AN EMPIRICAL INVESTIGATION OF THE USE OF MANAGEMENT ACCOUNTING TECHNIQUES IN NIGERIA CONSTRUCTION COMPANIES

BY

AUGUSTINE DACHI LADAJAU

AN EMPIRICAL INVESTIGATION OF THE USE OF MANAGEMENT ACCOUNTING TECHNIQUES IN NIGERIA CONSTRUCTION COMPANIES

BY

AUGUSTINE DACHI LADAJAU

PRESENTED TO AHMADU BELLO UNIVERSITY, ZARIA
IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR
THE AWARD OF MASTER'S DEGREE IN ACCOUNTING & FINANCE, M.SC. (ACCOUNTING & FINANCE)

DECLARATION

I hereby declare that this research work was carried out by me under the supervision of Mr. A. Silva.

To the best of my knowledge and belief, this work has never been submitted either in Ahmadu Bello University, Zaria or any other institution for the award of a degree.

Where some other people's works were drawn upon, the necessary acknowledgment have been inserted but any mistake in this work is my own responsibility.

A.D. LADAJAU

CERTIFICATION

This dissertation entitled AN EMPIRICAL INVESTIGATION OF THE USE OF MANAGEMENT ACCOUNTING TECHNIQUES IN NIGERIAN CONSTRUCTION COMPANIES by AUGUSTINE DACHI LADAJAU meets the regulations governing the award of the degree of Master of Science in Accounting & Finance of Ahmadu Bello University and is approved for its contribution to knowledge and literary presentation.

(Name and Signature) A. Silva **Date** 14th July 1997
Chairman, supervisory committee

(Name and Signature) O. T. Odiongenyi **Date** 4/7/97
Member, supervisory Committee

(Name and Signature) _____ **Date**.....
Member, supervisory Committee

(Name and Signature) _____ **Date** 4/7/97
Head of Department

Head of Department
Department of Accounting
Ahmadu Bello University
Zaria.

(Name and Signature) Prof. S. B. Ojo **Date** 09/06/99
Dean, Postgraduate school

DEDICATION

This dissertation is dedicated to my father Mr. DAJAU DANA'AT and my mother Mrs. NOESHE DAJAU and to all honest Nigerians.

ACKNOWLEDGEMENT

First and famous I must thank Almighty God for giving me the initiative to undertake this programme. I equally thank my cousin Mr. James Dalung who gave me both moral and financial support .

My thanks also goes to the management and staff of various organizations like Federal Office of Statistics, Ikoyi, Lagos, the Nigeria Stock Exchange Lagos, security and Exchange commission Lagos, the staff of University of Lagos main Library, the corporate affairs Commission Abuja, the Federal Ministry of works and housing , victoria Island Lagos, the Chief accountant of Tomline Building & Civil Engineering Construction Ltd. Benin city, to mention just a few.

This acknowledgment will not be complete without commending the efforts of the chairman of the supervisory committee of this dissertation, Mr. A. Silva, who read through all the manuscripts despite his tight schedule of duty, and made corrections where necessary. May God reward him abundantly, amen.

My sincere gratitude also goes to all those, who because of space I cannot mention their names , but have helped in one way or the other to make this study a reality . These include the Executives and Accountants of the various construction companies who agreed to complete the questionnaire especially those who spared their time for my personal interviews.

More importantly, I must thank the Authority of the Ahmadu Bello University, Zaria which made both human and material resources available to complete this study.

ABSTRACT

Building and Civil engineering aspect of the Nigerian economy is referred to as construction industry. The building construction comprises the establishments engaged in the erection of residential and non-residential buildings, offices and commercial structures etc. The second category is the civil engineering works which involves the construction of roads, bridges, ports, airports, dams, canals etc.

In her take-off stage Nigeria has undertaken a series of construction projects. A serious short-coming of some Nigerian contractors is the inadequate attention given to planning and control of construction projects using modern accounting techniques. All aspects of planning generally involves planning for financial resources, acquisition of raw materials, technological development etc. It is therefore important that the accountant should know how the planned programme will affect the growth and profitable operation of an organization.

A study of the usefulness/degree of use of the various Management accounting techniques in the construction industry has been undertaken in this work. However, due to time and space constraints in a study of this nature, only those techniques that are discernibly relevant to the construction industry were examined. These techniques include Absorption costing, Marginal costing, Break-even analysis, Long-term forecasting and planning, standard costing, and Budgetary control.

A sample of the construction companies scattered all over the country was selected for this study with the following consideration in mind:

(a) The need to fairly reflect the different types of construction organisation in the country.

(b) The need to obtain an appreciatiable sample size.

(c) The need to be careful not to favour only easily accessible region or to ignore areas that may be some distances away.

Therefore every Nigerian construction company had the same chance of being selected. It was for this reasons that samples were drawn from five cities across the country : Kaduna, Lagos, Jos, Benin City and Abuja.

Through the use of questionnaire and personal interviews with the accountants and chief executives of the various construction companies operating at different levels of capitalization; and through an analysis of the data obtained, the usefulness and degree of use of the various techniques, and the problems militating against their use were ascertained.

The study went further to find out the reasons for the frequent abandonment of construction works, especially government contract jobs. The study also tried to ascertain whether or not the construction companies make adequate provisions for the Nigeria peculiar inflationary trend while estimating their contract costs.

The problems militating against the application of the various management accounting techniques in the industry were also examined.

Recommendations meant to solve these identified problems have been made. A suggestion for further research in this respect has also been offered.

TABLE OF CONTENTS

		Page
Title page	.....	i
Declaration	.....	iii
Certification	.....	iv
Dedication	.....	v
Acknowledgements	.....	vi
Abstract	.....	vii
Table of Contents	.....	ix
List of Tables	.....	xii
List of Figures	.....	xiii
List of Appendices	.....	xiii

CHAPTER ONE: INTRODUCTION

1.1	The Problem	.....	1
1.2	Objectives of the Study	.....	1
1.3	Significance of the Study	.....	2
1.4	Scope of the Study	.....	3
1.5	Research Questions	.....	4
1.6	Definition of Terms	.....	5
1.7	The Research Plan	.....	8

CHAPTER TWO: THE CONSTRUCTION INDUSTRY IN NIGERIA

2.1	A brief Historical background	.....	10
2.2	Construction Industry in Nigeria at present	.....	11
2.3	Categorization of Companies in the Construction Industry	.....	16
2.4	Management structure of a Construction Company	.....	19
2.5	The accounting needs of Management in Construction Industry	.....	20

CHAPTER THREE:LITERATURE REVIEW **Page**

3.1 Overview of Chapter 23

3.2 Management Accounting methods and Techniques 25

3.2.1 Absorption Costing 25

3.2.2 Marginal Costing 27

3.2.3 Break-even Analysis 37

3.2.4 Long-term forecasting and planning 42

3.2.5 Standard Costing 45

3.2.6 Budget and budgetary Control 48

3.3 Conclusion 53

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Overview of Chapter 56

4.2 Sample selection 57

4.2.1 Criteria for sample selection 57

4.3 Methods of Data collection 58

4.3.1 The questionnaire 59

4.4 Personal Interview 61

4.5 Conclusion 63

CHAPTER FIVE: PRESENTATION, ANALYSIS AND FINDINGS

5.1 Overview of chapter 64

5.2 Trades of Respondents 65

5.3 Data Analysis and Interpretation 68

5.3.1 Absorption and Marginal costing 68

5.3.2 Break- even Analysis 70

5.3.3 Long- term Forecasting and Planining 72

		Page
5.3.4	Standard costing	74
5.3.5	Budgetary control	76
5.4	Findings	78
5.5	Conclusion	82

CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1	Summary	83
6.2	Conclusion	86
6.3	Study Limitation	90
6.4	Recommendations	91
6.5	Suggested path for further research	96
	References	97
	Appendices	100

LIST OF TABLES **Pages**

2.1 Summary of Trades, number of people employed, and value of work done by the Nigerian Construction Companies 17

2.2 Categorization of Construction Companies according to number of people employed. 18

5.1 Summary of replies to detailed Questionnaire 65

5.2 Industry Classification of respondent Companies. 66

5.3 Inflation and the Construction Industry 67

5.4 Reasons for Contract abandonment 67

5.5 Use of Absorption and Marginal costing Techniques by respondents Companies 70

5.6 Use of Standard costing Techniques by respondents 75

5.7 Use of Budgetary Control Techniques by respondents..... 77

5.8 Summary of replies for application and actual use of the various Management Accounting Techniques in the Construction Industry...80

LIST OF FIGURES

		Page
2.1	Typical Organizational Chart for a Construction Project.....	19
3.1	Rising Fixed costs Chart	40
5.1	A Construction Company Break-even Chart.....	71

LIST OF APPENDICES

I	Respondents Questionnaire	101
II	Summary of people employed by Companies covered by the Study.....	108
III	Summary of Gross asset sizes of Companies covered by the Study.....	109
IV	Professional Qualification/Degrees of personnel of the respondent Companies	110

CHAPTER ONE

INTRODUCTION

1.1 THE PROBLEM:

The construction industry is a wide, diverse, and complex part of the economy. Planning and control seem to be difficult and often in many companies, no attempt seem to has been made to use management accounting techniques. Any effective cost control system should highlight areas in which losses occur or areas which operate efficiently.

Nigeria, in her take-off stage has undertaken a series of construction projects. A serious short coming of some Nigerian contractors is the inadequate attention given to planning and control of construction projects using modern accounting techniques. All aspects of planning generally involves planning for financial resources, acquisition of raw materials, technological development etc. It is therefore important that the accountant should know how the planned programs will affect the growth and profitable operation of an organization.

If it is to stay in business, every firm must :-

1. Ensure completion of work to the satisfaction of its client (i.e. in accordance with the greed contract).

2. Maintain (and where possible improve) the desired profit on capital employed.

3. Have sufficient funds available in order to finance its various operations.
   It is suggested that the introduction, maintenance, and where possible, development and modification of the various techniques of management accounting can make a vital contribution towards the attainment of these goals.

1.2 OBJECTIVES OF THE STUDY:

The main objective of the study is to find out whether construction companies in Nigeria apply management accounting techniques in their decision making process and aim towards optimum level of performance. In other words, the objective of the research is to examine whether

or not construction management decisions are much influenced by management accounting techniques in Nigerian construction firms. In addition :-

(i) The causes of frequent abandonment of construction works, especially government contracts, by construction companies in the country will be investigated.

(ii) Efforts would be made to find out whether the contractors consider the inflationary trend of the economy before submitting their tenders for construction works; i.e. studies will be made to show the extent to which management accounting techniques have been employed in this regard.

(iii) Another objective is to examine the degree of use / usefulness of management accounting techniques in Nigerian construction companies and to find out whether some or all management accounting techniques are used by the companies covered by the study. Also the areas in which some of the techniques could be more extensively applied and developed will be considered. (iv) The problems militating against the application of management accounting techniques in the industry will be identified.

Thus the questionnaire has been designed with these objectives in mind.

1.3 SIGNIFICANCE OF THE STUDY:

It is hoped that this research will fill a gap in the literature that caters for accountants, company secretaries, and similar professional people who are engaged in giving a vital information service to management. The research is expected to be useful to directors and both the technical managers and accountants of the construction industry in this country.

Researchers and Students who require an appreciation of management accounting would find this study beneficial. In addition, accountants from other industries requiring an insight into this challenging industry could read it with advantage.

1.4 SCOPE OF THE STUDY:

The area of coverage for this study was arbitrarily selected. Specifically, the questionnaire was randomly administered. The firms so randomly selected in the study represent different construction companies operating at different level of capitalization. However, certain consideration guided the selection of subjects for the study.

These are :-

(a) The need to fairly reflect the different types of construction organizations in the country.

(b) The need to reflect the different types of functions within organizations, for example, general administration, production, finance, and personnel management.

(c) The need to obtain an appreciable sample size.

Other factors that affected the size and composition of the sample include :-

(i) The attitude of management's to initial attempts to establish contact with the organizations.

(ii) The resources and time available for the study.

To identify the construction organizations that will be involved in this research, respondents chosen were those who might have some ideas or knowledge of management accounting techniques. Due to constraints posed by finance and distance, it has not been possible to cover all the construction firms located in various parts of the country. As a result, the study is

being restricted to a sample of Nigerian Construction Firms. It is for this reason that samples are being drawn from only five towns ; namely Kaduna, Jos, Lagos, Benin and Abuja.

No attempt was made to fix a minimum share capital as a criterion for selecting a company for the study. There was also no attempt to select only those companies that were quoted on the Nigerian Stock Exchange because that would have limited the scope of the study too much that the data collected would have not been representative thereby rendering any conclusion based on such data meaningless. In fact, as at 28th June 1991, out of the more than 838 construction companies in Nigeria, only 8 (eight) were quoted on the Nigerian Sock Exchange.[1]

1.5 RESEARCH QUESTIONS:

At the end of this study readers will be able to answer pertinent questions like:-

1. Whether construction companies in Nigeria apply the various management accounting techniques in their decision making process for optimum level of performance.

2. Whether Nigerian contractors consider the peculiar Nigerian inflationary trend and make adequate provision for it when submitting their contract bids.

3. The causes of frequent abandonment of construction works, especially government contracts in Nigeria.

4. The problems (if any) that hinders the effective use of some or all the various management accounting techniques by the Nigerian construction companies.

1.6 DEFINITION OF TERMS:

(i) **Construction Industry:** Building and civil engineering aspects of the Nigerian economy is referred to as Construction Industry.[2]

In other words construction falls into two closely related categories :-

(a) **Building Construction:** It comprises the Establishments engaged in the erection of residential and non-residential buildings, offices and commercial structures etc.

(b) **Civil Engineering Works:** This involves the construction of roads, bridges, ports, airports, dams, canals etc.

(ii) **Costing Methods:** Cost data on their own cannot convey sense, logic or facilitate reasoning. They must be arranged into comprehensible cost statements or forms before they can be useful or meaningful. Cost methods are the systems of collecting, ascertaining and presenting costs. The costing method adopted by an organization is invariably determined by its mode of operation. A costing method is a method of costing which is designed to suit the way goods are processed or manufactured or the way that services are provided.

It follows therefore that each firm will have costing method which has unique features. Nevertheless, there will be recognizably common features of costing systems of firms which are broadly in the same line of business. Conversely, firms employing substantially different manufacturing methods for example a food processor and a jobbing engineering factory will have distinctly different costing methods.

Examples of costing methods are :

(a) **Job Order (or Production Order) :-** Costing method is used to cost single orders or contract. This method ascertain costs by treating an order on contract

as a cost unit. It is sometimes referred to as terminal costing. A form of job costing is batch costing. A convenient batch of production is treated as a job. The batch cost is then used as basis for determining the unit cost of the articles produced.

(b) **Process Costing** :- Method of ascertaining costs by treating each process or stage of production run as a cost center. This method is sometimes referred to as average costing. This is suitable where the article lose their identity during the manufacturing process and there is a continuous production.

(c) **Unit Costing** :- Method of ascertaining cost by reference to a unit of quantity of product, service or time. A form of unit costing is operation costing which is usually applied in the costing of services e. g. transport costing.

(d) **Multiple or Composite Costing** :- This method is used where a variety of product are produced independently and later assembled together to form a "complex product" e.g. Computers, Aeroplanes, Motor Cars.

(e) **Contract Costing** :- Which is a special form of job costing. Each contract is treated as a cost centre.

(iii) **Costing Techniques:** Costing techniques are those techniques that aid management in their planning, control and decision-making roles.

(iv) **Management Accounting :** Many varied definitions have been given and used. One is that of Amey and Egginton: "Management Accounting is taken to comprise the gathering, processing, communication and interpretation of data within a business for the purpose of ensuring as far as possible that its expectations realized, by seeing that decisions are consistent with the enterprise plan and with

`each other, that their implementation is controlled and by management comparing its own performance with its expectations".[3]

The management Accountant employs the technique of financial accounting, cost accounting, budgetary control and many others. In the broadest sense all accounting is management accounting since all financial and cost information generated by accountants are substantially to management. Ola, C. S. defined management accounting as "a representation of existing accounting information in a manner which is helpful to management in its day-to-day operations and which attempts to say what should be done and what is in fact done".[4]

Management accounting is generally indistinguishable from cost accounting. The fundamental aim of management accounting is that of assisting the manager in making a host of decisions.

