AN EVALUATION OF PROJECT APPRAISAL TECHNIQUES AS CRITERIA FOR SELECTING AND FINANCING PROJECTS

A CASE STUDY OF THE DEFUNCT NIGERIAN AGRICULTURAL AND COOPERATIVE BANK LIMITED

OLAYINKA. SAMUEL AYODELE
MBA/ADMIN/04199/1993-94

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF

MASTER OF BUSINESS ADMINISTRATION (M.B.A)

DEPARTMENT OF BUSINESS ADMINISTRATION, INSTITUTE OF ADMINISTRATION, AHMADU BELLO UNIVERSITY, ZARIA

JULY, 1997

DECLARATION

I hereby declare that this project titled An Evaluation of Project Appraisal Techniques as Criteria For Selecting And Financing Projects: A case study of the Defunct Nigerian Agricultural and Cooperative Bank Limited, is a product of my independent research work. No part of this work has been submitted to any institution for any academic award. All references made in the work have been dully acknowledged.

Olayinka Samuel Ayodele

DIGITIZED

CERTIFICATION

This research work entitled "An Evaluation Of Project Appraisal Techniques As Criteria For Selecting And Financing Projects" by OLAYINKA, SAMUEL AYODELE meets the regulations overning the award of Master Of Business Administration (M.B.A) of the Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literacy presentation.

DR. A. B. AKPAN — 24/5/2004
Internal Examiner

External Supervisor

Dr Sani A Abdullahi — 24/5/2004
Head, Dept of Business Administration

DEPT. OF BUSINESS ADMIN. INSTITUTE OF ADMIN

Prof J.U. Umoh — 26/2/05
Head, Post Graduate School

DEDICATION

The Project is dedicated to the Lord almighty, for when He says YES no one can say no. In Him I live, move and have my being. To God be the Glory!

I thank my mum for the support and care she gave, even when it was not convenient. You are a mother indeed.

DIGITIZED

To my darling wife who refused to give up on this programme, and my lovely children, blessings from the Lord, words cannot describe what you mean to me. May the Lord continue to bind us together with love that cannot be broken in Jesus name. Amen.

DIGITIZED

OLAYINKA, SAMUEL AYODELE

DIGITIZED

ACKNOWLEDGEMENT

I appreciate the Lord's goodness and mercy over me throughout this programme. He protected me and made way where it seemed there was no way. All glory honour and adoration to you Lord.

My indebtedness goes to my project supervisor, Dr.A.B.Akpan for his supervision, excellent expositions and ability to painstakingly read through my write-ups. His contribution, advice and encouragement to the success of this project are immeasurable. My sincere appreciations go to my colleagues Mr. Olusade Adesola and Ms Foluke Mesele for their invaluable support.

I am equally grateful to my cousin Mr. Kayode Owolagba, and my good friends (in serious times of needs) Mr. & Mrs. Muyiwa Olaoye for their contribution to the completion of this project.

My special appreciations go to my lovely wife, Mrs. Ibilola Olayinka for the encouragement and assistance.

I also thank everyone who has contributed in one way or the other to the success of this research project. You are blessed.

OLAYINKA, SAMUEL AYODELE

ABSTRACT

This project is written in partial fulfillment of the award of Master in Business Administration.

This research project is centered on "An evaluation of project appraisal techniques as a criteria for selecting and financing projects" - a case study of the defunct Nigerian Agricultural and Cooperative Bank Limited. Project Appraisal is a vital issue that helps in no small measure in the acceptability of a capital investment project. Project appraisal is the quantification, analysis, evaluation and identification of investment opportunities open to an investor in order to make a reasonable decision when embarking on an investment. A lending banker is also an investor who invests its fund in the provision of finance to a borrower who gives a binding promise to repay on due date, both the principal and the interest charges.

Among all the available appraisal techniques, the combination of NPV, IRR and Cost Benefit Analysis are the most commonly used. The lending banker needs project formulation and appraisal to plan and evaluate the degree of risk and success attached to loan requests. Project appraisal is very vital in any large/capital lending decision. It is important because through project appraisal risk and uncertainty are reasonably evaluated, analyzed and adjusted. It is in the light of all the benefits derivable from a good project appraisal programme that the researcher tried to take a critical look into this vital tool of lending decision.

After examining the important aspects of project appraisal, recommendations were made as to how to improve the general performance of the bank in this area. These include manpower training and development, and provision of incentives to increase productivity.

TABLE OF CONTENTS PAGE

TITLE i

CERTIFICATION ii

DEDICATION iii

ACKNOWLEDGEMENT iv

ABSTRACT v

TABLE OF CONTENTS vii

CHAPTER ONE

1. **INTRODUCTION**

1.1 BACKGROUND TO THE RESEARCH 1

1.1.1 Conceptual View..... 1

1.1.2 Statement Of Problems 2

1.1.3 Objectives of the Study 3

1.1.4 Scope and Coverage of the Study 3

1.1.5 The Relevance of the Study 3

1.2 THE NIGERIAN FINANCIAL SYSTEM

1.2.1 Introduction 4

1.2.2 Evolution of the Nigerian Financial System 4

1.2.3 The Structure of the Nigerian Financial System..... 9

1.2.4 Summary of Current State of the System (1986-97) 12

1.3 NIGERIAN AGRICULTURAL AND COOPERATIVE BANK LIMITED

1.3.1 History of the Bank 15

1.3.2 Key Activities of the Bank 17

1.3.3 NACB Loan Schemes 17

1.3.4 Achievements of NACB Limited 19

1.3.5 The Experience of NACB 21

1.3.6 Remedial Actions taken by NACB before its Dissolution 24

1.4 PROJECT APPRAISAL

1.4.1 Introduction 26

1.4.2 Project Appraisal Techniques 28

1.4.3 Net Present Value (NPV) 34

1.4.4 Internal Rate of Return (IRR) 37

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION 41

2.2 REVIEW OF RELEVANT LITERATURE 41

2.2.1 WHAT IS A PROJECT 41

2.2.2 PROJECT APPRAISAL, PURPOSE AND IMPORTANCE 43

2.3 APPRAISAL TECHNIQUES 51

2.4 BENFEIT-COST ANALYSIS 65

2.5 DEALING WITH RISK AND UNCERTAINTY IN PROJECT APPRAISAL 69

2.6 FINANCIAL STATEMENT ANALYSIS 78

2.7 HYPOTHESES TO BE TESTED 82

CHAPTER 3

3.1 RESEARCH DESIGN 85

3.2 DATA COLLECTION 85

3.3 DESCRIPTION OF RESEARCH INSTRUMENT 86

3.4 SELECTION OF SAMPLE SIZE 87

3.5 CONDUCT OF FIELD WORK 89

3.6 PROBLEMS ENCOUNTERED 90

CHAPTER 4

4.1 SUMMARY OF RESPONSES TO QUESTIONS 92

4.2 DATA ANALYSIS 96

4.2 TESTING OF HYPOTHESES AND INTERPRETATION 120

CHAPTER FIVE

5.1 SUMMARY OF FINDINGS 149

5.2 RECOMMENDATION 152

5.3 CONCLUSION 155

Summary Of NACB Loan Transactions By Project Type (1973 – 1995).....Appendix I

Summary Of NACB Loans On Annual Basis (1973 – 1995).....Appendix II

Qualitative Factors Considered Along With Quantitative Factors By NACB.....Appendix III(pgs 1- 8)

CHAPTER ONE

1. INTRODUCTION

1.1 BACKGROUND TO THE RESEARCH

1.1.1 Conceptual View:

Economic units whether private households, business enterprises or government agencies from time to time undertake projects. A project is any economic activity or endeavor embarked upon by any of the aforementioned groups with a view to altering positively existing state of affairs.

