ELSE
LOCATE ALL FOR MONTH=MMONTH
IF FOUND()
@15,20 SAY "This Project has been Evaluated for this Month,O.K."
@16,20 SAY "Press ENTER key...."
WAIT ""

ELSE
DO DATA
READ
MPER1=(MNOSC*100)/MNOS
MPER2=(MNOFC*100)/MNOF
MPER3=(MNUFC*100)/MNUF
MPER4=(MNOSCC*100)/MNOSC
MPER5=(MNRC*100)/MNR
MPER6=(MNBWC*100)/MNBW
MPER7=(MNWC*100)/MNW

MPER8=(MNDC*100)/MND
MPER9=(MNFPC*100)/MNF
MPER10=(MNPDC*100)/MNP
MPER11=(MNCFC*100)/MNC
MPER12=(MNFFC*100)/MNFF
MPER13=(MNPIC*100)/MNPI
MPER14=(MNEIC*100)/MNEI
MPER15=(MNEWC*100)/MNEW
@7,60 SAY MPER1
@8,60 SAY MPER2
@9,60 SAY MPER3
@10,60 SAY MPER4
@11,60 SAY MPER5
@12,60 SAY MPER6
@13,60 SAY MPER7
@14,60 SAY MPER8
@15,60 SAY MPER9
@16,60 SAY MPER10
@17,60 SAY MPER11
@18,60 SAY MPER12
@19,60 SAY MPER13
@20,60 SAY MPER14
@21,60 SAY MPER15

APPEND BLANK

REPLACE CONT WITH MCONT, PRO WITH MPRO, LOC WITH MLOC
REPLACE STARTD WITH MSTARTD, FIND WITH MFINDD, MONTH WITH MMONTH
REPLACE PER1 WITH MPER1, PER2 WITH MPER2, PER3 WITH MPER3, PER4 WITH MPER4
REPLACE PER5 WITH MPER5, PER6 WITH MPER6, PER7 WITH MPER7, PER8 WITH MPER8
REPLACE PER9 WITH MPER9, PER10 WITH MPER10, PER11 WITH MPER11, PER12 WITH M
REPLACE PER13 WITH MPER13, PER14 WITH MPER14, PER15 WITH MPER15

IF
IF
22 SAY "Are there more entry? (Y/N)" GET ANS PICT "!"

DO
DO
SE DATABASE
COLOR TO
TITLE
URN

PROCEDURE DATA

25 SAY "CONTRACTOR:" GET MCONT PICT "@!"
56 SAY "PROJECT:" GET MPRO PICT "@!"
2 SAY "LOCATION:" GET MLOC PICT "@!"
28 SAY "START DATE:" GET MSTARTD
50 SAY "FINISH DATE:" GET MFINDD
2 SAY " TOTAL NUMBER NUMBER COMPLETED PERCENTAG
2 SAY "SUBSTRUCTURES:" GET MNOS PICT "999999"
40 GET MNOSC PICT "999999"
2 SAY "FRAMES:" GET MNOF PICT "999999"
40 GET MNOFC PICT "999999"
2 SAY "UPPER-FLOOR:" GET MNUF PICT "999999"
40 GET MNUFC PICT "999999"
0,2 SAY "STAIR-CASE:" GET MNOSC PICT "999999"
0,40 GET MNOSC PICT "999999"
1,2 SAY "ROOFING:" GET MNR PICT "999999"
1,40 GET MNRC PICT "999999"
2,2 SAY "BLOCK WORK:" GET MNBW PICT "999999"

```

@12,40 GET MNBWC PICT "999999"
@13,2 SAY "WINDOWS:" GET MNW PICT "999999"
@13,40 GET MNWC PICT "999999"
@14,2 SAY "DOORS:" GET MND PICT "999999"
@14,40 GET MNDC PICT "999999"
@15,2 SAY "FINISHES-PLASTERING:" GET MNFP PICT "999999"
@15,40 GET MNFPC PICT "999999"
@16,2 SAY "PAINTING & DECORATION:" GET MNPDC PICT "999999"
@16,40 GET MNPDC PICT "999999"
@17,2 SAY "CEILING FINISHES:" GET MNCF PICT "999999"
@17,40 GET MNCFC PICT "999999"
@18,2 SAY "FLOOR FINISHES:" GET MNFF PICT "999999"
@18,40 GET MNFFC PICT "999999"
@19,2 SAY "PLUMBING INSTALLATION:" GET MNPI PICT "999999"
@19,40 GET MNPIC PICT "999999"
@20,2 SAY "ELECTRICAL INSTALLATION:" GET MNEI PICT "999999"
@20,40 GET MNEIC PICT "999999"
@21,2 SAY "EXTERNAL WORK:" GET MNEW PICT "999999"
@21,40 GET MNEWC PICT "999999"
RETURN

```

```

*****
* THIS IS FOR MODIFICATION OF RECORD(S) *
*****

```

PROCEDURE MODIFREC

ANS="Y"

DO WHILE ANS="Y"

DO HEAD

USE EVALUATE

@2,30 SAY "MODIFY RECORD"

STORE SPACE(10) TO MMONTH

STORE 0 TO MNOS,MNOSC,MNOF,MNOFC,MNUF,MNUFC,MNSC,MNSCC

STORE 0 TO MNR,MNRC,MNBW,MNBWC,MNW,MNWC,MND,MNDC,MNFP,MNFPC

STORE 0 TO MNPDC,MNCF,MNCFC,MNFF,MNFFC,MNPI,MNPIC

STORE 0 TO MNEI,MNEIC,MNEW,MNEWC

@4,2 SAY "MONTH:" GET MMONTH PICT "@!"