An example of costing technique is Standard or Predetermined Costing. This technique enables management to plan and impose control on operations. Under the technique, costs of production are predetermined and used as basis for preparing budgets. By setting standards or predetermined costs, management has a cost framework against which actual cost of operation can be compared. Adverse variation from standards can then be investigated and their causes identified with a view to preventing their occurrence. Other examples of costing techniques are absorption costing, marginal costing break-even analysis etc.

Techniques depend upon the purpose for which management requires the information. This could include control, decision making, predicting profit and price determination etc.

The difference between costing method and costing technique is that method depends upon the nature of production while technique depends upon the purpose for which management requires the information.

It must be emphasized that whatever costing method is used, it can be combined with any of the costing techniques if deemed appropriate. Thus, for example, a process costing system could utilize the technique of either total absorption costing or marginal costing or standard costing.

1.7 THE RESEARCH PLAN

This dissertation is divided into six Chapters. Chapter one, is an Introduction of the study. This chapter spells out the problems, objectives, significance and scope of the study.

Chapter two will be a brief of the Construction Industry in Nigeria. In this chapter, a study will be made of the occupations of various companies in the industry, assets, size of these companies, management structure and accounting need of management in the construction industry.

Chapter three will make a Literature review of management accounting techniques. These techniques will include Absorption Costing, Marginal Costing, Break-even Analysis, Long-term forecasting and Planning, standard costing and Budgetary control.

In chapter four, the Research Methodology will be explained. This will include methods of data collection, sample selection, criteria for sample selection, etc.

Chapter five will analyse and interpret the data collected. This will include the net asset size of respondents companies, results and the major findings.

Chapter six gives the Summary, Conclusions and Recommendations based on the result of the study.

SELECTED REFERENCES

1. The Nigerian Stock Exchange: Daily Official list, 28 June, 1991.

2. Alkasum A. et al: The Nigeria Economic Crisis: Causes and Solution. Gaskiya Corporation Zaria, 1985 p. 71.

3. Amey and Egginton: Management Accounting: A Conceptual approach, Longman 1972.

4. Ola, C. S.: Management Accounting: Theory and application, Graham Burn, U.K. 1982 p.12.

CHAPTER TWO

THE CONSTRUCTION INDUSTRY IN NIGERIA

2.1 A BRIEF HISTORICAL BACKGROUND:

The transfer of Western construction technology to Nineteenth century Lagos was effected by Missionaries and traders, many of whom were African indigenes or repatriates. Missionaries as well as traders imported Western technology and materials to construct buildings for their own use and comfort. The Missionaries were also committed to transferring Western construction technology as part of their civilizing mission while traders and enterpreneurs involved with the building trade were determined to transfer technology in order to expand their business (1).

The Missionaries made the greatest impact on the early development of the construction trade both by fostering demand and by transferring the technology required to satisfy the demand. They intentionally set out to transform the local domestic architectural requirements. The Missionaries introduced the construction trade as a modern form of employment.

For the comfort of the missionaries, the mission house was designed first while a bamboo shed sufficed for the Church. The mission house was also intended to impress potential converts and to be a model by which the housing in the community was to be improved (Ajayi 1965 page III).

The transfer of construction technology was an active aspect of missionary endeavour intended to improve the quality of life and enhance the status of the Christian religion. The transfer of technology in the building construction fields with respect to the operation of expensive equipment and the management of large scale projects failed to keep pace with the

twentieth century developments in Nigeria because of a combination of the British policy of excluding all professional and graduate Nigerians from the Civil Service, the British policy of paying those Nigerians it hired less than one quarter the salary of the British Civil Servants/Foreign experts (Ajayi 1965: 271-273); the British policy of paying Clerks higher salaries than technicians, the Nigerian imitation of these discriminatory remuneration policies in their own companies, and the considerable capital outlay for equipment and overhead maintenance required for a building construction firm (2).

2.2 CONSTRUCTION INDUSTRY IN NIGERIA AT PRESENT

The construction industry is an important contributor to the process of development. Construction work represents about one-half of the gross capital formation and 3 to 8 percent of the gross product in developing countries (3). Fostering a domestic capability in construction is becoming an essential part of the overall development process in these countries.

Informal, self-help building work is the predominant construction activity in poorer countries, catering for essentially shelter and related requirements which would otherwise go unattended. The informal construction activities, relying heavily on self-employed and family labour, are small enough to escape most legal regulations. Because they largely elude statistical enumeration there is a dearth of information on the basis of which meaningful assistance plans could be drawn. As a consequence, this part of construction activity tends to receive less attention from government than that dedicated to formal construction projects.

2.2.1 Risks

Construction work involves grave risks - more so when compared to other types of economic activity. Unlike the typical manufacturer or farmer, the construction entrepreneur

moves from site to site, organizes the logistics for timely assembly of all the inputs there, and follows a custom design for each site. Jobs are usually won by means of specific bids. Costs, therefore, have to be estimated for each site, with assumptions made about many variables such as site conditions, weather, productivity of labour and equipment, the time required for delivery of inputs, and so forth. For civil work the risks involved in bidding exceed even those for building because the scale of work is usually larger, the use of heavy equipment is greater and the sensitivity to the effects of inclement weather and, in some instances remoteness from service and supply centers is far more pervasive.

Since the majority of construction industry output is capital investment, demand tend to fluctuate considerably more than for most other industries. The central issue in the development of a country's construction industry is the growth of human capacity to manage these risks. The management's task is often more difficult in developing countries because of shortage of resources and inadequacies of other systems on which construction relies.

2.2.2 The Construction Industry and Nigerian Economy.

That the construction industry is of crucial importance to the development of the National economy in Nigeria is evidenced by its contribution to the gross domestic product as well as its share of total fixed capital formation and employment. The building and construction industry is often viewed as the prime indicator of a country's economic well-being. It currently accounts for about 80 percent of capital investments in the country (4). Also, it is the largest employer of the nation's work force in the private sector with nearly 838 firms that are operating all over the country (5).

Construction activities vary a lot. These are jobbing contracts, supply of building materials, construction of houses, school building, factory buildings, roads, bridges and other complex contracts.

Apart from undertaking these activities, the construction industry influences the economy in many other ways. It provides employment and has brought about improvements in transport facilities. It has also led to the establishment of such local industries for the manufacture of cement, roofing sheets, metal frames for Windows and Doors and terrazzo flooring.

The economic importance of the construction industry in Nigeria can also be assessed in terms of its contribution to employment opportunities. The employment aspect of construction industry is very relevant to Nigeria economy. This relevance derives from the fact that the industry can effectively take on a large percentage of unskilled staff who are attracted to all forms of wage-earning "brawl" operations of the industry.

2.2.3 Government attitudes towards Construction Industry.

One Major component of the Construction Industry in Nigeria is residential construction. As a matter of policy, the government's approach to increasing residential houses is to provide both land and building materials at reasonable prices. Apart from the provision of housing to Senior public officials, some of the state governments as well as the Federal Government have Housing Corporations or Boards which either build houses for sale to the public or loan out money to government officials to build houses of their own.

The impact of these measures aimed at easing housing problem had not been felt much by a great majority of the people. The number of houses on these estates is so few compared with the number of people who may want to buy the houses. Secondly, in instances where mortgage facilities had been supplied, the number of the people thus supplied is either too small, or the

amount of money is too small particularly in a situation of rising cost of building materials. Another disadvantage is that the people who can bid for either the estate houses or the loans are invariably the Senior civil servants who form a negligible fraction of the population.

There is no doubt that the problem areas here are many and these include:

(i) Indiscriminate allocation of building plots by various governments in the Country.

(ii) Public servants who took loans to build their own houses and still live in government residential quarters

(iii) High cost of building materials.

(iv) Speculative prices of building plots.

The implications of all these problems are many and include:

(a) The opportunity for a special class of people to claim ownership of certain areas of the building plots in various towns of the country will lead to social stratification and class distinction.

(b) The extreme advantage to live in government quarters and sublet own houses at exorbitant rate will further escalate the shortage in housing facilities. It is not uncommon to find people over-crowding a room in many of our rural as well as in the "local" areas of urban cities.

(c) The rising cost of building materials will only make the possibility of owning a house a dream for many, who under conditions of stable prices could have been able to build houses of their own.

(d) Exorbitant prices of land, as in the previous case will make it impossible to bridge the gap between supply and demand for housing facilities.

2.2.4 Classification of Construction Industry.

The Nigerian Enterprises Promotion Decree classifies Construction industry in its schedule 2. This is to say, in essence, that construction industry belongs to the group of industries in which alien firms can continue to participate if its share capital exceeds₦ 400,000.00 or its turnover exceeds ₦100,000.00 (whichever the Nigerian Enterprises Promotion Board considers

appropriate) and provided also that the equity participation of the Nigerian citizens is not less than 40 percent (6).

The overall implication of this Decree is that there is not supposed to be a single fully alien-owned construction company in operation in the country and statutorily at least ownership had been indigenised at least 40 percent.

Some economic factors seem to determine the level of indigenous participation in the Nigerian economy as a whole and these include:

(a) the overall level of construction activity,
(b) the share of foreign firms and government departments; and
(c) the obvious obstacles of the indigenous construction entrepreneurs.

2.2.5 Competition in the Construction Industry.

Some people have said that the most formidable competition which indigenous construction companies face in Nigeria is the foreign firm.

The argument here is that an obvious obstacle in the way of growth of indigenous enterprises is the powerful position of the foreign firms. These firms have more capital and are backed by many Overseas interests.

It will, however, not be correct to conclude that the lack of growth of indigenous sector of the construction industry is due to the domineering position of foreign firms. evidence abounds to show that even if the indigenous firms had been awarded contracts which went to the foreign firms, they would have had considerable difficulty in carrying out jobs. The problems of indigenous contractors are many. One important factor which militates against the efforts of indigenous contractors is the lack of trust in the quality of their work as well as doubt in the minds of policy makers (who award contracts) as to the capability of the local contractors to carry out the work efficiently and on time.

This impression has been stoutly contested. The indigenous contractors contend that the problem is not as much with the quality of their works as it is with the unfavourable conditions under which they carry out the works. Rigid rules concerning disbursement of contracted payment, refusal to grant advance payment, and delay in payment of bills even in respect of completed contracts after the quality of their work as well as increase period during which contracts are completed.

Another Major area of difficulty for the indigenous contractors is the issue of loan facilities by the commercial banks. There are two factors to be considered here. Most of the commercial banks, which are financially strong to grant long-term credit, are foreign-owned. The banks invariably prefer to lend out money to foreign firms of long experience which are able and willing to give securities for such credit. Indigenous banks have learnt not to come to the rescue because instances abound when they ventured to loan out huge sums of money to local contractors only to find that the money had been converted to other uses. Many such loans are still outstanding and the defaulters have nearly forced some local banks into bankruptcy. The interesting implication of these attitudes is that many banks, both foreign and indigenous, do not consider many of the local contractors credit-worthy even when facts portray them to be so.

2.3 CATEGORIZATION OF COMPANIES IN THE CONSTRUCTION INDUSTRY

As earlier indicated in Chapter one the Construction industry is an extremely diverse one, including general building, civil engineering contracting, plumbing, painting and other specialist trades. Building engineering accounts for 36.75 percent (table 2.1) of the total value of work done by the industry, while civil engineering accounts for 60.08 percent. Other construction projects account for 3.17 percent.

2.3.1 Categorization of construction companies according to number of people employed.

There is a preponderance of small firms in the construction industry (see table 2.2 below) e. g. over 52 percent of the firms employ less than 2,000 people but account for only 4.84 percent of the total value of work done by the industry. Only about 33.33 percent of the firms in the industry employ ten thousand people and above but account for up to 88.21 percent of the value of work done. About 14.29 percent of the firms employ between four and six thousand people and account for 6.95 percent of the value of work done by the industry.

Table 2.2 : Number of people employed by each size of Company

Size of Firm (Number of people employed)	Number of firms (%)	Value of work done (%)
0 - 1999	52.38	4.84
3000 - 6999	14.29	6.95
10,000 and above	33.33	88.21

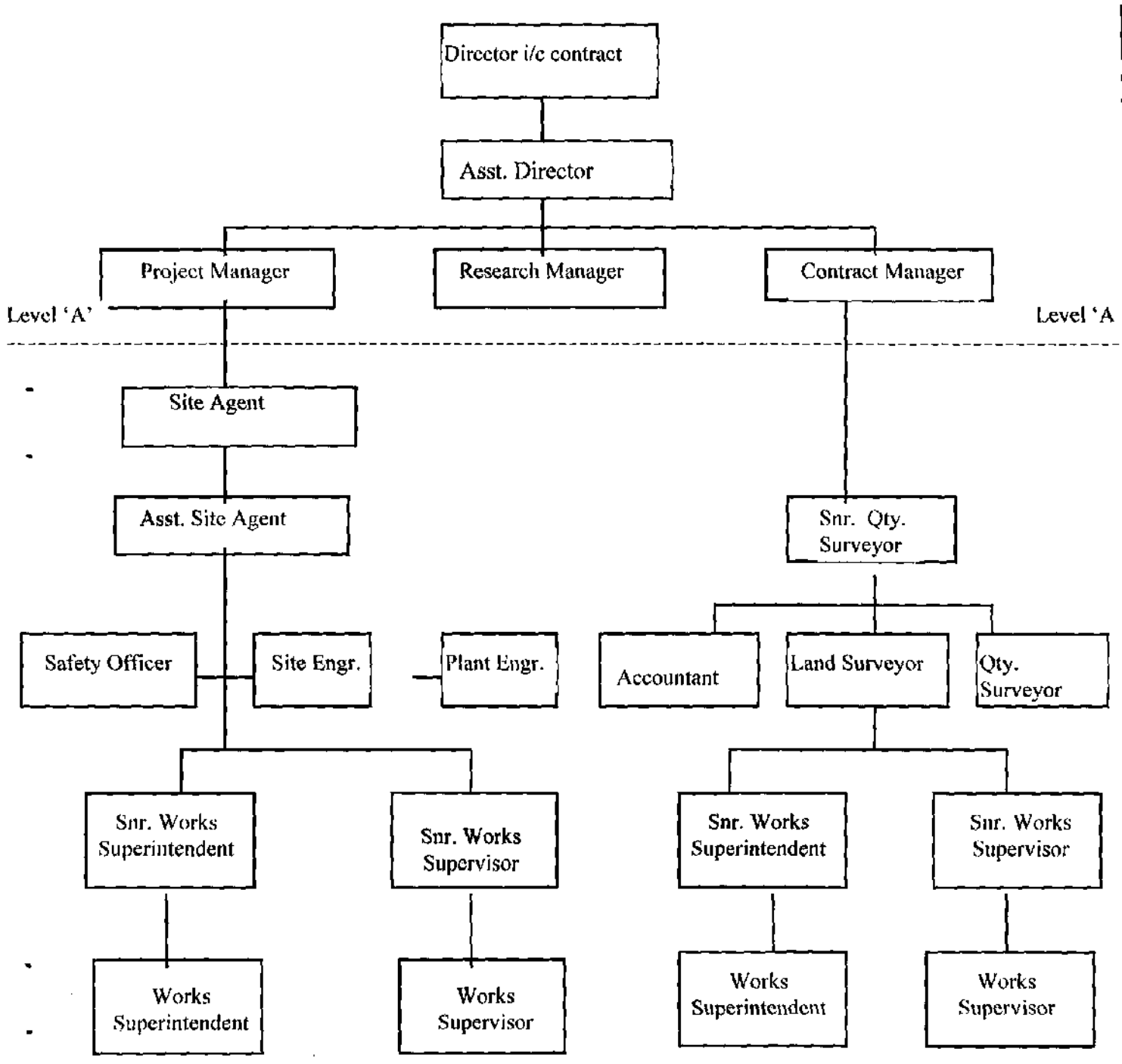
As will be discussed later (chapter 5), it may be considered impracticable to apply the full range of techniques associated with management accounting to the smaller firms. However, this surmise may merely be a question of degree, i.e. in a practical situation there could be the possibility of a limited application of a particular technique, considering the important contribution of the smaller firms in the construction industry, this principle is important.