An investment usually involves a relatively large initial outflow of cash, which later gives rise to series of future inflows of cash. The inflows or benefits from an investment are characterized with some elements of risk and uncertainty. Because of these problems, organizations have to exercise considerable care in identifying possible projects and selecting those projects, which are technically feasible and economically viable.

Over time, opinions have been divided on the supremacy of the various project appraisal techniques. Some of these opinions border on the superiority or complexity of these techniques over each other. Also worthy of note is the fact that despite the application of these techniques to project appraisal, virtually all the development banks in Nigeria are distressed. It is in the light of this observation that this research is set out to evaluate the project appraisal techniques of the defunct Nigerian Agricultural and Cooperative Bank (NACB).

1.1.2 STATEMENT OF PROBLEMS

The topic of this research work "An Evaluation of project appraisal techniques as a criteria for selecting and financing projects – A case study of the defunct Nigerian Agricultural and Cooperative Bank" is a very important one because it is one of the bases for project approval and financing by banks. This topic is therefore of considerable significance to:

- Banks in general.
- Particularly, development banks of which the Nigerian Agricultural Co-operative and Rural Development Bank (NACRDB) is one.
- Borrowers (Investors).
- Students of finance related courses.

Furthermore, the topic is of importance when one considers the volume of loan that the defunct NACB granted, its loan repayment statistics and the challenges that led to the dissolution of the bank. Also worthy of note are the numerous contributions of renowned authors on appraisal techniques as a tool for decision-making. Bearing all these in mind the failures of some banks and in particular, all the former development financial institutions (NIDB, NBCI, NERFUND, NEXIM, Federal Mortgage Bank and NACB) in Nigeria, one may be tempted to ask;

"to what extent has project appraisal techniques contributed to the success or challenges of development banking in Nigeria".

In the face of past and prevailing circumstances, were the project appraisal techniques of the defunct NACB adequate enough to optimize expected benefits of project funding?

1.1.3 Objectives of the Study:

The objectives of this study are as follows:

* To critically examine project appraisal techniques of the defunct Nigerian Agricultural and Cooperative Bank.
* To see if those techniques were adequate and sufficient in lending decision-making.
* To see whether they compared favourably with the conventional techniques.
* Where need be, to make suggestions and recommendations that may be useful for any improvement in project appraisal techniques of NACB successor (Nigeria Agricultural Co-operative and Rural Development Bank).

1.1.4 Scope and Coverage of the Study:

The study is expected to review the Nigerian financial system from inception to 1998. It will briefly take a look at various appraisal techniques and make a review of them. Appraisal techniques for shares and stocks are not supposed to be dealt with in this study. Areas of particular interest are; the Accounting Rate of Return, Payback period, Net Present Value (NPV), Internal Rate of Returns (IRR), Benefit Cost Ratio (BCR) or profitability Index (PI), Financial ratios, Sensitivity Analysis and Capital rationing. All these techniques will be looked at, as they relate to project appraisal in the defunct NACB and the present Nigeria Agricultural Co-operative and Rural Development Bank (NACRDB).

1.1.5 The Relevance of the Study:

To relate the theoretical project appraisal techniques learnt in my course works and practices in the banking industry with those in the defunct NACB with a view to making appropriate

recommendations to the new Nigerian Agricultural Co-operative and Rural Development Bank (NACRDB).

1.2 THE NIGERIAN FINANCIAL SYSTEM

1.2.1 Introduction:

"The financial system refers to the totality of the regulatory and participating institutions, including financial markets and instruments, involved in the process of financial intermediation[1]". J. F. Sinkey Jr., defined "Financial Services Industry (FSI) as the aggregation of all firms that supply financial services and products[2]". He stated further that FSI is the amalgamation of such traditional and segmented industries as banking, thrift, securities, insurance, real estate, credit union and finance. According to him, it also includes non-financial corporations e.g. General Motors, Ford Motor Company, etc which are involved in the production and delivery of financial services and products. The Nigerian financial system has over the years, especially since the advent of Structural Adjustment Programme (SAP) in 1986, undergone a rapid expansion both in terms of the number of institutions and the scope and variety of financial services and products offered. The system is gradually recovering from about a decade of distress and failures, which threatened its safety, soundness and stability.

1.2.2 Evolution of the Nigerian Financial System:

---

1 - A CBN/NDIC Collaborative study on Distress in the Nigerian Financial Service Industry, published in October, 1995.

2. SINKEY J. F. JNR - Commercial Bank Financial Management in the Financial Services Industry, 4th Edition (London: Macmillan). (1992).

The CBN/NDIC collaborative study of 1995 classified the evolution of the Nigerian financial system into four major phases discussed below:

(a) The Free-banking Era (1892 - 1951):

That period is referred to as the era of free banking because of the absence of any laws governing the establishment and running of banks. Also, during that period, the setting up of banks was not related to the need of the economy. Hence, many banks failed within a short time after they were hurriedly established.

An environment made up of relevant resources, skilled manpower, good banking culture/banking activities, etc., was not adequately considered in establishing several of those banks.

(b) Emergence of Banking Regulation (1952 - 1958):

The experience arising from the rapid rate of bank failure in the former era led to efforts to regulate the Nigerian banking system. This culminated in the enactment of the 1952 Banking ordinance. The ordinance provided for licensing requirements as well as procedures and standards for the conduct of banking business. It also prescribed prudential requirements for capital and reserves.

However, it must be stated that the regulatory framework of the ordinance did not prevent the collapse of badly managed banks that engaged in misappropriation of funds, unprofitable investment, etc.

c) The Era of Consolidated Growth (1959 - 1985):

The recognition of the developmental role of a stable and efficient financial system informed the concerted efforts for the establishment of the Central Bank of Nigeria (CBN). These efforts culminated in the enactment of the CBN Act in 1958 and the commencement of CBN operations on 1st July 1959. Apart from the traditional Central Bank functions, the CBN was saddled with the responsibility of ensuring an orderly development of the Nigerian economy, especially the financial system.

After the establishment of CBN in 1959, the foundations of the Nigerian money and capital markets were also laid in that year. On the capital market scene, the CBN developmental efforts were two-fold:

* Ensuring the emergence of the securities market and instruments (primary and secondary).
* Promoting the establishment of development banks, such as Nigerian Industrial Development Bank (1964), Nigerian Bank for Commerce and Industry (1973), Nigerian Agricultural and Cooperative Bank (1973) and the Federal Mortgage bank of Nigeria (1977). Other regional institutions emerged during this period.