READ

IF MMONTH=SPACE(4)

@15,10 SAY "NULL RECORD NOT ALLOWED O.K."

WAIT ""

ELSE

LOCATE ALL FOR MONTH=MMONTH

IF .NOT. FOUND()

@15,20 SAY "This Does not exist,O.K"

@16,20 SAY "Press ENTER key...."

WAIT ""

ELSE

STORE CONT TO MCONT

STORE PRO TO MPRO

STORE LOC TO MLOC

STORE STARTD TO MSTARTD

STORE FIND TO MFIND

STORE EXPD TO MEXPD

@7,60 SAY PER1

@8,60 SAY PER2

@9,60 SAY PER3

@10,60 SAY PER4

@11,60 SAY PER5

```
@5,2 SAY "LOCATION:"
@5,25 SAY MLOC
@5,48 SAY "START DATE:"
@5,68 SAY MSTARTD
@6,2 SAY "ELEMENTS"
@7,2 SAY "SUBSTRUCTURES:"
@8,2 SAY "FRAMES:"
@9,2 SAY "UPPER-FLOOR:"
@10,2 SAY "STAIR-CASE:"
@11,2 SAY "ROOFING:"
@12,2 SAY "BLOCK WORK:"
@13,2 SAY "WINDOWS:"
@14,2 SAY "DOORS:"
@15,2 SAY "FINISHES-PLASTERING:"
@16,2 SAY "PAINTING & DECORATION:"
@17,2 SAY "CEILING FINISHES:"
@18,2 SAY "FLOOR FINISHES:"
@19,2 SAY "PLUMBING INSTALLATION:"
@20,2 SAY "ELECTRICAL INSTALLATION:"
@21,2 SAY "EXTERNAL WORK:"
```

PERCEN

```
STORE PER1 TO MPER1
STORE PER2 TO MPER2
STORE PER3 TO MPER3
STORE PER4 TO MPER4
STORE PER5 TO MPER5
STORE PER6 TO MPER6
STORE PER7 TO MPER7
STORE PER8 TO MPER8
STORE PER9 TO MPER9
STORE PER10 TO MPER10
STORE PER11 TO MPER11
STORE PER12 TO MPER12
STORE PER13 TO MPER13
STORE PER14 TO MPER14
STORE PER15 TO MPER15
```

```
@7,60 SAY MPER1
@8,60 SAY MPER2
@9,60 SAY MPER3
@10,60 SAY MPER4
@11,60 SAY MPER5
@12,60 SAY MPER6
@13,60 SAY MPER7
@14,60 SAY MPER8
@15,60 SAY MPER9
@16,60 SAY MPER10
@17,60 SAY MPER11
@18,60 SAY MPER12
@19,60 SAY MPER13
@20,60 SAY MPER14
@21,60 SAY MPER15
```

```
ENDIF
ENDIF
@22,22 SAY "More Report? (Y/N)" GET ANS PICT "!"
READ
ENDDO
CLOSE DATABASE
SET COLOR TO
DO TITLE
```

RETURN

06/09/2000

4:46:40 am

PROJECT EVALUATION

```
=====MAIN MENU=====
PROJECT EVALUATION
  MODIFY RECORD(S)
  DELETE RECORD(S)
    REPORT
    EXIT
```

Use the UP and DOWN ARROW keys to make selection
and press ENTER key

Enter Data for New Project

06/09/2000

PROJECT EVALUATION
MODIFY RECORD

MONTH:

NULL RECORD NOT ALLOWED O.K.

06/09/2000

4:48:03 am

PROJECT EVALUATION
DELETE RECORD

MONTH:

06/0
06/09/2000

4:32:47 am

PROJECT EVALUATION
NEW INFORMATION

MONTH: JANUARY 98 CONTRACTOR: BERGER PROJECT: HOUSE
LOCATION: KANO START DATE: / / FINISH DATE: / /

	TOTAL NUMBER	NUMBER COMPLETED	PERCENTAGE (%)
SUBSTRUCTURES:	0	0	
FRAMES:	0	0	
UPPER-FLOOR:	0	0	
STAIR-CASE:	0	0	
ROOFING:	0	0	
BLOCK WORK:	0	0	
WINDOWS:	0	0	
DOORS:	0	0	
FINISHES-PLASTERING:	0	0	
PAINTING & DECORATION:	0	0	
CEILING FINISHES:	0	0	
FLOOR FINISHES:	0	0	
PLUMBING INSTALLATION:	0	0	
ELECTRICAL INSTALLATION:	0	0	
EXTERNAL WORK:	0	0	