To follow this brief consideration of the structure of the construction industry in term of the occupation (trades) and sizes of firms, the next section will be concerned with management structure.

2.4 MANAGEMENT STRUCTURE OF A CONSTRUCTION COMPANY.

Figure 2.1 is an organization chart which indicates a possible management structure in relation to a particular (e.g. Civil Engineering) Construction project.

Figure 2.1 A typical organization chart for a construction project .



Source: One of the respondents' organization chart.

Although it may be argued that the site manager (site Agent) is autonomous in regard to any particular site or contract, it must not be overlooked that all contracts are influenced by "Head Office" decisions, i. e. by the actions/decisions of those individuals indicated on the organization chart above level 'A'. This feature is often thought to be peculiar to the construction industry but, of course, this is not the case, as many large industrial organizations have their various factories scattered across the country (even the world) and, therefore, have a similar pattern of organization.

As may be appreciated, the management structure of an individual company within the industry tends to be strongly influenced by the engineering science. As indicated on the organization charts, in addition to the civil engineer in charge of a particular site, the general site agent/manager is usually technically qualified. The resultant disadvantage in such a management framework is that often the manager tends to become too immersed in the technical problems to the detriment of the financial controls and the behavioural aspects of the contract. In particular regard to human relation, the industry is still very dependent upon a co-operative labour force capitalistic situation, the ultimate measure of the success of particular contract will be in profit terms rather than in terms of technical efficiency.

2.5 THE ACCOUNTING NEEDS OF MANAGEMENT IN CONSTRUCTION INDUSTRY.

As in the normal industrial situation, the important aspect of cost control is a joint responsibility, it is the responsibility of both the engineer and the accountant.

The accounting needs of management in the Construction industry are such that they should be geared not to the cost (and profit) factor, but also to the time factor. It is imperative not only that a profit should result upon the completion of a contract, but that the contract is completed on time.

In addition to the possible loss of reputation due to a late completion, the client more than likely imposes a penalty clause which will ultimately affect the profit on that particular contract.

It is, therefore, important at an early stage to interrelate the cost and time factors in regard to the contract(s) on hand. If a contract is completed earlier than necessary (within the terms of the agreement) this can prove costly to the contractor, conversely, if reduction of cost is allowed to dominate the issue, resulting in delay of completion, the contractor has not fulfilled his part of the agreement. Therefore, a "realistic" (required) time-cost curve is necessary in order to indicate the interplay of these two factors in the construction situation.

The accounting report to higher management in the construction industry (as in other industries) should be comprehensive, i. e. higher management should not be involved in too much detailed information. Some summarized information should be forthcoming in respect of the majority of contracts on hand at the particular point in time. This accounting information should give an indication as to the progress of these contracts in terms of both costs and time.

SELECTED REFERENCES FOR CHAPTER TWO.

1. Aradeon, S. B. — Evolution of Construction Industry in Nigeria: CONSTRUCTION: A Journal of the Federation of Building and Civil Engineering Contractors in Nigeria: July, 1989.

2. Ajayi, J. F. A. — Christian Mission in Nigeria 1841-1891 (Ibadan Longmans, 1965).

3. United Nations: — The Construction Industry: Issues and strategies in developing countries. A world bank publication: 1986.

4. Ogie, R. — Business Concord vol. 5 No. 348 of 31/12/91 page 16.

5. Federal Office of Statistics: — National Census of Industries and Business, F. O. S. Lagos 1990.

6. Federal republic of Nigeria: — Nigerian Enterprises Promotion Decree 1972 as amended in 1977.

CHAPTER THREE

LITERATURE REVIEW

3.1 OVERVIEW OF CHAPTER.

In Chapter two the construction industry was discussed and against the background of both the structure of the industry and management process, the accounting needs of management were considered.

In this Chapter, a brief review of some of the techniques associated with management accounting will be made. The list detailed below is not intended to be in any way exhaustive, particularly in view of the state of development of management techniques.

The accountant's task of supplying information has various facets, i. e. in the area of book-keeping, attention directing, and problem solving. However, those distinctions tend to overlap in a particular management accounting task. Similarly, the various techniques must not be seen in isolation; as they are considered it will become apparent that there is an inter-relation between them, e. g. between long-term forecasting/planning and budgetary control.

Some of the techniques are:

1. Absorption costing.
2. Marginal costing.
3. Break-even analysis.
4. Long-term forecasting and planning.
5. Standard costing.
6. Budgetary control.

7. Inter-firm comparison (including uniform costing)

8. Net work analysis.

9. Risk and uncertainty analysis.

They are not dealt with in any significant order.

3.1.1 Financial Versus Management Accounting.

The nature of this study demands that considerable attention needs to be given to internal reporting, or management accounting, at the expense of external reporting, or financial accounting. However, the dichotomy between the two types of accounting is not significant[1]. It is natural to presume that there is a large common area between the two, including of course, their language and philosophy.

Using money as a measuring rod, both collect, analyze and report information about a business entity and its operations. But the emphasis of the two widely differs, more especially when we consider their use by two widely different classes of decisions makers. Financial accounting addresses its reports to parties external to the business. The balance sheet, the profit and loss account, and the statement of sources and Application of funds are directed towards shareholders, creditors, bankers, bond-holders, government and tax authorities which are outside the firm. The focus of management accounting is essentially internal, it tends to provide knowledge about experienced costs and cost estimates to the parties within the firm which obviously are various levels of management. While financial accounting "account for" the money entrusted to the business, management accounting treats this money as a "measure of economic performance".

3.2 MANAGEMENT ACCOUNTING METHODS AND TECHNIQUES.

Due to time and space constraint this study will not be able to consider all the management accounting methods and techniques. Therefore only those techniques that are discernibly relevant and applicable to the construction industry will be considered. That is not to say that those techniques not considered in this study are not relevant to the construction industry. In fact all the techniques are relevant for the survival of the construction industry in Nigeria.

Those techniques to be reviewed are:

1. Absorption costing.
2. Marginal costing.
3. Break-even analysis.
4. Long-term forecasting and planning.
5. Standard costing.
6. Budgetary control.

3.2.1 Absorption costing.

Absorption costing technique is a technique that include an element of fixed cost or sometimes referred to as "full costing technique".

Horngren C. T. simply defined absorption costing as a product-costing practice of "applying fixed factory overhead to the goods produced".[2] It is the technique that takes into account the total cost of running an enterprise. An effort is made to "absorb the entire cost" into individual units. That is, both variable and fixed costs are charged to goods and services produced. The Institute of Cost

and Management Accountants (UK) defines it as, "The practice of charging all costs, both variable and fixed to operations processes or products." This explains why this technique is also called full costing. Administrative, selling and distribution overheads as much form part of total cost as prime cost and factory burden.

Two distinctive characteristics of absorption or full costing are:-

(i) in absorption costing fixed factory expenses are included in the unit cost, and

(ii) the fixed factory cost is also included in the stock (inventory) values.

Full or Absorption Costing has some distinctive merits which could be spelt out as below :-

(i) It include historical cost for external reporting. This is also useful for stock valuation.

(ii) It makes a clear distinction between product and period cost and, hence, shows which of the costs will depend directly on production and which on time, regardless of production.

(iii) It highlights the gross and net profit (operating income and loss). Operating margin is clearly distinguished from the net profit.

(iv) Fixed management overhead is unitized and assigned to products.

(v) Whenever prices are regulated e.g. as in the construction of buildings, roads, bridges and dams, full cost is still the basis.

It is on the total cost of the product that a specified profit margin is granted to the producer or contractor. In the industries and companies which can set prices (e.g. price givers) it is the only method to be adopted.

No, doubt absorption costing has been in vogue since the beginning of modern costing, it has led to many wrong decisions.[3] Following are its main weakness:-

(i) Full costing leads to misleading conclusions about dropping the product lines because of the operating loss. The selling price of a product may not recover the full cost and yet it may be advisable to continue its production in the short-run because it still makes contribution towards the recoupment of fixed costs.

(ii) Through this method, it is not possible to determine the anticipated effect on the profitability of either product line or the company as a whole, since cost behaviour pattern (direct and period costs) are not identified.

(iii) The same data may yield materially different conclusions according to the basis selected for apportionment of indirect costs.

3.2.2 Marginal Costing:

Until recently, total absorption or full costing was the order of the day. It was employed in almost all situations. This practice might have proved satisfactory for inventory valuation and income determination, the two functions of costing in the past. But for day-to-day decision making, this was not the right approach. In the short-run, marginal costing is of particular importance. A bid, contract, tender or offer could be accepted if after recovering the marginal costs, it makes some contribution to the recovery of fixed overheads.

Marginal costing,(also called direct costing, variable costing, differential costing, incremental costing) is a technique which is designed to facilitate more accurate cost determination (and thereby control), by differentiating between Marginal Costs and Fixed Costs. Marginal Costing

is in fact a kind of partial costing. It represents the aggregate cost which varies with the variation in the volume of output by one unit.'

It is, in fact a technique by which the cost of a unit is determined so as to include only those costs which individually and exclusively are caused to be incurred. That is the cost of a product bears only the appropriate share of variable costs.

Under a marginal costing technique, all fixed overhead costs are treated as "period' costs, and no attempt is made to allocate these to production.[4] Any fixed expense is treated as period cost and is charged to operations of that period, and not to the product or service to which it relates.

The Institute of cost and Management Accountants, England, defines the term Marginal cost and Marginal costing as follows:-

3.2.2.1 Marginal Cost: "The amount at any given volume of output by which aggregate costs are charged if the volume of output is increased or decreased by one unit". It should be noted that in this context a unit may be a single article, a batch of articles, an order, a stage of production capacity or a department. It relates to the change in output in the particular circumstances under consideration.

3.2.2.2 The ascertainment of Marginal Cost.

"The ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed and variable costs". In this technique of costing only variable costs are charged to operations, processes or products, leaving all indirect costs to be written off against profits in the period in which they arise. Thus, in marginal costing, the variable costs are the focal point and the fixed costs are treated differently.

Most authors prefer to use the term variable costing which in fact is out of pocket outlay, and excludes fixed costs but includes:-

(i) Prime cost; and

(ii) Variable Overheads.

So far as prime costs are concerned, these can be accurately measured. But Overhead application does depend on estimates. The variable Overhead should generally be applied on the basis of normal expected use of facilities.

Fixed costs can frequently be ignored in making decisions. Only those costs that will change as a result of the alternative courses of action open to management are relevant. These marginal costs, frequently referred to as differential or incremental costs, represent the difference between the cost of one course of action and another.[5]

Differential cost is often referred to as Marginal or Incremental Cost. The term "Marginal Cost" is widely used by economists, but accountants seem to prefer the term "differential". Engineers generally speak of incremental costs as the added cost incurred when a project or an undertaking is extended beyond its originally intended goal.[6] Differential cost analysis provides the costs which the managerial problem of alternative choice demands. Marginal cost is the varying increment in total cost required to produce and sell an additional unit. Profits are maximized by producing until marginal revenue equals marginal cost.

Marginal costing is not a system of costing (like job costing or process costing), but a special technique for showing the effect on profit of changes in volume or type of output by differentiating between Fixed Costs and Variable Costs.[7]

Under this technique costs are charged directly to related operations while Fixed costs are charged against the overall profit for the period.

In other words, marginal costs occur in connection with production and therefore, tend to vary directly with any variations in production; however, Fixed costs tend to remain static irrespective of production levels.

Progressive cost accountants are of the opinion that Marginal costing is superior to the total absorption costing. They argue that in decision-making, absorption costing might lead to erroneous conclusions, and hence losses. They claim the following advantages of marginal costing in comparison to the total absorption:-

3.2.2.2.(i) Simplification: Marginal Cost remain the same per unit of product irrespective of the volume of production. Since in marginal/direct costing, fixed costs are kept outside the unit costs, the cost statements so prepared are simple and much less complicated. The reason for not charging the fixed costs is that they are incurred on time basis and not on the basis of production.

However, a fact which is often overlooked and yet is extremely important is that variable costs do not always remain constant per unit of output. Instead they may fluctuate from time to time for two principal reasons. In the first place there may be changes in the value of money. In a period of rising prices it is almost inevitable that material price and wage rates should increase and, therefore, cause marginal costs to increase. Secondly, the internal conditions under which the business is operating may also influence the variable costs after a certain level of output has been reached increasing costs will tend to apply. These may arise from overtime working, shift work, and excessive depreciation and maintenance of plant and machinery. In addition, abnormal increase in selling costs are not unknown, an attempt to push sales beyond a certain point may incur a disproportionate increase in such costs. Clearly, these observations qualify advantage (i) above. In

certain circumstances they may in fact invalidate the argument for marginal costing, canceling the advantage altogether.

For the advantage to be a valid one, a particular point of time must be taken. If this is done, the conditions and circumstances will not have had an opportunity to change. The longer the period being considered the more likelihood is there of costs behaving in an "unusual" manner.

3.2.2.2 (ii) No under or over absorption:- Since overhead costs are not allocated, there is no question of their being either over or under absorbed. When predetermined overhead costs are used as is generally the case when job costing is employed, there is the complication of under or over-absorption of overhead costs. Marginal costing avoids this.

3.2.2.2 (iii) Help in all Level of Marginal:- It assists all levels of management's in current control costs. Above all, it guides management in "making periodic profit plans and specific decisions relating to managerial labour, equipment, and financial policy. Flexible budgeting relies on clearly distinguishing between those costs which vary with changes in output and those which tend to remain constant irrespective of the volume of output.

The main reason why control is made easier is that recognition is given to the nature of the cost. Fixed costs more often than not arise from policy decisions - e.g. rent payable would come from deciding to obtain leasehold instead of freehold; managerial salaries would be based on salary policy and negotiation by top management and for this reason are controllable only by the highest level of management. On the other hand, variable costs are incurred by all levels of management and by operators. The responsibility for variable costs can be traced with a substantial degree of certainty and this allows the necessary control to be exercised.

3.2.2.2 (iv) No Fictitious Profits:- Since fixed costs are not absorbed in unsaleable stock, there is no question of fictitious or false profits.

3.2.2.2 (v) Help in Tenders:- The concept of marginal cost is of great help in accepting orders. When trade is bad and the business is operating below capacity, it is preferable to accept orders at cut prices. Even if the prices are below the total cost, any amounts received in excess of marginal cost contribute towards fixed overhead. This increase the profits or reduces the loss which would have been made otherwise. If the tenders are loaded with fixed expenses, their price might become uncompetitive and as a result lost.

3.2.2.2 (vi) Solves the Allocation Problem:- Right from the beginning, cost accountants have faced the problem as how best to allocate the fixed costs. A number of methods have been tried in practice, but they are all arbitrary and subjective. The principal feature of responsibility accounting is to keep the fixed cost allocation outside the areas of the concerned manager.

3.2.2.2 (vii) Choice between Products:- Where a firm is producing two or more items, the decision about their production levels can best be made with the help of marginal costing. The product whose relative contribution is larger should receive greater attention. While overall sales need be maximized, effort should be directed at those products which are making relatively larger contributions.

3.2.2.2 (viii) Intelligent Pricing:- Pricing can be done more intelligently since the contribution to be added into any cost unit will (a) be based on the total contribution required from all production and (b) take account of the use made by the unit of any relevant key factor.

3.2.2.3 Disadvantages/Dangers in Marginal Costing.

The cutting of price below total cost, is, however, not that easy and calls for managerial policy.

Following are the principal dangers:-

3.2.2.3 (i) Difficulty in raising price later: Sometimes it may be difficult to reduce the price to particular customers, while making normal figures for others. Again, once prices have been slashed to meet a temporary shortage of orders, it may not be easy to increase them later when business improves.