The securities market formally came on stream through private initiatives in 1960 with the establishment of the Lagos Stock Exchange. The Exchange was reconstituted into the Nigerian Stock Exchange in 1977 with branches in other

parts of the country[3].

(d) The Era of Financial System Deregulation (1986 - 1997):

Following the adoption of the Structural Adjustment Programme (SAP) in 1986, the financial system witnessed radical changes. The SAP era witnessed the most significant policy and institutional changes in the financial sector. Apart from the introduction of measures and instruments to deregulate the financial services industry, the techniques and the range of products offered by the industry also changed significantly. The major objective of the deregulation was to enhance economic efficiency and effective resource allocation through service-driven competition and improvement in quality and spread of financial service delivery. The key measures introduced included:

(i) The deregulation of exchange rate

(ii) Deregulation of the interest rate regime

(iii) Promulgation of the new CBN Decree 24, and the Banks and Other Financial Institutions Decree 25 (both of 1991) to strengthen regulatory and supervisory capacity of the CBN.

(iv) Establishment of the Nigerian Deposit Insurance Corporation (NDIC), with the promulgation of Decree No.22 of 1988, to safeguard customer deposit and promote banking stability.

---

3 The Nigerian Stock Exchange presently has branch offices in Abuja, Ibadan, Kano, Kaduna, Port-Harcourt and Onitsha.

(v) Re-introduction of stabilization securities as an instrument for containing excess bank liquidity.

(vi) Introduction of Open Market Operations (OMO) to influence the level of liquidity in the economy to replace the inefficient direct control through credit ceiling.

(vii) Establishment of the Nigerian Inter-bank settlement system to enhance inter-bank market transactions and ensure an efficient payment system.

(viii) Promulgation of the Failed Banks (recovery of Debts) and Financial Malpractices in Banks Decree No. 18 of 1994 to help recover bank debts and punish malpractices in banks.

(ix) Relaxation of the conditions for licensing new banks and other non-bank financial institutions. This led to a phenomenal growth in the number of banks and non-bank financial institutions in the country. For example, the number of banks operating in the country increased from 41 in 1986 to 120 in 1993, although the number has since dropped to 115 as at 1997 following the liquidation of 5 banks.

The proliferation of banks and other financial institutions led to unprecedented competition; introduction of new products and several other challenges. The impact of these developments on the financial system, especially between 1989 and 1994 were quite embarrassing and characterized by:

* High interest rates

* Sharp practices
* Frauds
* Gross inefficiencies
* Green horns in high places of responsibilities
* Professional/moral decline.

1.2.3 The Structure of the Nigerian Financial System:

The institutions that make up the Nigerian financial system can be classified into three broad categories, i.e:

(a) Regulatory/Supervisory Institutions:

Like the practice in many other countries, Financial Services Industry (FSI) regulation in Nigeria is carried out by government agencies. These agencies are;

(i) **The Central Bank of Nigeria** - Charged with the responsibility of promoting monetary stability and a sound financial structure in Nigeria. The CBN directly regulates the activities of the banks, finance companies, and Bureaux de change. It however delegates the supervision of community banks to the National Board for Community Banks as its agency for that purpose. It also has the power to demand for any financial infromation from any financial institution in Nigeria.

(ii) **The Nigeria Deposit Insurance Corporation (NDIC)** - The NDIC not only provides financial guarantee to depositors in case of failure but also ensures that banks comply with regulations and practices that will foster safety and

soundness in the Nigerian financial system. The corporation is also empowered to apply sanctions and corrective measures when lapses are observed in the operations of insured banks. The NDIC is also empowered to undertake the liquidation of failed insured banks when appointed by the CBN.

(iii) **Federal Mortgage Bank of Nigeria (FMBN)** - Consequent upon the promulgation of Decree No. 53 of 1989, the FMBN became a regulatory body over primary mortgage institutions. Since it was conferred with the regulatory function, it was also empowered to license and supervise mortgage institutions in Nigeria.

(iv) **The Securities and Exchange Commission (SEC)** - the SEC was established through the Securities and Exchange Commission Decree of 1979 and later repealed by the new SEC Decree of 1988. The institution is the apex regulatory authority in the capital market. The SEC is charged with the responsibility for the overall regulation of the capital market in Nigeria. The players in the capital market are the CBN, Merchant banks, the Nigerian Stock Exchange (NSE), Stock Brokers, registrars, issuing houses, insurance companies and other investors.

(v) **Federal Ministry of Finance** - The Federal Ministry of Finance in addition to its responsibility of overseeing some regulatory agencies, regulates the defunct People's bank directly and licenses the Bureaux de change.

(vi) **Other Regulatory Institutions:**

- National Board for Community Banks (NBCB) for registering

community banks and monitoring their operations.

ZARIA NIGERIA
Ahmadu Bello Uni

- National Insurance Supervisory Board (NISB) for regulating and supervising insurance companies and brokers.
- The development banks were regulated by their supervisory ministries, i.e.,
  - The Federal Ministry of Industries regulated the defunct NIDB and NBCI (both replaced with Bank of Industry).
  - Former NACB (now NACRDB) - by the Federal Ministry of Agriculture and Natural Resources.
  - Nigerian Export-Import Bank (NEXIM) - is under the regulation of the Federal Ministry of Trade.

KASHIM IBRAHIM LIBRARY

(b) Banking Institutions:

The Nigerian banking sector was made up of: Commercial, Merchant (most of them have gone into universal banking) and Development banks, and specialized banks - e.g. People's Bank of Nigeria (now merged with NACB to form NACRDB) and Community Banks).

(c) Non-bank Financial Institutions:

Finance and Investment companies, brokerage firms, insurance companies, discount houses, mortgage institutions, Bureaux de change, the Nigeria Social Insurance Trust Fund (NSITF) and the National Economic Reconstruction Fund (NERFUND) are some of the institutions in the category of non-bank financial intermediaries. These institutions perform the role of financial intermediaries by mobilizing and providing short to long-term funds to the various sectors, of the Nigerian economy.

- 477012

1.2.4 Summary of Current State of the System (1986-97)

(a) Bank Failure/Distress:

Initially, the impact of the SAP was positive on the Nigerian financial system. However, this positive impact was undermined by the advent of distress, which gradually ravaged the industry. The scale of distress was generally modest until 1989. Between 1989 and 1995 the distress in the system had become generalized, spreading to virtually all the sub-sectors of the industry. Annex __ shows the average number of distressed banking institutions from 1989 to the end of third quarter of 1996.

The financial system distress has been traced to:

(i) The prevailing economic recession.

(ii) Socio-political crisis

(iii) Policy-induced shocks

(iv) Poor and deteriorating asset quality arising from large portfolios of non-performing credits.

(v) Mismatch of assets and liabilities.