06/09/2000

4:32:49 am

PROJECT EVALUATION
NEW INFORMATION

MONTH: JANUARY 98 CONTRACTOR: BERGER PROJECT: HOUSE
LOCATION: KANO START DATE: / / FINISH DATE: / /

	TOTAL NUMBER	NUMBER COMPLETED	PERCENTAGE (%)
SUBSTRUCTURES:	0	0	
FRAMES:	0	0	
UPPER-FLOOR:	0	0	
STAIR-CASE:	0	0	
ROOFING:	0	0	
BLOCK WORK:	0	0	
WINDOWS:	0	0	
DOORS:	0	0	
FINISHES-PLASTERING:	0	0	
PAINTING & DECORATION:	0	0	
CEILING FINISHES:	0	0	
FLOOR FINISHES:	0	0	
PLUMBING INSTALLATION:	0	0	
ELECTRICAL INSTALLATION:	0	0	
EXTERNAL WORK:	0	0	

06/09/2000

4:36:47 am

PROJECT EVALUATION
NEW INFORMATION

MONTH: JANUARY 98 CONTRACTOR: BERGER PROJECT: HOUSE
 LOCATION: KANO START DATE: 21/12/1997 FINISH DATE: 12/12/2000

	TOTAL NUMBER	NUMBER COMPLETED	PERCENTAGE (%)
SUBSTRUCTURES:	67	67	100
FRAMES:	34	12	35.29
UPPER-FLOOR:	23	12	52.17
STAIR-CASE:	89	56	62.92
ROOFING:	35	12	34.29
BLOCK WORK:	56	12	21.43
WINDOWS:	67	12	17.91
DOORS:	54	50	92.59
FINISHES-PLASTERING:	45	12	26.67
PAINTING & DECORATION:	34	12	35.29
CEILING FINISHES:	56	12	21.43
FLOOR FINISHES:	34	12	35.29
PLUMBING INSTALLATION:	34	12	35.29
ELECTRICAL INSTALLATION:	34	23	67.65
EXTERNAL WORK:	12	10	83.33

Are there more entry? (Y/N) Y

06/09/2000

4:36:48 am

PROJECT EVALUATION
NEW INFORMATION

MONTH: JANUARY 98 CONTRACTOR: BERGER PROJECT: HOUSE
 LOCATION: KANO START DATE: 21/12/1997 FINISH DATE: 12/12/2000

	TOTAL NUMBER	NUMBER COMPLETED	PERCENTAGE (%)
SUBSTRUCTURES:	67	67	100
FRAMES:	34	12	35.29
UPPER-FLOOR:	23	12	52.17
STAIR-CASE:	89	56	62.92
ROOFING:	35	12	34.29
BLOCK WORK:	56	12	21.43
WINDOWS:	67	12	17.91
DOORS:	54	50	92.59
FINISHES-PLASTERING:	45	12	26.67
PAINTING & DECORATION:	34	12	35.29
CEILING FINISHES:	56	12	21.43
FLOOR FINISHES:	34	12	35.29
PLUMBING INSTALLATION:	34	12	35.29
ELECTRICAL INSTALLATION:	34	23	67.65
EXTERNAL WORK:	12	10	83.33

Are there more entry? (Y/N) Y

CHAPTER FIVE

5.1 SYSTEM IMPLEMENTATION REVIEW:

The system implementation review is a process of checking on the design system operation and on how to improve on the system to cover certain areas of operations that the new system did not cover. The present system covers the valuation of various percentages of works done on each element of a project on site. It is desirable to improve on the system for a design that will cover contract documentation. Staff training is also necessary to improve the standard of workers.

5.2 LIMITATION:

The aim of this project work is to help the organisation – DESIGN QUANTS CONSORTIUM to cope with the increasingly complexity of projects and timely completion. However, the system covers the valuation of the percentage of works completed on an office complex in Kano. It can be improved in future to cover other sections of quantity surveying operations.

5.3 CONCLUSION:

At the beginning of this project work, the issue at stake was to produce a system whose reliability efficiency and cost benefit will be better than the existing manual procedure. A system has therefore been developed, the result of this work shows that the system provides a qualitative and reliable information databank where Evaluation and Valuation of various percentage of work done on project. This package makes the work simpler and faster and also reliable. It is believed that this package will help the Quantity Surveyors in preparing monthly valuations for the purpose of payment to the contractors.

REFERENCES

1. Understanding and Using Micro-computer by Akin Fapohunda, Ph. D. Nigeria 1997.
2. Development and Planning Economy (Cost-Benefit Analysis) by F.A. Stone U. K. 1986.
3. System Analysis And Design (F. U. T. Minna) by Prince R. O. Badmus 1998.
4. Computerised Personnel Record System (A Case Study of New Nigeria Development Company Limited Kaduna) by Abubakar Baba Adamu 1998.
5. Quarterly Journals of the Nigerian Institute of Quantity Surveyors. 1996 – 1999.