3.2.2.3 (ii) Possibility of Overall Loss:- If too large a percentage of the sales is made at marginal prices, the total contribution will be insufficient to cover the fixed overheads, and that an overall loss will result. It is only the marginal work which could be accepted at any price in excess of marginal cost. The bulk of the output should be priced sufficiently high to absorb the fixed costs of the machine and still provide reasonable profit; it should be costed on a total cost basis. In the long run, economic selling prices cannot be set without the allocation of fixed costs to the products. The difficulty in assigning fixed costs does not mean that they can be ignored in all circumstances.

3.2.2.3 (iii) Incorrect Price - fixing:- Since under marginal costing period or time costs are ignored, this may lead to incorrect pricing decisions. Two jobs might have the same marginal costs, but one may take a longer time for completion than the other. Unless therefore, fixed costs based on time factor are taken into account, their pricing will be wrong.

3.2.2.3 (iv) Increasing Fixed Costs:- The industry is fast moving towards automation. If mechanisation was the first stage of industrial revolution, automation is the second stage. The incidence of fixed costs is naturally increasing which must be allowed for. Failure to do so might burden the enterprise with heavy losses.

3.2.2.4 Views in Favour of Absorption Costing Over Marginal Costing.

Those who favour absorption over Marginal costing have argued from two different points of view. First, supporters of the full costing techniques feel that marginal or direct costing has theoretical weakness. In their view marginal costing fails to meet the requirements of good accounting theory. The second argument offered is that since the marginal costing approach focuses on only a part of the costs that may vary with decision alternatives, it may be more misleading than useful. The amount of error in the approximation may be sufficiently large to lead management to follow the wrong course of action.

The theoretical argument against the marginal costing approach relies upon the accounting concept usually described "Cost attach". The essence of this argument is that the accounting records are a financial model of the events affecting the firm in the real world. Therefore, the recording, classifying, and reclassifying of accounting data in the books of account must be done in a fashion consistent with the acquisition, storage and utilization of service potentials in the real world. It is difficult to determine which method is "consistent" with the real world. However, one study used a postulated definition of the "true" income of the firm and proceeded to test which accounting methods yielded the best approximation of true income as defined. The findings were that marginal costing resulted in larger errors of estimation.[8] The service potentials of fixed costs are as surely expended in the production of goods and services as the variable costs are. Since all these service potentials are needed to produce a finished product, all the related costs should attach to units produced.

The second argument against the marginal costing approach is more closely related to the benefits usually claimed for marginal costing. The essence of this argument is that full costing may be a better measure of the total cost of producing a product on a recurring basis. To be specific, the incremental costs of producing a certain quantity of output include three possible classes of costs. Changes in Variable Costs, changes in Semi-fixed costs, and an Estimate of the opportunity cost of using fixed facilities. Moreover, the assumed rate at which costs are expected to vary with output (e.g., the variable cost rates) is valid only over a specified output range. A contemplated change in production may be outside the assumed range, in which case the average variable cost rate is no longer applicable. For example, the acceptance of a special order may require the firm to produce outside the range of production that was used as the basis for determining the original estimates of fixed and variable costs. This in turn could result in either economies resulting from quantity discounts or lower set-up costs, or diseconomies resulting from bottlenecks, depending upon the amount of capacity available before the order is accepted.

In short, the variable costs of production may be misleading as a measure of the incremental cost of production, of course the full costs may be just as misleading, since the incorporation of a fixed cost per unit may overstate the change in costs in relation to a change in output. It is not likely that either costing method will measure the incremental cost of production under all assumed operating conditions. Therefore neither marginal nor absorption costing can be concluded to have an advantage in this respect

3.2.2.5 The Choice

The main difference between marginal costing and absorption costing is timing. The marginal costing approach takes all fixed costs (period charges) to the income statement immediately. Absorption costing assigns the fixed costs to units produced during the period. The amount of fixed costs reported on the balance sheet is in proportion to the number of units still in inventory.

It could be clear that those favouring marginal costing and those favouring full or absorption costing tend to emphasize different aspects of the problem. The former focus on internal purposes and are concerned with reflecting data in a form that makes management aware of both the relevant cost classifications and their patterns of cost behaviour. For purpose of internal reporting these consideration take precedence over the theoretical argument of cost allocations.

However, those favouring full costing reject the marginal costing technique primarily because it violates the theoretical rule of cost attach. They feel that marginal costing should not be adopted unless there is evidence that what is gained more than offsets the weakening of accounting theory. They demand much more precise measurement of relevant costs before they will accept marginal costing. Thus the standards applied by each group vary and the difference of point of view still persists.[9]

The above discussion highlights the fact that the choice between the two techniques is not that simple. Since production cannot be achieved without incurring fixed costs, it is improper to ignore them. Once the prices have been announced below the total cost, it may be difficult to raise them in future. The controversy has been extended rather too much. The fact is that the marginal cost technique is useful only over a short period when the demand for the product is slack. In the

long run, both the variable and the fixed costs have to be recovered from the sales price lest the concern should incur perpetual losses. It does not seem very sound to take on a new product line which cannot pay its share of existing fixed expenses and have a reasonable return on investment left over. As a matter of fact the two techniques are not contradictory; they simply represent the extremes of the relationship. Full costing still is the rule and variable costing may be viewed as weak and imperfect but yet useful complement to conventional managerial accounting.

In conclusion, no generalized, all embracing answer can be given as to which technique should be used. Having regard to all the factors, the accountant should make a judgment as to which technique is more appropriate for the requirements of a particular organization. Although any technique can be used for internal purpose, the Nigerian Statement of Accounting Standards No. 4 is quite clear that absorption costing must be the basis of the financial accounts.[10]

In other words, marginal costing is not currently a generally accepted method for reporting inventories in external reports. It would appear that the use of a full marginal costing system in the routine cost ascertainment procedures of an organization is relatively rare. This does not mean that marginal costing principles are unimportant. An understanding of the behaviour of costs and the implications of contribution is vital for accountants and managers. The use of marginal costing principles in planning and decision making is universal and is of considerable importance.

3.2.3 BREAK-EVEN ANALYSIS:

Break-even analysis, sometimes called cost-volume-profit analysis, stresses the relationship of the factors affecting profits. The break-even point serves as a base indicating how many units of product must be sold if the a company is to operate without loss.[11]

Break-even analysis focuses on the measurement of the break-even point. Bull R. J. defines break-even analysis as "the analysis of revenues and costs in relation to volume".[12]

He further defined the break-even point as that level of activity at which total revenue is equal to total expense, and hence net income is equal to zero. In other words, the break-even point of a company or a unit of a company is the level of sales income which will equal the sum of its fixed costs and its variable costs.

Cost-volume-profit analysis is a technique used to examine the relationships between volume, total costs, total revenues, and profit. Cost-volume-profit analysis is particularly useful in the early stages of planning because it provides a framework for discussing planning issues and for organizing relevant data.

3.2.3.1 Application of Cost-Volume-Profit Analysis:

Cost-Volume-Profit (C-V-P) analysis lies at the centre of short-term profit planning because it has a wider application to a whole series of decision problems. In view of the relationship between costs and volume of output, cost-volume-profit analysis is helpful in establishing a pricing strategy. Cost-Volume-Profit is also relevant to the selection of the best sales mix, where a firm produces several different products. In such a case, it is essential to select the most profitable combination of the different products having regard to their costs of production and the prices which are obtained. A decision to produce a sales mix which is less profitable may be made, for example, in order to penetrate a market or to establish a stronger position in a particular market from a sales point of view, and in such a case cost-volume-profit will enable management to asses the cost of that strategy in terms of lost profit. Other applications include the study of product alternatives, the acceptance of

special orders, selecting channels of distribution, the strategy for entering a foreign market and changing plant layout.

Cost-Volume-Profit analysis lays emphasis on cost behaviour patterns through different volumes of output as a guide to the selection of profit targets and the adoption of an appropriate pricing policy. By uniting the behaviour of all four variables together in one short-term model, cost-volume-profit analysis provides management with a sweeping overview of the planning process.

3.2.3.1 (a) Assumptions:

It is necessary to make certain assumptions about the behaviour of costs and revenues. Thus we assume that costs and revenue patterns have been reliably determined and that they are linear over the range of output which is being analysed. These assumptions also imply that costs may be resolved without difficulty into fixed and variable costs; that fixed costs will remain constant; that variable costs will vary proportionally with volume of output, and that all other factors will remain constant, that is, that selling prices will remain unchanged, that the methods and the efficiency of production will not be altered and that volume is the only factor affecting costs. It is because these assumptions are difficult to maintain in "real life" situation that break-even analysis cannot pretend to be anything but a rough guide. Its real value to management lies in the fact that it highlights the inter-relationships between the factors affecting profits, allowing management to make certain assumptions about these factors and seeing the likely effects of changes in these assumptions. Hence, break-even analysis is useful as a management decision model.

3.2.3.1 (b) Limitations:

Discussions of the cost-volume-profit analysis bring out many opposing points of view. Some claim, for example, that it is an oversimplified and highly theoretical device better suited to the classroom than to practice while others give glowing accounts of its merits as one of the essential tools provided to management. Actually, it can be either one, depending upon how it is constructed and applied. When it is derived from an extensive study of prices and cost behaviour, and when it is used with due regard for its limitations, it becomes an instrument which can be put to effective managerial use.[13]

Limitation of a cost-volume-profit analysis stem from the assumptions on which it is based. The analysis attempts to arrest a dynamic set of forces by assuming that all of them except volume will remain constant during the period in which the analysis will be used.

Cost-Volume-Profit analysis, though it is a very useful tool for decision making, is based upon certain assumptions which can rarely be completely realised in practice. Hence, the fragility of these assumptions places limits on the reliability of cost-volume-profit analysis as a tool in decision making. For example, it assumed that fixed costs are constant, and that both the variable cost and revenue curves are linear over the relevant volume of output. It is also assumed that volume is the only factor affecting costs, and that both the price of cost factors and of the product produced or sold remains unaffected by changes in the volume of output. All these assumptions may be challenged. Fixed costs may not remain constant over the entire output range considered in the analysis that being particularly true if the volume range is fairly extensive. Fixed costs may indeed be constant over a band of output, but then will rise sharply and remain constant for another stage, as indicated in figure 3.1.

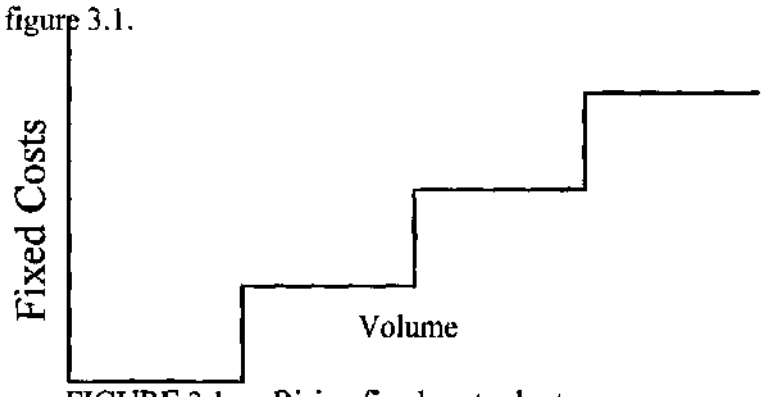


FIGURE 3.1 Rising fixed costs chart.

Equally doubtful is the assumption that the variable cost curve is linear so that variable costs change in direct proportion to changes in volume. As demand for output factors increase so will their price, with the effect that the variable cost curve is likely to increase proportionately faster as volume of output expands.

To overcome these limitations, and to retain the usefulness of cost-volume-profit analysis, it is necessary to limit the volume range to be examined so that the behaviour of both fixed and variable costs may be more accurately determined. The basic assumption that the cost-volume relationship is a linear relationship is realistic only over narrow ranges of output which is called the relevant range.

Despite its limitations, the real usefulness of cost-volume-profit is that it enriches the understanding of the relationship between costs, volume and prices as factors affecting profit, enabling management to make assumptions which will assist the decision-making process in the short-run planning period.

3.2.3.2 Importance of Break-even Point:

A company's life is limited if it is continuously making losses no matter how small. It can however, continue if it is making profit no matter how small. The break-even point is important to management since it marks the very lowest level to which activity can drop without putting the continued life of the company in jeopardy. In the short-run working below the break-even point may not be fatal but in the long run if volume cannot be maintained above break-even point quantity a temporary or permanent short-down may be considered.

3.2.3.3 Uncertainty and Sensitivity of Cost-Volume-Profit Analysis:

Estimates and predictions are subject to varying degrees of uncertainty which is basically the possibility that the actual amount will deviate from the expected amount. Uncertainty can be coped with by introducing sensitivity analysis to the certainty model.

Sensitivity analysis is an analysis of the outcome when the volume attributed to a parametre is altered or if the sales mix changes.[14] Sensitivity analysis is a "what if" analysis technique that measure how the expected values in the decision model will be affected by the changes in the critical data input.

It therefore attempts to determine what the net income might be as a result of a change in variable cost of sales by a certain percentage. There may be a change in any of the profit facts which include:

(i) Change in selling price

(ii) Change in fixed costs

(iii) Change in variable costs

(iv) Change in volume of sales.

3.2.4 LONG-TERM FORECASTING AND PLANNING

Alert management should relate the policies of the individual firm to national economic trends; one way in which this may be attempted is by the use of business forecasting. This is the process of finding out if expansion is possible by examining the general business prospects and, in particular, those of the industry of which the company is a part; it is an attempt to assess probable events. Against the background of this business forecasting the individual company may then

prepare long-term plans, using the results of the general business forecasting to fix the objectives of the company (and to determine how they may be achieved).

It is suggested that the degree of accuracy, within the concept of long-term forecasting can be increased by the application of e.g. probability theory. Notwithstanding this refinement, long-term forecasting and planning is not easy to apply because many factors change(and will continue to change) the business environment. However, it could be argued that the radical transformation in the business environment that has taken place in recent years necessitates formalized long-range planning.

Normally long-term forecasting and planning relates to a period two to five years ahead, whereas budgetary control is usually concerned with the plans for the immediate twelve months period ahead.

The main function of long-term forecasting is to minimize the unknown factors which operates in industry. A study of long-term trends will enable the company to deploy its resources in ample time. At present, this facet is particularly significant in the sphere of capital raising as it is very important to recognise the need for further capital at the right time, i.e. well in advance of requirement; it is lacking in business expertise to wait until the situation is desperate. However, in using this technique it should be appreciated that while it is not always a very precisely reliable guide, it should nevertheless be sufficiently accurate to help management in the establishment of long-term policies.

Separate forecasts (and ultimately plan) will generally be made in respect of:

1. Sales (related to work-ahead/order book position)

2. Production (including personnel requirements).

3. Trading results.

4. Cash position.

5. Capital expenditure.

These forecasts and plans will be allied to the required (i.e. internal) rate of growth, which in turn will reflect the policy of the business, bearing in mind:

I. Anticipated national annual growth rate.

II. Growth of the industry of which the individual company is part.

III. Growth of any related industries which would affect the demand for the company's product.

Budgetary control is related to long-term forecasting and planning because some time prior to the financial year end, the broad outline of the following year's plan is analysed into more detailed budgets, revised according to the present year's trend.

Planning is based on forecasting, that is to say that forecasting takes place before planning. Management must forecasts the relevant variables that are not subject to the control or manipulation of the firm. By reducing uncertainty about these non controllable variables management may develop plans to take advantage of their favourable consequences.

Don T. Decoster and Schafer defined forecasting as a "projection of variables both controllable and non controllable, that is used in the development of plans and budgets".[15]

Planning deals with the futurity of present decisions in term of setting goals and developing strategy to achieve them and in translating strategies into detailed operational programmes and ensuring that plans are carried out. In other words, long-term planning is determining what company's long-term objectives are and how to achieve these objectives.

Ackoff R.L. sees corporate planning as process that involve making and evaluating each of a set of inter-related decisions before action is required, in a situation where it is believed that unless action is taken a desired future state is not likely to occur, and that if appropriate action is taken the likelihood of a favourable outcome can be increased.[16]

Ackoff explains further that corporate planning is a continues process not an art, hence no plan is ever final. It is always subject to revision somewhere or somehow.