(b) Effects of Distress on the Financial Services Industry:

The distress in the banking system with the attendant liquidity squeeze led to significant increase in the level of interest rates. Several banks engaged in distress borrowing, notwithstanding the prevailing market interest rate, in order to cover

customers' demand and other maturing obligations.

A sub-committee of the Financial Services Regulation Committee (FRSCC) on financial sector distress, identified the following as the implication and consequences of distress problem for the financial sector and the economy[4]:

(i) Loss of confidence in the financial system

(ii) Disintermediation and demonetization resulting in massive portfolio shift to safe assets such as foreign exchange and foreign currency-denominated assets, short-term government securities and non-monetary assets or inflation hedges,

(iii) Crowding-out of the real sector in the provision of credit in an attempt to reduce risk exposure.

(iv) Resolving the problem of distress in the system increases the cost of supervision and regulation,

(v) Increase in unemployment and its attendant social implications.

(c) Actions taken to Tackle Distress in the Financial System:

To avert the danger of instability, various measures were taken by the regulatory, supervisory and other relevant authorities. For instance, the introduction of an explicit insurance scheme has provided a specialized institution to address the distress and protect depositors. Furthermore, the CBN has revoked the operating licenses of some distressed banks and other institutions in the system.

---

4 MICHAEL BROMWICH – Capital Budgeting – a Survey; Journal of Business

In addition to the above, several measures have been taken by the regulatory authorities to sanitize the system, the Federal Government promulgated the Failed Banks (Recovery of Debts) and Financial Malpractices in Banks Decree No. 18 of 1994 to strengthen the legal framework as it affects the recovery of debts in failed banking institutions.

Below is the summary of some actions taken by the various regulatory/supervisory authorities[5]:

(i) Financial Assistance - The CBN in collaboration with the NDIC granted liquidity support to desirable illiquid banks to assist them meet their obligations as and when due.

(ii) Technical Assistance - This came in the form of advisory services and secondment of staff from NDIC/CBN to distressed banks.

(iii) Holding Action - This could take any of the following forms; recapitalization, aggressive debt recovery drive, staff and branch rationalization and embargo on further lending.

(iv) Assumption of Control and Management - Where (i) - (iii) above failed, CBN has had to assume control and management of some distressed banks with the intention to acquire, restructure and subsequently sell them to the public.

(v) Review of Banking Licenses - Revocation of banking licenses.

---

5 See note 1

(vi) Upward revision of the minimum paid-up capital of the various institutions in the financial system.

(vii) Removal of names of distressed institutions from the classified list of operating institutions.

(viii) Suspension of distressed institutions from participating in operations that could further endanger investors.

(ix) A host of other measures that vary from one sector to another (i.e., banking sector, insurance, etc.).

1.3 NIGERIAN AGRICULTURAL AND COOPERATIVE BANK LIMITED

1.3.1 History of the Bank:

Development banks in Nigeria did not emerge on their own. They are creatures of the Federal Government and Central Bank of Nigeria. The inadequacy of the Commercial Banking arrangements, which were service-oriented in trade and commerce led to the rationale for development banking. Among the development banks that emerged in Nigeria was the defunct Nigerian Agricultural and Cooperative Bank (NACB).

"The establishment of NACB in 1972 and commencement of her operations on the 6th of March, 1973 followed decades of frustrations and dissatisfaction with the system of agricultural credit in Nigeria[6]". The Central Bank of Nigeria held 40% of the shares of the Bank, while the remaining 60% was held by the Federal Government of Nigeria through the

---

6 PROF. G. O. NWANKWO in Financial System in Nigeria

Federal Ministry of Finance. The Bank's authorized share capital as at 1997 stood at ₦1 billion and had been fully paid up.

At inception, NACB was expected to provide medium and long term credit to agriculture. The Bank, based on her experience over the years introduced short-term lending schemes aimed at reaching the peasant farmers who make up over 80% of the population of farmers in the country.

The bank's sources of funds were; share capital and various loans from the Central Bank of Nigeria, International Bank for Reconstruction and Development (The World Bank), African Development Bank, ECOWAS Bank and some International Non Governmental Organizations such as International Fund for Agricultural Development (IFAD) and International Labour Organization (ILO), etc.

The bank was specifically set up to deliver credit to the agricultural sector of the economy. Its existence was aimed at stimulating a fast rate of agricultural development in Nigeria and remove inadequate access to credit required in financing agriculture and agro-allied projects. It is also to draw flow of finance resources from abroad to finance agricultural projects so as to improve the incomes and welfare of farmers on the one hand and create self-reliance in food and exportation of agricultural produce as well.

In addition, the bank provides financing by directly investing in the equity capitals of some

agricultural and agro-allied industrial ventures. The bank participates in loan syndication, co-financing, NERFUND Scheme and in exceptional cases, provides guarantees for viable agricultural and agro-allied ventures.

1.3.2 Key Activities of the Bank:

The bank financed all forms of agricultural projects including; arable crops, tree crops, horticulture, poultry, piggery, cattle rearing, rabbitary, fishery, forestry and timber production. In addition, the bank financed produce marketing, agro services and agro-allied projects.

1.3.3 NACB Loan Schemes:

(i) On-Lending:

Under this scheme, loan was advanced by NACB to established institutions for on lending to small-scale farmers. The established institutions are the direct beneficiaries while the ultimate beneficiaries are peasant farmers, which form the target group. This scheme can also be classified as a micro-credit scheme.

(ii) Large Scale Direct Lending;

Under this scheme loans were advanced directly to individual farmers, corporate entities and farmers organizations without going through any on-lending intermediary.

(iii) Small Holder Direct Loan Scheme:

It was a scheme directed at meeting the increasing credit demand of small-scale farmers who are responsible for the production of over 90% of the food and fibre requirements of the country. Security requirements applicable to large-scale direct

lending scheme were waived for borrowers under this scheme. Ability of the applicant to satisfy the bank that he/she is a full-time farmer with a farmland belonging to him or his family and that he/she resides where the farmland is located were the most important requirements to qualify for the loan. Two guarantors were also required.

(iv) Special Small Holder Loan Scheme:

This was a special on-lending scheme for small-scale farmers. Its onward disbursement to ultimate beneficiaries was supervised by the State Ministries of Agriculture and directly controlled by the offices of the State governors. The tenor of the loan then was one year. One significant condition under this scheme was that a further loan would not be made to any State Government until the previous one was fully repaid.

(v) Special Projects:

These were loan packages funded by International lending agencies and tied to specific projects to stimulate and sustain increased agricultural production. These included the World bank assisted Second Livestock Development Project, ECOWAS and IFAD funded artisan fisheries development projects (which covered some coastal States), and the ILO programme for women. This Special Project scheme operates like the conventional micro-credit scheme.

1.3.4 Achievements of NACB Limited:

In terms of volume of lending, as at December 1995, the bank had sanctioned total loans of about ₦5.67 billion out of which ₦4.43 billion had been disbursed to various projects in the areas of agricultural production, processing, agro-allied industries, agro-servicing and agricultural produce marketing. See details in Appendix I.

Credit has over the years become an important tool in the development of agriculture. Inadequate presence of banks in the rural areas, where at least 70% of the farming population reside, limits the accessibility of farmers to formal sources of credit and exposes them to shylock money lenders and other informal sources. These sources are often not only expensive but also characterized by stringent conditions. In recognition of these facts, NACB over the years of its existence made commendable efforts to decentralize its operations.

The Bank commenced business in 1973 with only its Head office in Kaduna while as at December 1995 it had a network of 7 Zonal Offices, 70 Branch Offices, and 314 representative offices in many of the Local Governments of the Federation. Each of the Zonal offices supervised a group of branch offices within reasonable distance to it. The branch offices were responsible for supervising the representative offices. The representative offices acted as the Bank's rural branches. In effect NACB had one of the largest rural network amongst all the Banks in the Federation.

The Branch Offices (depending on their classification and volume of business) had the

authority to sanction loans up to maximum of ₦100,000 per transaction except for special projects where a maximum of ₦250,000 per transaction was allowed. The Zonal offices on the other hand had authority to sanction loans up to a maximum of ₦0.5 million per transaction. This enabled the bank to adequately cater for the small and medium scale farmers who did not therefore require making trips to the Head-Office to obtain loans.

With these developments, NACB was able to get to the generality of farmers. It was also able to make a real impact in terms of numbers of farmers reached and volume of loans dispensed. For instance, total credit disbursed between 1973 and 1988 was ₦848.96 million whereas in 1993 alone ₦913.26 million was disbursed. See details in Appendix II.

NACB's performance in agricultural financing was encouraging until dearth of loan-able fund crept into its operations by mid 1990s. An examination of its audited accounts shows that it was consistently making profits until 1992 when it recorded its first substantial loss since 1974. The Bank's net profit was ₦17 million in 1987 while in 1988 there was a modest loss of ₦1.17 million. Thereafter, a net profit of ₦28 million was made in 1989. The loses the bank started recording since 1992 had been mainly due to the foreign currency fluctuation on its off shore loans and increased cost of rendering its services as against the hither to low exchange rate fixed by Government. The bank found it difficult getting out of the set back arising from these problems. This in addition to bad management was responsible for the bank's failure.

NACB had an impressive growth in physical development over the years; comprising a seven storey Head-office building in Kaduna, an impressive edifice at Abuja, a three-storey office building, one each in 19 states of the Federation, and staff housing estates in most of these locations.

1.3.5 The Experience of NACB

(i) Dearth of Loanable Fund:

By mid 1990s the bank was faced with the problem of dearth of loanable funds, hence there was a decline in the volume of loans she could sanction. This also affected loan disbursement and distribution. The shortage of loanable fund could be traced to the bank's debt service of foreign loans.

The bank obtained foreign currency denominated off-shore loans which were converted to naira when exchange rate ranged between ₦8 and ₦10 to US$1.00. The fall in the value of naira at the time the loans became due for servicing continued to deplete the loanable fund of the bank. This contributed to huge operating losses being sustained by the bank since 1992.

The fundamental consequence of foreign exchange fluctuation was that even if all NACB loan beneficiaries repay their loans, it would not meet NACB obligations to her offshore creditors.

(ii) Low Loan Repayment:

In project financing, the ability of a client to conveniently service debt is to a large extent a function of project performance. Projects funded by the bank were faced with problems ranging from high cost of inputs to unstable Government policies. These problems hampered productivity and invariably client's ability to service their debts as proposed during project packaging.

Default rate associated with this type of problem was discovered to be higher than imagined, on the part of non-governmental loan beneficiaries who were usually left to battle with this problem.

Also, over the years the Federal Government came up with various policies aimed at assisting and encouraging local producers of food and cash crops. While the policies meant well and were quite laudable, frequent changes took their toll on the fortunes of the bank as the leading financiers of agriculture.

Each time these policies were reviewed or changed, the producers reacted by demanding credit to enhance production levels and reap the benefits therefrom. But as soon as they embarked on massive production, these policies get changed again. The resultant effect of course was loss of income, which ultimately affects their capacity to repay the loans used in financing those operations.

(iii) Reduction in Loan Portfolio:

The bank was compelled to eliminate from her portfolio large-scale projects requiring substantial sums of loan for small and medium scale projects. Projects badly affected under this arrangement were mostly marketing, agro-allied, agro-services and integrated projects, to mention a few.

(iv) High Initial Capital Outlay:

Revamping a depressed economy requires government policies aimed at creating an enabling environment for the purpose of boosting production through increasing efficient investments. Investments to boost national domestic product in most cases require investment in capital items such as machinery and equipment. In situations where such items have to be imported in the face of high exchange rate occasioned by very sharp fall in the value of local currency, it will definitely lead to very high initial capital outlay to start up a new project.

As a result of the fall in the value of naira, it became inevitable that if NACB would need to finance similar levels of projects in terms of number and size/capacity she had financed before 1988, the bank would need about 8-10 times the volume of loanable funds she had then. With the dearth of loanable funds in the entire financial system, investments to boost production therefore became a serious matter for industrialists. In fact obtaining working capital to operate plants and service existing debts became a different task, especially when financial analysis results often turned out to be

unfavorable.

(v) The effect of inflation on Project Packaging:

By 1990s, accurate financial projection in project packaging had become a difficult and almost impossible task because of inflation. The high rate of inflation in the Nigerian economy renders prices used as the basis of appraisal invalid within a very short period of time. Moreover, these projects were supposed to be medium or long term in nature, i.e., requiring sometime for implementation. More often than not project appraisal results were rendered invalid before approval and even when reviewed after approval, they still become stale before implementation. This factor was a serious one in project failure.

1.3.6 Remedial Actions taken by NACB before its Dissolution

In an attempt to solve the problems of NACB the bank took the following decisions:

(a) Selective Lending:

In view of dearth of loanable fund, the bank's attention was shifted in favour of small and medium scale loan schemes. The reasons being that:

* a large number of farmers could be reached with small amount of loan as against less number of farmers under the large-scale scheme.
* this group of farmers were more involved in the production of primary farm outputs and form over 80% of the population of farmers in Nigeria.

* the risk of project failure is more diversified considering the small amount of money granted individuals under the scheme and the spread in terms of number of beneficiaries.
* Imported inputs under these arrangements were usually within bearable level.

(b) Aggressive Debt Recovery Drives:

The bank took steps to deeply get her top management staff involved in debt recovery activities. Debt recovery task Force was put in place at the Head Office, Zonal and Branch Offices levels. This to some extent yielded positive results before the big bang.

(c) Cost Control Measure:

The bank's expenditure profile was focused on essential operating expenses that were necessary to keep the bank in business. Idle and unserviceable assets of the bank were disposed of in order to generate fund and avoid unnecessary maintenance cost on them.

Optimum staff placement was carried out and a number of staffers whose services were no longer required were laid off.

(d) Making Branch Offices Profit centres:

Every branch office of the bank was expected to operate profitably. Unviable

ones were identified and relocated or closed.