3.2.4.1 Importance and Use of Corporate Planning to an Accountant.

The need for corporate planning is so obvious and so great that it is hard for any one to be against it. But it is even harder to make such planning useful. Planning is one of the most complex and difficult intellectual activities in which man can engage, "not to do it well is not a sin but to settle for doing it less than well is" (Ackoff 1969 p.1)

The accountant need knowledge of corporate planning to enable him make contribution to an area of management activity. Accountant's participation is very vital because all aspects of planning have financial implications, technological development, acquisition of raw material and require funds which must be planned in advance. It is therefore important that the accountant should know how the planned programmes will affect the profits or financial condition of the organization.

3.2.5 STANDARD COSTING:

This technique could be described as an analytical type of budgetary control. Rather than being concerned with the company as a whole, and with function and departments within the company, standard costing is primarily concerned with the control of product costs. A standard is an estimate of what should occur under assumed conditions of operations A formal set of standard can be nothing more than a set of estimate about the relationship between various inputs and some

activity measure. The actual results compared with standard provide a means of performance evaluation. In other words, a standard is a predetermined figure based on experience and estimates and takes into account materials, wages (labour), variable expenses and fixed expenses (overhead). A standard may be varied in the course of history but this should not be done too regularly or else it shall fail to be a yardstick for performance measure. Standard cost is a predetermined-calculation of how much cost should be under specified working conditions. It is built up from an assessment of the value of cost elements and correlates technical specifications and the quantification of materials, labour and other costs to the prices and/or wages rates expected to apply during the period in which the standard cost is intended to be used. Its main purposes are to provide basis for control through variance accounting, for the valuation of stock and work-in-progress and, in some cases, for fixing selling prices.

Standard costing is an important control technique. It establishes predetermined estimates of the cost of products or services, collect actual costs and output data and compares the actual results with the predetermined estimates. The difference between standard and actual is known as a variance.

The process by which the total variance of difference between standard and actual cost is subdivided is known as variance analysis.

The definition used by the Institute of cost and Management Accountants states that standard costing is the preparation and use of standard costs, their comparison with actual costs and the analysis of variance to their causes and points of incidence. This definition highlights the similarity with budgetary control, and indicates that standard costing is another example in the application of the principle of management by Exception. The difference, i.e. variances, between what the

product costs should be (standard) and what they are (actual) are analysed and where possible action is taken to counter the recurrence of excess costs in the future.

The degree of this variance analysis will depend upon the particular circumstances but the basic variance arise from the following variations.

1. Material price.
2. Material usage.
3. Labour rate.
4. Labour efficiency.
5. Fixed and variable overhead expenditure.

It must be stressed that the basic aim of calculating variances is not to explain them, but to eliminate them. Sales variance analysis has not been discussed, mainly because of fixed-contract price situation in the construction industry. However, it is contended that within budgetary control, budgeted order book/sales levels when compared with the value of the actual contracts which materialize will tend to measure the efficiency of the marketing function.[17]

One of the fundamental problems in the sphere of standard costing is the meeting of the standard. The consensus of opinion indicates that the standard should be an attainable one. Such a standard can therefore, be used not only as a basis for the selling price but also as a measurement of performance. In regard to the latter, such a standard represents a reasonable performance which will have the desired motivational impact on employees.

Notwithstanding possible limitations, it is contended that standard costing can aid management in the control of cost; also when based upon work study standards, it can be used to

actually reduce existing costs. Both these aspects are very important in a competitive industry and the application of such a technique should lead the way towards a definite improvement in the efficiency of the company.

3.2.6 BUDGET AND BUDGETARY CONTROL:

3.2.6.1 A budget.

A budget is a plan or target in the form of a quantitative statement for a specified time span. It is a plan where the business hopes to be in future and how to get there. In other words, budgets are financial or quantitative statements prepared and approved prior to a defined period of time of the policy in pursuit during that period for the purpose of obtaining given objectives. Budgets are therefore regarded as basically sets of standards indicating the level of activity expected of each responsible person or decision unit and the amount of resources that could be consumed to achieve that level of activity.[18] Budgeting is used to achieve control process in an organization.

3.2.6.1(a) Characteristics of a Budget:

There are three principal characteristics of a budget.

1. It is a collection of forecasts.
2. It represents an attempt to organise and aggregate various individual forecasts into a consistent overall expectation about the future period called the budget period.
3. It serves to mediate and to transmit sub-goals of various Managers in ways that emphasize harmony of sub-goals with overall organizational goals.

Once the budget is evolved, the budget is an internal part of the planning and control cycle. At the beginning of a period the budget serves as a plan or goal and does not affects operating

decisions. At the end of the period the budget serves as a standard and it is therefore a yardstick for evaluation of performance.

An effective budget system will assist in :

(a) Providing top management with a summarized picture of the result to be expected from the proposed plan of operations. This ease management choice between alternative plans and determination of whether a particular plan is satisfactory.

(b) Serving as a guide to executives and departmental heads responsible for individual segment of the company's operation by clearly defining the responsibilities and objectives of each department.

(c) Budget serve to measure performance since deviation reflects either the organization's failure to achieve the planned standard of performance or its ability to better them.

3.2.6.1(b) <u>The Master Budget</u>:

A budgetary planning and control system is made up of many individual budgets but these budgets have to be integrated into a master budget. The master' budget aggregate forecasts about all activities of the firm into a project or proforma statement for the budget period and a balance sheet as at the end of the budget period. The master budget provides a detailed plan for one financial year and by its nature is participative.

3.2.6.2 Budgetary Control:

Budgetary control is essentially a management technique, rather than one of accounting. This can be more fully appreciated if the definition of the Institute of Cost and Management Accountant is considered: this states that 'budgetary control is the establishment of budgets, relating the responsibilities of executives to the requirements of a policy and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of policy, or to provide a basis for its revision'.[19]

As can be perceived, this definition endeavours to differentiate between a system of budgets and budgetary control; the latter incorporates the important function of control together with often associated technique of standard costing. Budgetary control applies the principle of "Management by exception", i.e. management at all levels tend to concentrate on those items (exceptions) which are out of alignment with the budget (or standard). The scheme of budgets, within the frame work of budgetary control, usually covers a period of twelve months and evolves from an assessment of sales for that particular period of time (cash budgets usually have to be updated more frequently than every twelve months; cash flow is important in terms of high interest rates and closer control and monitoring than is possible with an annual budget is therefore necessary).

The involvement of the various functional and departmental Managers in the preparation of the integrated and comprehensive systems of budgets should help to create a certain esprit de corps, a factor which is very often missing in industry; this should not necessarily conflict with the necessity of engendering healthy departmental competition within the organization.

Few individuals are ecstatic about any technique used by the boss to check their performance. Ideally the budgeting procedure, i.e. the preparation of budget, should be formulated so as to create an inter-relationship between the interests of the firm and those of each individual Manager. Any system or technique should encourage Managers to act in harmony with the objectives of higher management. Therefore, in using budgets as measures of performance, the aspect of personal motivation must not be ignored.

3.2.6.2 (a) <u>The behavioural aspect of Budgetary Control</u>:

The behavioural aspect of budgetary control is often overlooked. Too much effort and emphasis is placed on budget preparation, implementation and performance target. Writers like Chris Argyris see budgets as pressure device, rewarding and penalizing instruments and since they are in respect of writing they are formal and concrete. He perceive budget as a "whipping posts". Anthony Hopwood and others have observed that where the standard cost is at a minimum acceptable level subordinate will not strive for higher level. Where sub-ordinate are not willing to improve on their performance it may be due to lack of motivation and ability or skill.[20]

An understanding only of the technical aspects of the budgetary process is not sufficient for the Management Accountant. The human, social, and organizational factor which are in involved at all stages in budgeting are of critical importance and cannot be ignored. There has been considerable research into the behavioural aspects of budgeting but as with many other facets of human behaviour the findings are complex, imperfectly understood and sometimes contradictory, so broad generalisations are difficult to make. On one point there does seem to be agreement and that is that budgeting is not considered by participants as a neutral, objective, purely technical process which is a view adopted by many accountants.

The human, subjective elements cannot be overemphasized-budgeting is not a mechanistic technical procedure. Its success is totally dependent upon the goodwill and co-operation of the participants. Without this, budgeting will become merely a paper exercise with no real impact on the operation of the organization. The ideal budgeting system is one which encourages goal congruence, develops motivation and avoids dysfunctional effects.

3.2.6.2(b) Standards and Budgets:

Budgets and Standards are concerned with setting performance and cost level for control purpose. They are similar in principles but differ in scope for standards are units concept whereas budgets are concerned with total. Standards are however used as the basis for developing meaningful budgets. Budgets are revised on a periodic basis, normally one year, whereas standards are revised only when they are inappropriate or when there is a need to do so. Budget do not form part of double entry book-keeping whereas standard(variance) do.

Whereas a budget relates to an entire activity or operation, a standard presents the same information on a per-unit basis. Thus, a standard provides cost expectation per unit of activity and a budget provides the cost expectation for the total activity. If the budget calls for materials cost of ₦ 10,000.00. The standard would express this as, say₦ 2.00 per unit.

3.3 CONCLUSION:

In this chapter a literature review of some of the management accounting techniques focused in this study was undertaken. These techniques included :- Absorption costing (sometimes known as total absorption costing), Marginal costing, Break-even analysis, Long-term forecasting and Planning, Standard costing and Budgetary control.

Timing, which is the main difference between Absorption and Marginal costing was highlighted. In conclusion, no generalized, all embracing answer could be given as to which of the two(absorption and marginal costing) techniques should be used. Having regards to all factors, the accountant should make a judgment as to which technique is more appropriate for the requirement of a particular organization. The nature of work or situation in which any or all of the techniques could be used was also highlighted in this chapter.

The merits and demerits/dangers of the use of various techniques in any particular situation were also mentioned.

14. Argenti, J.(1974) — Systematic Corporate Planning. Nelson and Sons. 1974.

15. Descoster, D.T. and Shafer, E.L.(1976) — Management Accounting: A decision emphasis. John Wiley & Sons Inc. New York.

16. Ackoff, L.R.(1969) — A concept of Corporate Planning. John Wiley & Sons Inc. New York.

17. Dobson, R.W.(1969) — Distribution Cost Accounting. London: Gee & Co.; 1969.

18. Sizer, J.(1975) — An insight into Management Accounting. Pengiun 1975.

19. Institute of Cost and Management Accountants(1967) — Terminology of cost Accountancy. (London, Gee & Co.; 1967.)

20. Hopwood, A.(1974) — Accounting and Human Behaviour. (Accountancy Age Books, 1974.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 OVERVIEW OF CHAPTER.

This is an empirical research attempting to examine the various issues relating to the use of Management Accounting Techniques in Nigerian Construction Companies. Since it was intended to be a sample survey, information necessary for the research work was gathered as follows:

A structured questionnaire(reproduced in appendix I) was administered to top executives of 60 selected Nigerian Construction Companies in order to gain an indication of the extent to which the various Management Accounting Techniques are being used, improved and developed in the Construction Industry.

In addition interviews were conducted with the construction companies' executives, Senior and middle management officials of the companies. The names of such executives of the enterprises they represent will, however, not be disclosed in the analysis of data as it had been assured in the questionnaire that all information collected will be treated in strict confidence.

The questionnaire was in two parts, part one covering questions on capital base of the enterprise, its industry classification or trades and staff position. Part two required detailed information about the use of management Accounting Techniques, skill of staff involved in the preparation of Management Accounting information data and the frequency of the preparation of such information. Respondents were asked to choose alternative that best suit their organization in terms of applicability of the various techniques and their suggestions for improvement.

For those selected companies within reach, visits were made to them to get more insight into their operations and problems. To those companies not accessible, letters were posted to their Chief executives explaining the objectives of the research and attaching the questionnaire for their response. 30% of the responding companies were also visited to verify the data supplied and seek further clarifications.

It is hoped that this research will fill a gap in the literature that caters for accountants, company secretaries, students who require an appreciation of Management accounting, similar professional people who are engaged in giving a vital information service to Management and useful to subsequent researchers who may be interested in further study.

4.2 SAMPLE SELECTION

It is impracticable to study the entire companies that make up the Construction Industry in Nigeria. Because of that only a sample of the construction companies was chosen for the study. To eliminate any possibility of a bias in the sampling procedure a random sample was chosen. A sample is a limited number of elements selected from a population which is representative of that population. The population from which the sample for this study was selected is the entire construction companies in Nigeria.

4.2.1 Criteria for sample selection.

A sample of Companies was selected from different parts of Nigeria, being careful not to favour any easily accessible region or to ignore areas that may be some distance away. Therefore every Nigerian Construction company had the same chance of being selected. As could be seen from the above procedure, only one method of sampling was used. This method is called random

sampling. It is believed that the best way to obtain a representative sample is to draw its members from the population at random. So the main concern was to make sure the sample was random.

Other sampling methods available but were not used in this study are:

(a) Stratified random sampling.

(b) Double sampling.

(c) Systematic sampling.

(d) Cluster or area sampling.

4.3 METHODS OF DATA COLLECTION.

In this study most of the data were collected from secondary sources. Secondary in the sense that these data were recorded by some people other than by the researcher directly. For example the figures used were those supplied by various accountants in these test companies. Data from primary sources are more reliable than those from secondary sources because of the distortion caused along the communication line in secondary sources.

The main advantage of obtaining data from primary source is that the exact information wanted is obtained. The researcher was not opportuned to witness the actual recording or participate in recording these figures at the primary stages. Such secondary data may not give the exact kind of information needed, and the data may not be in the most suitable form.

Out of the various methods of collecting data available, the following methods were used in collecting data for this study.

4.3.1 Questionnaire:

Questionnaire was used as device for getting answers to questions by using a form which the respondents filled in themselves, and were either mailed or presented to respondents personally. There was one form of questionnaire.

4.3.1.1 Structured Questionnaire:

A structured (closed form) questionnaire was designed and administered to executives of the various construction companies under study. This consisted of prepared list of specific questions and choice of possible answers.

4.3.1.2 Questionnaire sent by mail:

Some copies of the questionnaire were posted to those companies not accessible to the researcher, self-addressed envelopes were enclosed with the questionnaire for the correspondents' replies.

The mailed questionnaire were more in number than the personal contact questionnaire. It is believed that the questionnaire could reach many people in widely scattered areas quickly at relatively low cost and effort.

The advantages of the mail questionnaire considered were firstly, it affords not only wider geographical coverage than any other method, but it also reaches individuals who were difficult to contact.

Secondly, because it does not call for a signature or other means of identification, this method elicit more candid and more objective replies because of its greater impersonality.

The major constraint of this method of data collection was the problem of non-returns. Very few people replied the letters with the filled questionnaire despite the follow-up letters reminding them to fill and return the questionnaire.

Another problem was that many of the few that replied the letters did not answer most of the questions. Further more, the validity of questionnaire data based on this method depended on the ability and the willingness of the respondents to provide the information requested.

4.3.1.3 <u>Questionnaire used for direct contact</u>:

A the same (closed form) questionnaire was administered on executives (mostly accountants and quantity surveyors) of the various construction companies under study. This consisted of prepared list of specific questions and a choice of possible answers. This form of questions helped to keep the questionnaire to a reasonable length and this encouraged response and validity in terms of the representativeness of the returns.

For the purpose of this study, this method of data collection was the most satisfactory. Most of the questions in the questionnaire were explained to the respondents at the time of submission so that the respondents understood exactly what the questions meant.

It is believed that the closed questionnaire with its alternatives would structure the concept under study, minimizes the risk of misinterpretation, permits easier tabulation and interpretation, and make for greater coverage and more systematic tabulation

However, the constraint experienced with this form of questionnaire was that the answers did not reveal the respondents' motives (why they answered as they did) and they did not yield

information of sufficient scope or depth. Another constraint was that this form of questionnaire did not enable the respondents to give more adequate presentation of their particular cases and did not possess greater flexibility. Another problem encountered in this regard at time of submitting questionnaire was that most respondents referred the reasercher to their head offices which are mostly in Lagos. This problem was prominent in most companies being managed by foreign personnel. Even then not all those companies that collected the questionnaire returned them.

Further more this form of questionnaire did not provide sufficient opportunity for developing interest on the part of the respondents, nor did it allow them to develop the rapport necessary to permit them to ask questions of a personal or embracing nature.

Other forms of questionnaire available but were not used in this study are:

a. - open form of questionnaire

b. - pictorial form of questionnaire.

4.4 PERSONAL INTERVIEW

A focused interview was conducted. Respondents were asked to focus their attention on the use of Management accounting techniques in their organization. In other words the interviews were conversation carried out with the definite aim of obtaining certain information about the application and problems encountered in the use of management accounting techniques in the construction industry. The interviews were designed to gather valid information through the responses of the interviewee to a planned sequence of the questions.

Before the interviews appropriate questions were prepared to serve as the basis for the discussion, and during the interview the discussions were limited to the predetermined relevant

issues. Respondents were allowed to express themselves freely and completely but along the lines outlined in the questions.

This method of interview was very useful in collecting personal information, attitudes or beliefs and was particularly useful in probing for additional information where the need arose. It was flexible and was applicable to different types of problems. For example if a question was not clear to a respondents, it was rephrased.

The problem with this method was that some of the interviewee complained of lack of time and authority to be interviewed while others kept on giving us appointments that they could not honour even at the latter dates which they had earlier fixed.

Some executives in these companies did not believe in the purpose for which the study was meant even after full identification and the submission of a letter of introduction from the University.

In addition, this technique of data collection is time - consuming.

Other methods of data collection under this category which are available but not used for this study are:

a. - Observation

b. - Telephone conversation

c. - Questionnaires to be filled in by administration

d. - Report based on observation or informal conversation

e. - Results of experiments by other researchers.

4.5 CONCLUSION:

In this chapter the research methodology has been explained. The area of coverage has also been explained. The sample selection and the desire to eliminate any possibility of a bias in the sampling procedure was also described.

The criteria for sample selection and methods of Data collection have been described. Questionnaire and personal interviews which were the two methods used in collecting data for this study were extensively described in this chapter.

CHAPTER FIVE

DATA PRESENTATION, ANALYSIS AND FINDINGS.

5.1 OVERVIEW OF CHAPTER:

A detailed questionnaire was circulated on a national basis to accountants, directors, Managers, and foremen associated with the construction industry, in order to establish indications as to the actual use, improvement, and development of the various management accounting techniques by these accountants in their individual companies. As a further development of the questionnaire, several of the responsive organizations were visited, and as a result a more detailed appraisal of their individual situation was evolved.

The response (see table 5.1) was encouraging considering the down turn of the industry in recent years and its competitive nature of operation.

TABLE 5.1

Summary of replies to detailed questionnaire coverage

Number of questionnaire circulated = 60

Number of questionnaire received and analysed = 42

Percentage response to questionnaire = 70

Questionnaire returned	No	% response
(i) Questionnaire returned by post	7	11.67
(ii) Questionnaire returned by hand in addition to personal interview	10	16.67
(iii) Questionnaire returned by hand but without personal interview	25	41.66
Total	42	70

5.2. TRADES OF RESPONDENTS.

The construction industry is an extremely diverse one, including Building Engineering, Civil Engineering contracting, and other specialist trades.

In this study about 19.05 percent of the test companies undertake only building engineering works, 21.43 percent undertake only civil engineering works, and about 59.52 percent undertake both civil and building construction works (see table 5.2)

TABLE 5.2

Industry classification of respondent companies.

Trade of Firm/Nature of activity.	No. of respondents	% of respondents.
Building engineering only	8	19.05
Civil engineering only	9	21.43
Building and Civil engineering	25	59.52
Total	42	100.00

Source: Summary of replies to detailed questionnaire.

Table 5.3

Inflation and the construction Industry.

Question:- Do Management of your company relate the policies of your company to the peculiar Nigerian inflationary trend in making its long-terms forecasting and planning decisions?.

Options:-	No. of respondents.	% of respondents.
Yes	27	64.0
No	15	36.0
Don't know	-	-
	42	100

Source: Summary of replies to questionnaire.

TABLE 5.4

Reasons for frequent contract abandonment.

Question:- What do you think is responsible for the frequent abandonment of construction works in Nigeria?.

Options:-	No. of respondents.	% of respondents.
1. Due to lack of efficient cash management	15	35.7
2. Due to lack of forecast while bidding	11	26.2
3. Due to the practice of giving mobilization fees before commencement of work by contractors	4	9.5
4. Due to (1) and (2) combined	8	19.0

Source: Summary of replies to questionnaire.

5.3 DATA ANALYSIS, INTERPRETATION AND FINDINGS:

The questionnaire was designed to obtain a positive or negative indication as to the potentiality of the various techniques. The replies in respect of each technique will now be considered.

5.3.1 Absorption costing and Marginal costing:

About 64.29 percent of the respondents considered that absorption costing technique is applicable in the construction industry. Out of these only 54.76 percent of them actually use the techniques in their various companies. About 80.9 percent of the respondents indicated that marginal costing technique is applicable in the construction industry. However, only 73.81 percent of them actually use the techniques in their various companies. (see table 5.5).

5.3.1.1 Relevance and Possible Development of Marginal Costing Technique within the Construction Industry:

Marginal costing (which differentiates between fixed and variable costs) may be said to operate when the price quoted for a tender is less than the estimated total cost of the contract (excluding profit). This difference on any particular contract will be assessed by the contractor, bearing in mind such factors as the need to keep in a market, the need to retain his labor force, etc. It may be more profitable to vary the mark-up according to the competition, i.e. a variable mark-up, based upon the amount of competition expected will almost invariably result in higher profits than a constant mark-up.

Sometimes, due to shortage of work in the industry, many contractors :buy it",

i.e. under-tendering in order to hold on to work gangs which had built up in the prosperous years. Such usage and development of marginal costing is only advocated for the short term, particularly in view of the fact that the total profit margin on all contracts over a period of years must ultimately be related to the firm's capital employed.

As may be appreciated, the wider implications of bidding strategy are outside the scope of this study. However, in common with other competitive marketing situations it may be stated that one way of determining the probability of winning with a given bid lies in the studying of previous bidding data.

80.96 percent (see table 5.5.) of the respondents considered that marginal costing could be applied in the following areas.

1. Tendering, particularly when work is short.
2. Presentation of information to lower levels of management.
3. Site profitability, the "contribution" of each site to head office fixed overhead costs can be calculated.

A small number, who were not convinced as to the practicability of applying marginal costing to the construction industry, stressed the difficulty of analysing the marginal costs on-site and also indicated that it is more realistic to trace many so-called fixed overhead costs to the site. This latter point tends to be valid when a civil engineer is spending all his time on one or two contracts of long duration. In regard to the former criticism, i.e. difficulty in assessing marginal cost, the tradition of casual labour within the industry may also tend to accentuate this difficulty.

TABLE 5.5

Use of Absorption and Marginal costing techniques by Respondents:

	ABSORPTION NO. OF RESPONDENTS.	MARGINAL NO. OF RESPONDENTS.
Techniques considered applicable by respondents.	27	34
Actual use of techniques by respondents	23	31
percentage consideration applicable	64.29	80.96
percentage of actual use by respondents.	54.76	73.81

Source: Summary of replies to questionnaire

Four (9.52 percent) respondents did not indicate whether these techniques are applicable in the industry and whether these techniques are in actual use in their companies.

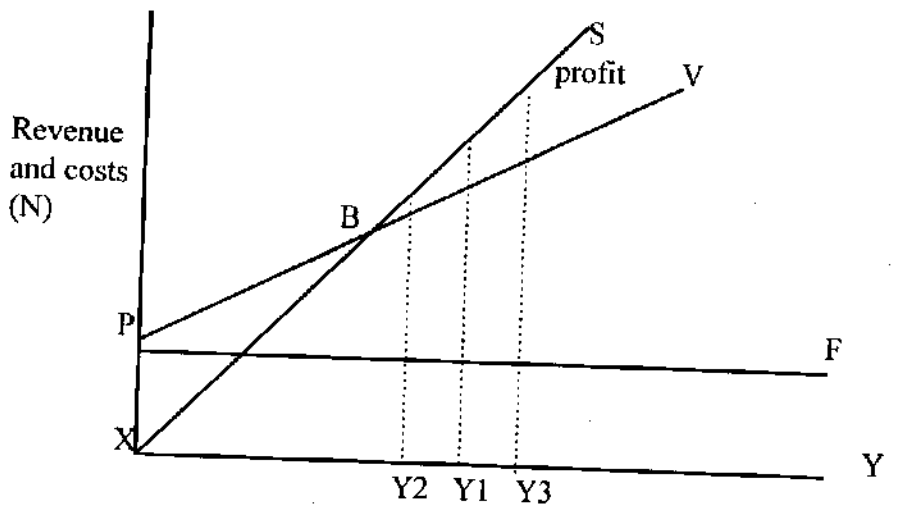
Nineteen (45.23 percent) respondents indicated that both absorption and marginal costing techniques were being used in their various companies.

5.3.2 Break-even Analysis:

The graphical presentation of fixed and variable costs compared with sales revenue may be modified by the construction industry. A chart (see figure 5.1) may be created which indicates costs and revenues related to number of houses. The chart indicates the number of structures to be built (and sold) before the company "breaks even" (B on the chart).

Depending on the state of the market, once this break-even point is attained the building contractor may prefer to become more selective in his bidding on new contracts for the remainder of his financial year.

Figure 5.1 A construction company break-even chart



Source: Developed by researcher

Any decrease in the number of houses to be built (from Y1 to Y2) will decrease the margin of safety. Conversely any increase in the number of houses to be built (say Y1 to Y3) will increase the margin of safety.

FPXY = Fixed cost

VPF = Variable (marginal costs)

XS = Sales revenue

PV. = Total cost line

B = Break-even point.

BPX = Loss area

SBV = Profit area.

5.3.2.1 Contract Profitability:

Each contract may become the subject of a break-even chart whereon contract's budgeted costs and revenue can be plotted. Such graphical presentation will highlight in advance the periods when capital will be required. The question of liquidity is very important due to the nature of construction work.

Projects using alternative materials structures, with varying degrees of necessary maintenance may be compared by a development of the break-even technique. Nearly two-third of the respondents were either undecided or doubtful about its possibilities. 54.76 percent of the respondents indicated that the technique is applicable in the industry but only 19.05 indicated that they use the technique in their companies. However, it was suggested that this technique could be modified and applied to individual project where there is a possible interplay between fixed and variable costs, e.g. plant ownership versus plant hire, or where alternative types of construction ar feasible. For contract profitability, each contract may become the subject of a break-even chart whereon the contract's budgeted costs and revenue can be plotted. Such graphical presentation will highlight in advance the period when capital will be required.

5.3.3 Long-term Forecasting and Planning:

Although there would seem to be less opportunity for the development of this technique in the construction industry because of certain inherent factors, e.g. the possible discontinuance or delay of long term government contracts, a facet should be considered within the context of long-term forecasting and planning.

If long-term forecasts and plans (for say, three years) are to be a viable proposition for the construction industry, it is imperative that more firms become marketing oriented in the sense that

the marketing function brings the goods or services which a business wishes to sell to the attention of the markets to which it wishes to sell. Market research (which concentrates on a specific market) may also be undertaken, either by the individual business or, where it can be done more effectively, by an agent. Examining records kept by the business and data published by government departments, economic and business periodicals, and economic and research organizations, will aid development of long-term forecasts and plans because such a study will indicate both the market potential and the extent to which individual business is in a position to take advantage of the changing environment in its particular sphere of the industry.

About 35.72 percent of the respondents indicated that long-term forecasting and planning (for, say, five-year period) could be applied to the industry. However, only 9.52 percent out of these indicated that they practice this technique in their companies. The following points were made to support this view. The technique could be useful in these situations:

1. In the long-term control of head office costs (including capital expenditure) of the larger organization.
2. Where the policy of the organization is one of expansion which could possibly necessitate the anticipation of increased funds, e.g. new capital issue.
3. Where the organization is involved in an industrialized building situation.

Although about less than one-half of the respondents commented upon the impracticability of the technique, their experience of the industry was reflected in various statements related to the difficulty of accurately assessing long-term demand, the non-continuous volume of work from clients, particularly the government, makes long-term forecasting and planning so much guesswork. However, it could be argued that a forewarning of these

fluctuations in work load, via the use of the long-term forecasts and plans could aid the marketing function of the organization. It is also a fact that changing government policy can make quite a marked contribution to market fluctuation in the construction industry, also, as most contracts tend to be for less than two years, a five year base for forecasts and plans may prove to be unrealistic.

5.3.4. Standard Costing:

It is suggested that there is a great degree of scope for the development of this technique in the areas of tendering and site control. It has been stated that it is possible to develop a Bill of Quantities which gives separate standards in respect of labour, materials and plant for each construction operation. This type of bill is prepared direct from the drawings for the purpose of obtaining competitive tenders and it presents the required information in an entirely new manner.

Operational Bill is an entirely new form of tender document wherein the work to be carried out is analysed into operations, processes, or stages of work; these become the units for estimating (and later pricing) labour content. In addition, details are included of all materials and plant necessary to complete each of the aforementioned packages of work.

In conclusion, as may be appreciated by the amount of deliberation upon standard costing, there is ample scope for its development in the construction industry: however, further discussion here is of necessity curtailed in order to maintain the element of perspective. Nevertheless if those concerned use some of the techniques, the way will be open for the use of a

tender, based upon standard operation costs, which may be applied as an effective Management tool to the most important area of site cost control:

Majority of the respondents appreciated that this technique could be used within certain areas of the construction industry e.g. in repetitive situations. It could also be used as a means of controlling site labour, particularly where the standards originated from a work study base. Standard costing was also envisaged as a natural development of existing estimating activities of the industry.

Approximately a third of the respondents considered the technique impracticable. The cost of costing was mentioned in view of the accumulations of (possibly ineffective) data i.e. standard operations costs, actual operations costs, and variances between standard and actual.

TABLE 5.6

Use of Standard Costing Technique by Respondents:

	No. of respondents
Technique considered application by respondents	23
Actual use of technique by respondents	nil
Percentage considered applicable	54.76%
Percentage of actual use by respondents	nil.

Source: Summary of replies to questionnaire

5.3.5 BUGETARY CONTROL:

5.3.5.1 Head office costs:

These 'Head Office costs e.g. rates of administration office block, higher Management salaries, will tend to be fixed in character and will be the subject of various departmental budget e.g. accounts department, marketing department.

(Although reflecting the policy of the business, departmental Managers should be involved in the preparation of the budget which is related to their individual area of responsibility; however, it will be necessary to stress the connection between one budget and another in order to co-ordinate the efforts of Management).

It is suggested that such costs should be apportioned to the various contracts in proportion to the budgeted duration of each contract expressed in labour and time.

5.3.5.2 Cash Control:

In the construction industry, the need for cash control is reflected by the indication of actuarial use of budgetary control. However, the technique should be developed to a higher degree in the small business, particularly when the extent to which inefficient cash control contributes to the possibility/probably of bankruptcy is appreciated. It is imperative that a comprehensive yet simple budgeted cash flow statement be introduced by the small contractor and used on a regular basis. By anticipating cash shortages(s), the contractor may be able to obtain short term finance to cover the critical period(s). Because of the risk element in the industry, it is also advisable to allow for contingencies sometimes called a 'tactical' reserve.

Less than half of the respondents considered that budgetary control is applicable in the industry, the shorter time base being the obvious advantage; contracts gained can be quantified

and form its basis, rather than the "guesswork" which is required in the application of long-term forecasting and planning.

Some respondents agreed that budgetary control could be applied as an 'umbrella' system within the construction industry i.e. it should cover both head office and site costs. It was suggested that the technique could be more realistically applied to the various contracts/projects rather than, say, period of three months.

However, as each contract normally has to be completed within a time scale, the two aspects would tend to be interrelated.

The other important aspect of budgetary control was also mentioned; the aspect of co-ordination. It was suggested that a full commitment to the technique would

improve the co-ordination between the many and varied professionals in the industry

(i.e. the architects, consultants, engineers, quantity surveyors, estimators, and accountants)

TABLE 5.7 Use of budgetary control technique by respondents.