1.4 PROJECT APPRAISAL

1.4.1 Introduction:

Inadequate fund to optimally carry out desired operations is one of the constraints an entrepreneur has to contend with. It is in the face of this constraint that a business enterprise has to seek various sources of finance available to it for funds. However, it must be stated that these sources of finance have their advantages and disadvantages, which we are not going to address in this research. Sources of finance available to any investor includes retained profit, Asset disposal, Share capital, Debentures, Loan, Overdraft, Leasing, Hire purchase, Factoring, trade credits, etc.

For this study, our concern is basically loan funds from banks with the defunct Nigerian Agricultural and Cooperative Bank (NACB) as our case study. Hence, we shall be taking a look at the project appraisal techniques of NACB, how it was used in deciding whether a loan proposal qualified for loan. It is worth noting that the following principles of good lending which we will briefly discus here, were altogether considered by NACB in its lending decision:

*Purpose of the loan - To ensure it does not ultra vire both the borrowing and lending organization capacities.

*Amount of the Loan - To ensure that adequate and timely fund was provided for any project since this is crucial for project viability.

*Repayment - This is the most important of all the other factors because project viability and organization's willingness to repay loan help to eliminate security realization.

*Term of the Loan - This determines the tenor of the loan, whether it should be a long-term or short-term facility.

*Security - Taken as insurance in case of default. It is not taken with the sole intention of being the main source of loan repayment.

*Other important factors that NACB considered were: Connection, Remuneration and Character.

To determine the viability of a proposal requires a thorough analysis and appraisal. It is the need to determine the technical feasibility and economic viability of projects that led to project appraisal.

"In the mid-fifties literatures began to reflect the growing academic interest in business finance and project appraisal"[7]. Profitability has been considered a very important objective of any business enterprise. For this reason projects or investments that provide returns greater than their cost of funds are considered the most appropriate to undertake. Likewise, banks will be interested in financing projects that

7 MICHAEL BROMWICH – capital Budgeting – a Survey; Journal of Business

are capable of repaying themselves without having to realize securities pledge for such loans.

For a variety of reasons, not all projects that are identified can be financed/implemented. As such, an organization must select those, which will prove most beneficial. In selecting projects, some forms of appraisal techniques must be applied to each possibility and only those projects, which pass the test, should be considered.

1.4.2 Project Appraisal Techniques:

A wide variety of appraisal methods are used in practice with differing degrees of sophistication. However, the most commonly used techniques are:

(i) Accounting Rate of Return (ARR)

(ii) Payback Period (PBP)

(iii) Net Present Value (NPV)

(iv) Internal Rate of Return (IRR)

(i) Accounting Rate of Return (ARR):

Using this technique, projects are evaluated according to the average return earned per annum as a percentage of the outlay. The decision rule is that projects with their ARR above a predetermined required rate of return are undertaken. Where mutually exclusive projects are competing, the one with

the higher ARR is normally considered.

The formula[8] is as follows:

$$ARR = \frac{\text{(Net Revenue - Accounting depreciation) x (1-tax rate) x 100}}{\text{Capital Cost - Cash grant}}$$

Example:

XYZ Ltd. is considering buying one of two labour saving machines. The estimated data concerning the machines are as follows:

Items	Machine A (₦)	Machine B (₦)
Initial Investment Year (0)	15,000	15,000
Residual value of machine Year (5)	3,000	4,500
Annual Labour Cost savings: Yr. 1	6,000	3,000
Yr. 2	6,000	4,500
Yr. 3	6,000	7,500
Yr. 4	3,000	10,500
Yr. 5	3,000	3,000

Depreciation is calculated as the initial cost less residual value divided by the life of the project in years.

8 J. R. FRANKS and H. H. SCHOLEFIELD, Corporate Financial Management, 2nd edition pg. 48, pp3.

Solution

Step 1

Calculating Annual depreciation:

Items	Machine A	Machine B
Cost	₦15,000	15,000
Residual value	- 3,000	- 4,500
Annual depreciation =	₦12,000 ÷ 5 yrs = ₦2,400	₦10,500 ÷ 5 yrs = ₦2,100

Step 2

Accounting profits:

Items	Machine A	Machine B
Yr. 1	6,000 – 2,400 = 3,600	3,000 - 2,100 = 900
Yr. 2	6,000 – 2,400 = 3,600	4,500 - 2,100 = 2,400
Yr. 3	6,000 – 2,400 = 3,600	7,500 - 2,100 = 5,400
Yr. 4	3,000 – 2,400 = 600	10,500 - 2,100 = 8,400
Yr. 5	3,000 – 2,400 = 600	3,000 - 2,100 = 900
Total Accounting Profit =	12,000	18,000
Average Accounting Profit	12,000 ÷ 5 yrs = ₦2,400	18,000 ÷ 5 yrs = ₦3,600

$\therefore$ ARR = $\frac{₦2,400}{₦15,000}$ x 100 = 16% $\frac{₦3,600}{₦15,000}$ x 100 = 24%

On the basis of ARR, Machine B would be preferred.

Advantages of ARR:

1. It takes account of all cash flows
2. It is practical and straightforward to use
3. Managers understand its results provided that they understand the basis of accounting profit.

Disadvantages of ARR:

1. It ignores the timing of cash flows
2. It takes account of certain information with respect to accounting adjustments (e.g. depreciation) that may then lead to incorrect decision being made.

(ii) Payback Period (PBP):

This is more a measure of the liquidity than of the profitability of a project. It is the number of years required to return the projects entire initial outlay (including any working capital) and should therefore be computed after taxes and investment incentives. The decision rule is that only projects with shorter lives than a predetermined minimum are selected. If projects are competing, then the project with the shorter life is chosen. Applying this method to the first example gives the following payback periods:

	Yr.1 (₦)	Yr. 2 (₦)	Machines	Payback Period
A	6,000	6,000	6,000	3yrs
B	3,000	4,500	7,500	3 yrs

It will take three years to recover the original ₦15,000 invested in both cases if all cash flows are realized at the end of each year. Proceeds occurring after the payback period are ignored. The two machines rank equally on the basis of PBP. However, it should be noted that if cash flows were spread evenly over each year instead of being receivable at that year-end as is currently assumed, the payback periods would be as follows:

Machine A = 2½ years

Machine B = 3 years.

Machine A, then, would be preferred. "If a project is expected to produce constant net revenue, the Payback period can be determined by a simple formula"[9].

$$P.B.P = \frac{\text{Capital cost - Cash grant - (initial allowance x tax rate)}}{\text{Revenue (1-tax rate)}}$$

If the projected net revenue cannot be represented as constant annual amounts, the formula has to be modified. To obtain the projects payback period, it is necessary to add the after-tax revenues for each year of the project until the accumulated sum equals the net capital cost

9 J. R. FRANKS and H. H. SCHOFIELD, Corporate Financial Management, 2nd edition pg. 46, pp1.

(capital cost - cash grant - tax benefits of capital allowance).

Example:

Assume a 20% cash grant (₦40) and a 100% first year capital allowance ₦200 with corporation tax of 50%

Year	Project A	Project B
0	-200	-200
1	50	80
2	50	80
3	50	20
4	50	20
5	50	20

Project A

Using the formula for constant net revenue our answer is as follows:

$$P.B.P = \frac{₦200 - ₦40 - (₦200 \times 0.5)}{₦50 \times (1 - 0.5)} = \frac{60}{25} = 2.4 \text{ years.}$$

477012
HG
4028.V3
O1a

For Project B:

Net Capital cost year 0 = (capital cost - cash grant - (initial allowance x tax rate))

= ₦200 - ₦40 - (₦200 x 0.5) = ₦60

$$\therefore P.B.P = \frac{60}{40}$$

Year	Cash flow	Net Cash flow
0	-60	-60
1	80 x (1 – 0.5)	40
2	80 x (1 – 0.5)	40

∴ P.B.P = 1.5 years.

Advantages of Payback Period:

1. It is practical and easy to calculate
2. It is easy to understand.
3. It emphasizes the short term and so is likely to lead to fair safe projects being chosen, particularly since it implicitly emphasized liquidity.

Disadvantages of Payback Period:

1. All cash inflows after the Payback Period are ignored.
2. It ignores time value of money

1.4.3 Net Present Value (NPV)

This is the present value of future cash flows, discounted at the appropriate cost of capital, minus the cost of investment. The NPV (and also the IRR) method is called the Discounted Cash Flow (DCF) method and it has the following formula:

$$NPV = X_0 + \frac{X_1}{(1+k)} + \frac{X_2}{(1+k)^2} + \ldots + \frac{X_n}{(1+k)^n}$$

Where X_0 = Initial capital outlay in year zero

X_1 to X_n = Years 1 through to year n.

K = Required discount rate.

With the problems associated with the ARR and PBP methods, people began to search for better methods of evaluating projects that would recognize the time value of money.

NPV assumes some minimum desired rate of return. "The minimum rate is often called the required rate, hurdle rate, cutoff rate, discount rate, target rate, or cost of capital"[10]. All expected cash flows are discounted to the present, using this minimum desired rate. If the project is positive, the project is desirable, and vice versa. Where there are competing projects, the one with the larger positive NPV will normally be chosen.

Example: A firm is considering buying either one of two machines with the following data:

	Machine A (₦)	Machine B (₦)
Initial Investment Year (0)	100,000	100,000
Residual value of machine Year (5)	20,000	30,000
Annual Labour Cost savings: Yr. 1	40,000	20,000
Yr. 2	40,000	30,000
Yr. 3	40,000	50,000
Yr. 4	20,000	70,000
Yr. 5	20,000	20,000

10 CHARLES T. HORNGREN, Introduction to Management Accounting

Applying the NPV method to the example using 20% cost of capital we get:

Table 1.1

	Machine A			Machine B		
Year	Cash flow	Discount Factor	PV	Cash flow	Discount Factor	PV
0	-100,000	1	(100,000)	-100,000	1	(100,000)
1	40,000	0.8333	33,332	20,000	0.8333	16,666
2	40,000	0.6944	27,776	30,000	0.6944	20,832
3	40,000	0.5787	23,148	50,000	0.5787	28,935
4	20,000	0.4823	9,646	70,000	0.4823	33,761
5	40,000	0.4019	16,076	50,000	0.4019	20,095
NET PRESENT VALUE			₦9,978			₦20,289

The Present Value (PV) of a future cash flow is calculated by multiplying the cash flow for the relevant period with the appropriate discount rate. The NPV is the sum of the individual PVs. The Year 5 cash flows include the disposal proceeds.

Both projects are acceptable when using the NPV approach. Being mutually exclusive, machine B would be chosen since it gives the higher NPV.

Advantages of NPV:

1. All the cash flows are included in the appraisal.
2. The timing of the cash flows is taken into account.
3. The method is not subject to the problems caused by accounting adjustments since

decisions are based on cash flows.

4. It is fairly easy to use, although identification of the appropriate discount rate can be a problem.

Disadvantages of NPV:

1. The exact meaning of NPV is not readily obvious, and many businessmen prefer to use rates of return.
2. The method of ranking projects by size of the NPV can lead to incorrect decision, where the following situations exist:
   a. Constraints on the amount of funds available for capital projects.
   b. Investment indivisibility.

1.4.4 Internal Rate of Return (IRR)

According to CHARLES T. HORNGREN, "the internal rate of return (IRR) has been defined as the discount rate that makes the NPV of a project equal to zero". The decision rule is that all projects whose IRR exceeds the cost of capital should be undertaken. If all projects cannot be undertaken, the project with the higher IRR is normally chosen.

For a simple accept or reject decision regarding a project, both NPV and IRR should give the same result, since:

1. With NPV, projects should be accepted when they give a positive value, when cash flows are discounted at the cost of funds.

2. With IRR, projects should be accepted when they give a return in excess of the cost of funds.

If the same cost of funds is used in both calculations, the above are identical rules. A project, which when discounted at the cost of funds gives a positive NPV, must be giving a return in excess of the discount rate used. Calculation of the IRR requires a trial and error approach.

Advantages of IRR:

1. All cash flows are included in the calculations
2. The timing of the cash flows is taken into account.
3. The method is not subject to the problems caused by accounting adjustments since decisions are based on cash flows.
4. Managers express the results of the appraisal in a form acceptable and understandable.

Disadvantages of IRR:

1. IRR is more difficult to calculate, although the availability of computer packages means that this is no longer a real problem.
2. Some projects with certain cash flow characteristics can have more than one IRR, frequently of very different magnitudes.
3. IRR has a number of weaknesses when it comes to choosing between projects, and is generally considered to be less satisfactory than NPV.

Example:

Calculation of the IRR requires a trial and error approach. This can be seen if we apply the method to machine A of our earlier example.

Machine A, has a positive NPV when discounted at 20% (see solution-using NPV on page 35), therefore the IRR must be greater than 20%.

Taking 25% as our next trial discount rate we get:

Year	Net Cash flow	Discount Factor	PV (₦)
0	-100,000	1	(100,000)
1	40,000	0.8000	32,000
2	40,000	0.6400	25,600
3	40,000	0.5120	20,480
4	20,000	0.4096	8,192
5	40,000	0.3277	13,108

NPV at 25% discount rate = (₦620)

To compute the IRR: $= X_0 = \frac{X_1}{(1+r)} + \frac{X_2}{(1+r)^2} + \ldots + \frac{X_n}{(1+r)^n}$

For our example, that is, $-100{,}000 = \frac{X_1}{(1+r)} + \frac{X_2}{(1+r)^2} + \ldots + \frac{X_n}{(1+r)^n}$

$\therefore IRR = 20 + \frac{9{,}978}{10{,}598} \times 5$

$= 20 + (0.9415 \times 5)$

= 20 + 4.7075

IRR = 24.71

Therefore a 5% increase in the discount rate gives a decrease of ₦10,598 in NPV

i.e. 9978 – – 620

= 9978 +620 = 10,598

At a discount rate of 24.71% the project's NPV will be equal to zero. This means that the project must not be financed with a cost of capital that is above 24.71%.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The word credit is derived from the Latin word "Credo" which means "I believe", this belief provides means for the temporary transfer of an asset from man or organization that has it to a man or organization that does not have it. The dearth of financial facilities is one of the problems that hinder development in the developing countries of the world of which Nigeria is one. Abe, S. T. (1982)[1] defined credit as "encompassing all loans and advances granted to borrowers to finance and service production activities". Credit plays a significant role in the development and improvement of business activities. However, credit is not just given on the face of mere application. The appraisal of proposals, their feasibility and economic viability, determines whether a credit request qualifies for approval. It is the challenges of which proposal qualifies for loan financing that led to various appraisal techniques. Hence in this chapter, we shall be reviewing the opinions and comments of writers on project appraisal techniques.