	No. of respondents.
Technique considered applicable by respondents-	15
Actual use of technique by respondent	8
Percentage considered applicable	35.72%
Percentage of actual use by respondents	19.05%

Source: Summary of replies to questionnaire

5.4 FINDINGS:

The following findings emerged as a result of this study.

(1) The consensus of opinion indicated that there is scope for the application of the various management accounting techniques. However, many of the others would have to be modified to suit the particular needs of the construction industry. This is true in any industry in the sense that they have to be adapted to the needs of management in the individual company within a particular industry.

(2) On the whole 54.37 percent (see table 5.8 (a)) of the respondents indicated that the techniques under study are applicable in the construction industry. However, on the whole only 29.36 percent (see table 5.8 (b)) of the respondents in indicated that the techniques were actually being used. Eleven (26.19 percent) considers additional techniques like payback period, Net Present Value (NPV) and zero-based budgeting as also aplicable in the construction industry. Seven (16.67 percent) respondents indicated that both absorption costing, marginal costing, Break-even analysis and budgetary Control techniques were being used in their companies.

The difficulty is that in many cases, more refined techniques cost more than the benefits they bring. Also, it must be remembered that the construction industry is by no means homogeneous and large difference exist between the techniques applicable. e.g.; to a speculative house builder in contrast to a general contractor.

(3) Respondents were asked whether their management consider the Nigerian peculiar inflationary trend in making their long-term forecasting and planning policies. 64.0 percent (see table 5.3) of the respondents indicated that proper inflationary forecasts were

being made in their various companies planning policies. 36 percent of them indicated that no enough provisions for the peculiar Nigerian economic trend were being considered while making their companies' policy guidelines.

(4) Respondents were also requested to give reasons for the frequent abandonment of construction works by Nigerian construction companies. 35.7 percent (see table 5.4) of them indicated that lack of sufficient funding and proper fund management was responsible. 26.2 percent attributed the reason to lack of proper forecast of the Nigerian inflationary trend before submission of tenders for contract jobs.

9.5 percent of the respondents indicated that the practice of giving mobilization fees to contractors before the commencement of work was responsible. 19 percent of them indicated that the combination of first and second reasons were responsible for the projects abandonment in the industry.

(5) In the course of personal interview, majority of the accountants and chief executives in the construction companies remarked that poor monitoring and lack of proper projects implementation were responsible for the frequent contract abandonment.

Corruption which results in over-invoicing to accommodate bribes and dubious manipulation by contractors were pointed out as some of the reasons.

(6) All the respondents indicated that many problems, amongst which were cost allocation, organizational, communication and internal control hinders the proper use of the various management accounting techniques in their various companies.

TABLE 5.8

Summary of replies to the applicability and actual use of some

Management Accounting Techniques in the construction industry.

Question (a): Do you consider the following techniques applicable to the construction industry in Nigeria?

Techniques	Yes	%	No	%	Undecided	%	Total(%)
Absorption Costing	27	64.29	11	26.19	4	9.52	100
Marginal costing	34	80.96	4	9.52	4	9.52	100
Break- even Analysis	23	54.76	15	35.72	4	9.52	100
Long- term forecasting and planning.	15	35.72	23	54.76	4	9.52	100
Standard costing	23	54.76	15	35.72.	4	9.52	100
Budgetary control	15	35.72	23	54.76	4	9.52	100
Total	137	54.37	91	36.11	24	9.52	100
Other(s), please specify	11	26.19	27	64.29	4	9.52	

Question(b): Which of the following Techniques do you use in your company?

Techniques	Yes	%	No	%	Undecided	%	Total(%)
Absorption Costing	23	54.76	15	35.72	4	9.52	100
Marginal costing	31	73.81	7	16.67	4	9.52	100
Break- even Analysis	8	19.05	30	71.43	4	9.52	100
Long- term forecasting and planning.	4	9.52	34	80.96	4	9.52	100
Standard costing	0	0	38	90.48	4	9.52	100
Budgetary control	8	19.05	30	71.43	4	9.52	100
Total	74	29.36	154	61.12	24	9.52	100
Other(s), please specify	7	16.67	31	73.81	4	9.52	

5.5 CONCLUSION:

In this chapter the data obtained in the course of the research was presented and analysed. Based on the data available the classification of respondent companies into Building and Civil Engineering was made.

The possibility and actual use of the various management accounting Techniques as indicated by the various respondent companies in the construction industry was analysed in the various tables.

The gap between the possibility of use and the degree of actual use of the techniques by the respondent companies was also presented. The findings which included the scope of use of the various management accounting technique and the problems militating against the progress of the construction industry in Nigeria was highlighted in this chapter.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 SUMMARY:

The construction industry is a wide, diverse, and control seem to be difficult and often in many companies no attempt seem to have been made to use management accounting techniques.

If it is to stay in business, every firm must:

1. Ensure completion of work to the satisfaction of its client. (i.e. in accordance with the agreed contract)
2. Maintain (and where possible improve) the desired profit on capital employed.
3. Have sufficient funds available in order to finance its various operations.

The introduction, maintenance, and where possible, development and modification of the various techniques of management accounting can make vital contribution towards the attainment of these goals.

The main objectives of the study was to find out whether construction companies in Nigeria apply management accounting techniques in their decision making process and aim towards optimum level of performance. Another objective was to examine the degree of use /usefulness of management accounting techniques in Nigerian construction companies and to find out whether some or all of these techniques are used by the companies covered by the study.

It is hoped that this research will fill a gap in the literature that caters for accountants, company secretaries and similar professional people who are engaged in giving a vital information service to management.

The area of coverage for this study was arbitrarily selected. Specifically, the questionnaire was randomly administered. The firms so randomly selected in the study represent different construction companies operating at different level of capitalization. No attempt was made to fix a minimum share capital as a criterion for selecting a company for the study. There as also no attempt to select only those companies that were quoted on the Nigerian Stock Exchange because that would have limited the scope of the study too much that the data collected would have not been representative thereby rendering any conclusion based on such data meaningless. For example, as at 28 June, 1991, out of the more than 838 construction companies in Nigeria only 8 (eight) were quoted on the Nigerian Stock Exchange.

A survey of the trades of various companies in the construction industry indicated that building engineering accounts for 36.75 percent of the total value of work done by the industry while civil engineering works accounts for 60.08 percent. Other construction projects account for 3.17 percent. (see table 2.1).

This is an empirical research attempting to examine various issues relating to use of Management accounting techniques in Nigerian construction companies. Since it was intended to be a sample survey, information necessary for the research work was gathered as follows:

A structured questionnaire (reproduced in appendix 1) was administered on top executives of 60 selected Nigerian construction companies in order to gain an indication of the

extent to which the various management accounting techniques are being used, improved and developed in the construction industry. In addition interviews were conducted with the companies' executives and senior and middle management officials of these companies.

Because it was impracticable to study the entire companies that make up the construction industry in Nigeria, only a sample of the construction companies was chosen for the study. To eliminate any possibility of a bias in the sampling procedure, a random sample was chosen. These sample of companies were selected from different parts of Nigeria, being careful not to favour any easily accessible region or to ignore areas that may be some distance away. Therefore every Nigerian Construction company had the same chance of being selected.

Two methods of collecting data for this study were used. They were (1) questionnaire and (2 interview. Questionnaire was used as a device for getting answers to questions by using a form which the respondents filled in themselves, and were either presented to them personally or mailed to them.

Interview was another technique used for collecting information from people in face-to-face contact. A focused type of interview was conducted. Respondents were asked to focus their attention on the need, use and problems encountered in the application of Management accounting techniques in their organization. Respondents were allowed to express themselves freely and completely but along the lines outlined in the question.

The consensus of opinion indicated that there is scope for the application of the various management accounting techniques. The only difficulty is that in many cases more refined techniques cost more than the benefit they bring. Also it must bee remembered that the

construction industry is by no means homogeneous and large differences exist between the techniques applicable.

On the whole 54.37 percent (see table 5.8 (a)) of the respondents indicated that the techniques under study are applicable in the construction industry, but on the whole only 29.36 percent (see table 5.8(b)) of the respondent indicated that the techniques were actually being used. Eleven (11) respondents considered additional techniques like pay-back period, Net present value (NPV) and zero - base budgeting as also applicable in the industry.

6.2 CONCLUSION

It has been the wish of the researcher in undertaking this study to make some contribution (however limited) towards prompting all interested parties as to the relevance of the various Management accounting techniques to the construction industry, and making them aware of the fact that although their industry is very complex and diverse in character many of the techniques may be modified successfully and applied to practical situations.

The industry has the reputation has the reputation of being reserved in regard to the introduction of new techniques. Although this seems to be case in the smaller sized companies this apparent lack of enthusiasm also applies to other industries, the construction industry is far from being unique in this matter. Management accounting is most efficient at finding management weaknesses and although it is intended to be damning criticism of management accounting, the frequently heard" I am not going to change my business to suit my accounting information" is probably the greatest tribute to its ability as a fault finder. However, it must not be

overlooked that the kind of information generated as a result of management accounting may also bring to the attention of management the efficient area of activity.

The management structure which naturally evolves from the nature of contract work seems to be appropriate and that efficiency of the industry depends upon, inter alia the quality of relationships on-site, and between head office and each individual site.

The foreman is an extremely important individual in the management structure, being essentially a link between management and men; the "climate" of the site is largely determined by him and his personal relationships with his men

The site Managers and contract managers covered by the survey were satisfied with the type and frequency of information received from the accountant but suggested that there was room for improvement in the speedier presentation of information.

Within the management structure of the individual construction company the majority of the accountants acted as financial stewards rather than as financial advisers, which fact tends to reflect the historical bias which most accountant derive from the nature of their daily work. There would seem to be an element of hesitancy on the part of accountants to become involved in the wider implications of management, this is possibly because accountants by tradition and training are conservative and cautious in their attitude.

Majority of the participating quantity surveyors interviewed were of the opinion that the majority of the techniques could be applied in the construction industry; however, they added a rider in to the effect that many would have to be modified to suit the particular needs of the industry. Nevertheless the potential for development exist.

As to the actual use, some of the interviewee's viewpoint indicate that the industry is in two camps. On the one hand there seem to be contractors who take an objective view of cost -- reporting and financial controls and forecasts, and apply those techniques(modified when necessary) which are likely to meet their needs. The remainder of the industry appears to work on an extremely adhoc basis and accounts historically for completed contracts. This division is dependent on the size of the companies concerned, e. g the larger contractor tends to use the range of techniques associated with management accountancy. This viewpoint was substantiated by the general indications of the survey, i.e. most of the technique are used in the industry but in the case of the smaller firms the of utilization is either limited or non-existent.

It would be wrong to assume that the various techniques of management accounting are being applied to the same degree throughout the total population of companies in the construction industry, but various case studies indicated that companies in the medium to large range are applying and developing many of them to advantage. In the case of large contractor, the full range is in the use and there is also a degree of development in the case of the medium - size contractor, there is not the same degree of penetration. Very limited use of the techniques seem to be the case in the small firm. The successful contractor, according to the indications of the survey, is using most of the technique within a wider concept of good business management, and such utilization has contributed toward the success of the company.

Therefore the consensus would seem to indicate that the techniques are being used in the industry in varying degrees as aids in more realistic decision- making and positive cost control.

Possible development of the technique in the construction industry should be seen against the economic background, e.g. constraints on the ready supply of capital have changed the

emphasis to a growing realization that a company of the 90's must consider liquidity to be as important as profitability. This is even more pertinent to the construction industry and any technique which aids cash control is to be considered a potential aid in the area of financial control and management. All the techniques which have been considered can be developed and modified for use in the industry to a greater or lesser extent, and it is also suggested that an improvement in 'information flow' would be welcomed by the various levels of management. In so far as individual techniques are concerned, development is suggested in the following areas, inter alia:

Marginal Costing: The application of the contribution / marginal- costs factor to the actual marginal (site) costs of a contract could obviate the need for actual physical (short-term) interim valuation.

Break-even Analysis: Projects using alternative materials / structures with varying degrees of necessary maintenance may be compared by a development of this technique.

Long-term forecasting and planning: Although there would seem to be less opportunity for this technique in the industry, it is imperative that more firms becomes marketing - orientated.

6.3 STUDY LIMITATION

The first experience of the limitation of this study was the lack of co-operation and response from top financial executives of some of the construction companies. Most of the respondent companies expressed that they were unwilling to respond quickly and adequate because of the fear that their capital investment policies might be disclosed to their competitors. This was despite the assurance that all information disclosed would be treated as confidential.

Efforts were made to verify the data supplied by those respondents whose questionnaires were sent by post. Some of the information were based upon the replies which may not be the whole truth. It is possible that the replies may be subject to many subjective influences on the part of the respondent executives. Some of the questionnaires were returned blank or with very few questions answered.

Most of the companies expressed apparent unwillingness to supply needed information, especially companies whose executives were foreigners. The researcher was often mistaken for a government tax agent collecting information to better assess the respondents.

Many of the companies tended to have a special liking for secrecy. In fact even in government ministries were information that otherwise would be for public consumption were consider secret. For example, in one of the States Ministry of Works & Housing visited, the researcher was not allowed access to the number of construction companies registered, and their classification according to trades and specialties. This was despite the fact that an identity card was given in addition to a letter of introduction from the university.

The bureaucracy in government Ministries and parastatals that make it almost impossible to obtain research information should be relaxed. Ministries should be staffed with well qualified people who recongnise the need for the vital statistics required for a scholarly research.

6.4 RECOMMENDATIONS

It would seem from the earlier chapters that there is scope both for an increase in the general use of management accounting techniques in the construction industry, and also for the development , modification , and improvement of those which are in use at the present time.

It is suggested that any industry which may have to face rising costs and smaller profits, as well as the threat of a cut in public sector contracts, has every reason to seek the savings which the expert use of management accounting techniques can offer.

The following are some of the recommendations for the construction industry:

(1) It is suggested that every board of Directors(or board of management) should include one member who fully appreciates the principles of management accounting and the associated techniques. A less insular approach to the exchange of data is also important and whenever possible main contractors should influence their subcontractors in the use of the appropriate techniques.

(2) A comprehensive forecast of the inflationary trend of the National economy, particularly as it applies to construction industry, should be made before submission of contract bids. Contractors should be given adequate time for submission of tenders for efficient costing.

(3) There should be adequate funding and efficient fund management for projects. There should be proper feasibility studies before projects are sited. Stiff penalties should be meted on

contractors who fail to perform according to contract specifications i.e. those who abandon the projects.

(4) Governments(at all levels) should continue the implementation of inherited projects. Governments should also appoint people of proven integrity to monitor implementation of projects. Government should pay debts owed to construction companies immediately to reactivate the construction industry.

(5) Higher Management should encourage a regular interface between the accounting staff and site management (including foremen).Accountants should have access to site and should be urged to visit those which are within their area of responsibility. Sound co-operation between financial and technical people is essential.

(6) Both site Managers and foremen should be encouraged to feel involved in the financial implications of contract work and a good feedback system is essential if they are to participate fully in construction management

(7) Accounting information, if properly disseminated, can instill loyalty; the recipient is more likely to understand and appreciate his contribution to the total effort, and the higher management of the industry should realize that such a situation is vital in construction work which relies upon a favourable site environment.

(8) Accounting is concerned with communication between human beings; it involves the establishment and operation of information system ; it is therefore, imperative for the accountant to review his lines of communication and improve them where possible. It may be argued that because of the geographical barrier that exists between the accountant (situated at head office) and

site management, the accounting information should be so presented in order to encourage accurate interpretation and the promotion of prompt and correct management action.

It is therefore vital that all responsible parties should make a co-ordinated effort to establish within the industry, information systems which will fulfill the real accounting needs of construction management.

(9) It is a fact that the quality of management is fundamental to the growth of productivity and in this process two of the Major factors are:

(a) The introduction of modern management techniques(often undertaken with the help of management consultants) and;

(b) The systematic development of junior and Middle Managers.

(10) Education in the techniques of management accounting should be included in this development and the firms in the industry should consider utilizing the facilities offered by the various professional institutes, University and the construction industry. In addition, each individual firm should organise internal courses which will also have the added advantage of bringing together different management disciplines.

(11) The status and significance of the site manager should be re-appraised and much more attention should be given to his training and development. These managers are not simply technicians for whom a craft and technical training alone is sufficient; they are men of whom competence is required also as Managers and organisers.

(12) Another way in which the industry may encourage the development of management accounting is through the employment of academic consultants, or alternatively through

encouraging joint research between members of the firms staff and the staff of a nearby University, Polytechnic or college of Technology.

(13) The industrial accountant should take every opportunity of 'educating' management, and the practicing accountant should give his clients as much detail as is economically possible.

(14) The construction industry should attempt to evolve a self-perpetuating system of management based upon the efficient utilization of scientific knowledge, in order to attract the right calibre of accountant, it must provide a challenging opportunity within a profit - orientated management team, for the image of the industry tends to militate against the recruitment of high-calibre executives and managers.

(15) Every attempt must be made to encourage the accountant of the present(and of the future) to take a more positive attitudes, to become more of an adviser to management than merely a financial steward.

(16) Success, even survival, depends on the rigorous control of a firm's cash position and the most economical deployment of its staff. Every firm must know how much it can afford to spend on any job if it is to profitable.

(17) Although it may be argued that the client has no responsibility in so far as the development of management accounting is concerned, it may be possible for the client to influence development techniques in the construction industry by:

a. Limiting invitation to tender to a realistic number of firms, thereby limiting the completion of 'unnecessary' tenders.

b. Stipulating adherence to recognised accounting procedures associated with a precedence diagram/critical-path schedule.

c. Entering into negotiated contracts whenever possible in order to facilitate fuller use of techniques and thereby improve efficiency and lower costs.

Where the accountant believes he has discovered something of significance he should convey his conviction to management.

18. In addition, the accountant working in the construction industry must become more involved in the general management scene; he must realize that the successful application of management accounting techniques requires the closet cooperation between himself and technical management. As a construction company is basically so different from a manufacturing business, he must take the trouble to gain the specialised knowledge of this peculiar industry.

Conversely, he should be ready to learn from the experience of accountants in other industries and be less insular in his approach to his discipline.

It should be the responsibility of the accountant to exercise some ready means of effective control over the various sub-contractors; this control may take the form of establishing standard costs for certain repetitive types of work. Finally, the Nigerian Accountant must become more business - minded and orientates his company towards a profit - geared policy. He should endeavour to substantiate the belief that accounting training has a special and unique relevance for decision making at the top management level and take his rightful place in the construction management team. Because of the magnitude of the construction industry, any increase in efficiency resulting from the increased utilization, development, and modification of the techniques associated with management accounting should make a vital contribution to an improvement in the economy of Nigeria.

6.5 SUGGESTION FOR FURTHER RESEARCH:

Further research may be conducted to involve all companies that make up the construction industry in Nigeria. Where it is not practicable to involve all construction companies in a survey of this nature, effort should be made to classify the companies in the industry into three main categories. This classification could be small size, medium size, and large size companies. A representative sample from each of these categories can then be taken and studied separately.

The result that would emerge from these separate studies might assist in identifying which of the categories have more (or less) problems in the industry.

BIBLIOGRAPHY

1. ACKOFF, L.R. (1969) A concept of Corporate Planning. John Wiley & Sons Inc. New York.

2. AJAYI, J.F.A. (1985) Christian Mission in Nigeria 1841-1891 (Ibadan Longmans).

3. ALALADE O.A. (1985) Cost Accounting, 1st edition, Peacock Publishing Ltd.

4. ALKASUN A. et al (1985) The Nigerian Economic Crisis: Causes and Solutions. Gaskiya Corporation, Zaria.

5. AMEY AND EGGINTON (1972) Management Accounting: A conceptual approach, Longman.

6. ARADEON S.B. (1989) In Evolution of construction Industry in Nigeria: CONSTRUCTION: A Journal of the Federation of Building & Civil Engineering Contractors in Nigeria: July, 1989.

7. ARGENTI, J. (1974) Systematic Corporate Planning. Nelson and Sons.

8. BULL R.J. (1984) Accounting in Business; Butterworth & Co. Ltd., Borough Green, Sevennoaks, 5th edition.

9. COPELAND, R.M. AND DASCHER P. E.(1976) Managerial Accounting: An Introduction to Planning, information processing, and control. Hamilton Publishing Co.; Santa Barbara, Califonia. 1st e.p.357.

10. CROWNINGSHIELD G.R AND GORMAN K . A. (1974) Cost Accounting; Principles and Managerial Applications; Houghton Mifflin Co. Boston, 3rd edition.

11. DECOSTER D.T. AND SHAFER E. L. (1976) Management Accounting: A decision Emphasis: John Wiley and Sons Inc. New York.

12. DOBSON, R.W. (1969) Distribution Cost Accounting. Gee & Co. London.

13. DOPUCH, N. (1969) Cost Accounting: Accounting Data for Management decisions, Harcourt, Brace & World, Inc. New York.

14. EWING, D.W. (1964) Long-range planning for Management. New York: Harper & Row.

15. FEDERAL OFFICE OF STATISTICS. (1990) National Census of Industries and Businesses, F.O.S. Lagos.

16. GLAUTIER M.W.E. AND UNDERDOWN B. (1987) Accounting Theory and Practice, Pitman Publishing, London, 3rd edition.

17. GREENBALL, M. (1969) An Accuracy Analysis of different Methods of Accounting for Earnings - A simulated approach. (Journal of Accounting research) Vol. 6 No. 1, Spring.

18. HOPWOOD, A. (1974) Accounting and Human Behaviour. (Accounting Age Books).

19. HORNGREN C.T. Cost Accounting: A Managerial emphasis, Prentice-Hall International, 4th ed.

20. INSTITUTE OF COST AND MANAGEMENT ACCOUNTANTS (1969) Terminology of Cost Accountancy. (London, Gee & Co.).

21. KORN S.W. AND BOYD T. (1969) Accounting for Management Planning and decision making; 1st edition, John Wiley & Sons, Inc. New York.

22. MATZ A. AND USRY M.F. (1976) Cost Accounting Planning and Control; South-West Publishing Co.Cincinnati, West Chicago, 6th edition.

23. MOORE, C.I. AND JAEDICKE, R.K. (1976) Managerial Accounting: South-Western Publishing Co. Cincinnati, West Chicago, 4th edition.

24. FEDERAL REPUBLIC OF NIGERIA (1977) Nigerian Enterprises Promotion Decree 1972 as amended in 1997.

25. FEDERAL REPUBLIC OF NIGERIA, (1991) The Nigerian Stock Exchange: Daily official list, 28th June, 1991.

26. NIGERIAN ACCOUNTING STANDARD BOARD (1986). Statement of Accounting Standards, No. 4-1986.

27. OGIE, R. (1991) Business Concord Vol. 5 No. 348 of 31/12/91 page 16.

28. OLA, C.S. (1982) Management Accounting: Theory and application, Graham Burn, U.K.

29. SIZER, J. (1969) An insight into Management Accounting! (Harmondsworth: Pelican Library of Business and Management).

30. SIZER, J. (1975) An insight into Management Accounting: Penguin.

31. UNITED NATIONS (1986) The Construction Industry: issues are Strategies in developing countries. A world Bank publication (1986).

APPENDIX I

POSTGRADUATE SCHOOL

AHMADU BELLO UNIVERSITY

ZARIA.

DACHI. A. LADAJAU

RESPONDENTS QUESTIONNAIRE

Dear Respondent,

Below are questions relating to the use of management Accounting Techniques in Nigerian Construction companies. You are expected to read carefully and then tick the answer(s) that applies to your company.

This is not a test of intelligence, therefore no wrong or right answers. You should feel free to indicate your opinion choice as best as you can. Your choices and feelings will be considered confidential and will be used only for the purpose of the study. All questions are to be responded to please. Your co- operation is highly solicited.

TERM OF REFERENCE.

Management Accounting Techniques are considered by the researcher as costing techniques that aid Management (at all levels) in their planning, control and decision making roles. The important techniques associated with decisional and control process are total absorption costing, marginal costing, standard costing, budgetary control, and Long- term forecasting and Planning.

6 Professional qualification / degree / experience
(Please tick one).

(a) Chartered ☐
(b) Cost and /Management ☐
(c) Certified ☐
(d) Experience ☐
(e) Any other(s) please specify ☐

7. What is your role in the company?

(a) Financial controller ☐
(b) Financial adviser ☐
(c) Any other, please specify .....

8. What is your level of Management decision making participation?

(a) Lower Management decision ☐
(b) Middle Management decision ☐
(c) Top Management decision ☐
(d) Do not participate in decision making. ☐

PART TWO

In the execution of the contracts undertaken by your company

1. What are the contract priorities?

(a) Technical consideration ☐
(b) Financial implication ☐
(c) Speed of execution ☐
(d) (b) and (c) are of equal importance ☐

2. Do you have a separate Management Accounting section in your organization whose main pre- occupation is on deciding what expenditure to incur or not? Yes ☐ No ☐

3. How many of the staff in the management accounting section of your organization have any formal training in accounting? (give it in the term of percentage) tick the appropriate box.

☐ 100% ☐ 75% ☐ 50% ☐ 25% ☐ 10% ☐ Nil

4. To what extent is management accounting information used by your organization in its decision making?

(a) Little ☐
(b) Much ☐
(c) Very much ☐
(d) None ☐

5. Do you consider the following techniques applicable to the construction industry? (tick only those you think are applicable to the industry).

(a) Absorption costing ☐
(b) Marginal costing ☐
(c) Break- even analysis ☐
(d) Long term Forecasting and planning (say 5 years period) ☐
(e) Budgetary control(say 1 year period) ☐
(f) Standard costing ☐
(g) Network analysis ☐
(h) Any other(s) please specify. ☐

6. Which of the above technique do you use in your company

(a) ☐
(b) ☐
(c) ☐
(d) ☐
(e) ☐
(f) ☐
(g) ☐
(h) None of the above ☐
(i) Any combination please specify.....

7. Does the management Accounting technique you employ assist in the following matters?

(a) Planing and control of activities	Yes	☐	No	☐
(b) Fixing of tender prices	Yes	☐	No	☐
(c) Making decisions	Yes	☐	No	☐
(d) Reduction of costs	Yes	☐	No	☐
(e) Non- Acceptance of unprofitable contracts.	Yes	☐	No	☐
(f) Motivating employees	Yes	☐	No	☐

8. Does the company use the same technique(s) for every type of contract (e.g. long-term and short term contract(s)? Yes ☐ No ☐

9. Long-term forecasting and planning is said to symbolize the purposefulness of modern management. Do management in your company make use of long-term forecasting and planning (say 5 years and above) as a decision making technique?

Yes ☐ No ☐ Don't know ☐

10. Do management of your company relate the policies of the company to the Nigerian National economic trends in making its long term forecasting and planning?

Yes ☐ No ☐ Don't know ☐

11. What particular accounting variables are of utmost significance in your contract decision process?

(a) Turnover or sales (i.e. no. of contracts completed and amount of money involved). ☐

(b) Pretax profit ☐

(c) After tax profit ☐

(d) Return on investment ratio ☐

(e) Retained earning ☐

(f) Other variables, please state .....

12. How often do you prepared / receive accounting information for higher management?

(a) Daily ☐ (d) Quarterly ☐

(b) Weekly ☐

(c) Monthly ☐

13. Are you satisfied with the present frequency of accounting information preparation

Yes ☐ No ☐

If the answer to the above is No, please recommend a suitable frequently for preparation of accounting information

.....

14 How often do you prepare / receive accounting information for site management.

(a) Daily ☐

(b) Weekly ☐

(c) Monthly ☐

15. Are you satisfied with the present frequency of accounting information preparation for the site.

Yes ☐ No ☐

If the answer above is "No" please recommend a suitable frequency for preparation of accounting information.

16. Is action taken promptly on the information received from the report stated in question 12 and 14 above? Yes ☐ No ☐

17. Which of these levels of management receive reports?
(a) Head office only ☐
(b) Site Management only ☐
(c) Foremen ☐
(d) Any other(s) please specify .....

18. In connection with question No.12 do you consider the system followed as being effective.
Yes ☐ No ☐

19. Preparation of budgets and standard for your organization is done by:
(a) A budget committee ☐
(b) The organization executive(s) only ☐
(c) On departmental and Sections basis ☐
(d) Outside consultants ☐
(e) Others, please specify .....

20. Does your organization have a committee dealing with the approval of budgets, operating statements and variances?
Yes ☐ No ☐

21. In approving sectional / divisional / departmental budgets, in what order are these factors ranked? (please indicate by putting 1st, 2nd, 3rd etc.)
(a) Attainment of sectional objectives ☐
(b) Attainment of the whole organization's objectives ☐
(c) Other(s) please specify .....

22. Are variances computed for separate
(a) Cost centers ☐
(b) Departmental ☐
(c) Other divisions, please specify .....

23. The kind of problem(s) the company encounters in the areas dealing with management accounting techniques are:
(a) Cost allocation problems ☐

(b) Attitudinal problems ☐
(c) Organization problems ☐
(d) communication problems ☐
(e) Internal control practices problems ☐
(f) Other major problems, please specify .....

24. What do you think is responsible for the abandonment of construction works by Nigerian construction companies?
(a) Due to the practice of giving mobilization fees to the contractors ☐
(b) Due to lack of efficient cash management ☐
(c) Due to lack of consideration of the Nigerian economic trends in contract bidding ☐
(d) Other(s), please specify .....

25. What do you think is responsible for the frequent revaluation of contract price in Nigeria?
(a) Due to rising cost of building materials. ☐
(b) Due to frequent demand for increase in wages ☐
(c) (a) and (b) combined. ☐
(d) Due to the fact that most of these contracts are not handled by qualified engineers. ☐

26. Do you agree with the suggestion that all construction works in Nigeria should only be handled by construction companies who have qualified engineers in their employment?
Yes ☐ No ☐

27. Do you suggest the inclusion of at least one qualified accountant in the top management decision - making team of all construction firms in Nigeria?
Yes ☐ Not necessary ☐

NB: COMMENTS ON THE RESEARCH STUDY AND THE QUESTIONNAIRE

This section is left for any advice the accountant or executives in related industry, may wish to give.

Criticisms of the form of the questionnaire, its inadequacies, etc. will be welcomed.

Similarly, views on the practicability and impracticability of the various management accounting techniques in the Nigerian construction industry will be of considerable assistance.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

APPENDIX II

Summary of people employed by organizations covered by the study.

Question: State the number of people presently employed by your company.

Response:

No. of people employed	No. of respondents	Percentage of respondents.
1- 1000	23	54.76
1001- 2000	15	35.72
2001- 3000	4	9.52
TOTAL	**42**	**100.0**

Source: Summary of replies to questionnaire.

There are more number of companies with less than 1000 people employed. For instance 54.76 percent of the test companies employed between 1- 1000 people. Only 9.52 percent employed between 2001- 3000 people. That is to say there is a preponderance of small firms in the construction industry.

APPENDIX III

Summary of gross asset sizes of Companies covered by the study.

Question: What is the gross assets size (i.e. capital employed in assets) of your company? Please specify the amount.

Response:

Asset Size	No. of respondents	Percentage of respondents.
N1 million- N5million	11	26.19
above N5m- N10million	11	26.19
N11 million- N50million	4	9.52
N51million- N100million	8	19.06
N101milliom- N500million	4	9.52
N501million- N1billion	4	9.52
TOTAL	**42**	**100.00**

Source: Summary of replies to questionnaire.

APPENDIX IV

Professional qualification/degrees of respondents personnels.

Question: What is your qualification?

Qualification	No. of respondents .	Percentage of respondents.
Chartered Accountant	8	19.06
Cost and Management Accountant	4	9.52
Certified Account	10	23.80
Degree/Higher National Diploma	4	9.52
No qualification (just experience)	4	9.52
Others, please specify, (HDIMT, ANIM, ACEA.)	8	19.06
No response	4	9.52
TOTAL	**42**	**100.00**

Source: Summary of replies to questionnaire.