2.2 REVIEW OF RELEVANT LITERATURE

2.2.1 What is a Project:

A project is any economic/social activity or endeavor embarked upon by private households, business enterprises or government agencies with a view to altering positively a state of

---

[1] ABE S. T. (1982), "Nigerian Farmers and their Financial Problems" – Published in Bullion Magazine, Vol. 7 No 4th, Oct – Dec, 1982

affairs.

A project could be any of the followings:

(i) Constructing a private residential house or school

(ii) Educating ones children/community

(iii) Constructing a new road or rehabilitating an old one

(iv) Commissioning a new factory or bank

(v) Embarking on sales promotion activities

(vi) Expansion or an extension of an existing production line

(vii) etc.

In short, projects involve the provision of tangible goods or services as the case may be. These activities entail the commitment of economic resources (men, money, material, time, etc). There are therefore various definitions of projects among which are the following[12]:

(i) The use of one or more scarce resources during a special time period for the purpose of producing some economic return or output at a later time;

(ii) A capital investment to develop facilities to provide goods and/or services;

(iii) The consumption in the near future of scarce or at least limited resources in the hope of obtaining in return over a longer period some benefit(s); and

(iv) An optimum investment-oriented actions by which a defined combination of human and material resources is expected to cause a determined amount of economic and social development.

---

12 T. FAKIYESI, - Introduction to Cost Benefit Analysis. Lecture delivered at the FITC's Course on Project Analysis and Investment Appraisal" – Owerri, 20th – 31st August, 1990.

Owualah S.I (1990)[13] defined a project as "the commitment of resources both human and non-human, in anticipation of benefits which may occur over a reasonable long period of time in the future or over a short period".

From the above statements, one can conclude that the meaning of project is wide-ranging and implies that some activities that are undertaken as a matter of routine are in the technical sense projects. Examples that readily come to mind are the provision of education for a child and a decision to refurbish one's car.

2.2.2 Project Appraisal, Purpose and Importance

(a) Project Appraisal:

An investment usually involves a relatively large initial outflow of cash, which later gives rise to series of future inflows of cash. The inflows or benefits from an investment are characterized with some elements of risk and uncertainty. Because of these problems, organizations have to exercise considerable care in identifying possible project and selecting those projects, which are technically feasible and financially viable.

---

13 S. I. OWUALAH – "Project Costing and Running Cost Need Analysis" – a paper presented at a course organized by F.I.T.C. Lagos, on Project Analysis and Investment Appraisal, 20th – 31st August, 1990 at Owerri.

Dennis L. Gower (1997)[14], stated that project financial appraisal processes help to forecast the likely net savings or profits that the investment will yield, put these into perspective against the company's corporate objectives, and assess any risk that the expected benefits might not accrue. He went further to say that; this demand proper and extended project definition, the full scope of which would include the evaluation and assessment of some or all of the following parameters:

- An outline, description of the project with its required performance characteristics quantified in unambiguous terms.
- Implementation/work plan with expected dates.
- Forecast all operating and maintenance costs for the new product or structure and for the existing plant or structure.
- Scrap or resale value expected from disposal of both the existing and new plants.
- Economic working life expected from new plant.
- Forecast all financial cost over the appraisal period (i.e., bank interest, etc.)
- Fiscal considerations (taxes, financial incentives, legislation).
- A schedule that sets out all expected savings or other contributions to profits (cash inflows) against the same calendars.
- A Net cash flow schedule.

Both H. A. Simon (1961)[15] and H. I. Ansoff (1968)[16], agreed that in decision making any

---

14 DENNIS L. GOWER – Project Management 6th edition (1997) pg.45

15 A. A. SIMON, The New Science of Management Decision, Harper and Row, new York, 1960, pp. 8-14.

16 H. I. ANSOFF, Corporate Strategy, Pelican, 1968, Chapter 2.

decision involves, at least, the following elements:

(i) Recognizing that a problem exists.

(ii) Obtaining information about the alternative actions (projects) available to solve the problem.

(iii) Gathering data about the possible future environments, which may affect the outcome of projects.

(iv) Defining the objectives which the decision-maker is trying to achieve, and from this, deriving a criterion, or set of criteria, in project selection.

(v) "Construction of a model which relates the outcome of the various projects to the firm's selected criteria and to the various potential environments"[17].

(vi) Having constructed a model, selecting the combination of projects giving highest value to the objective on the basis of the chosen criteria.

(vii) Finally, the models used have to be tested and shown to have relevance and validity for the particular firm.

They concluded that, the steps do not necessarily occur in the above order and the results of any one stage in the process may necessitate a rethink of the previous elements, that is, the process is a cyclical one that may have to be repeated many times as decision-making proceeds.

17 K. J. COHEN and R. M. CYERT, Theory of the Firm, Prentice Hall, Englewood Cliffs, 1965.

However, J. Dean (1951)[18], had earlier asserted that many tests on investment appraisal assume that: steps (*i*) to (iii) of the above process had been completed prior to the use of capital budgeting techniques. He went further to say that some mechanism outside the capital budgeting process is assumed to highlight the firm's opportunities and weaknesses, and generate search for alternative projects to exploit opportunities and remedy weaknesses.

Project appraisal is a vital tool that helps in no small measure in the acceptability and desirability of a capital investment project. In short, project appraisal is the quantification, analysis, evaluation and identification of investment opportunities that may be open to an investor in order to make a reasonable investment decision.

(b) Purpose of Project Appraisal:

Michael Bromwich (1970)[19] observed that until recently, businessmen had always had to decide what investment projects to undertake without the benefit of direct advice from the academic community. He also said that literature began to reflect the growing academic interest in business finance and project appraisal in the mid fifties. According to him, the desire for more rigorous theoretical methods of investment appraisal arose partially out of the increased complexities of a world of increasingly large-scale investments and rapid technological obsolescence, and out of the success of such methods in helping to wage the Second World War.

---

18 J. DEAN, Capital Budgeting (Columbia University Press, New York, 1951)

19 MICHAEL BROMWICH, "Capital Budgeting – a survey; edited by John Sizer in "Readings in Management Accounting, Chapter 9, pg 193, pp 2.

R.H. Parker (1969)[20], in his general review of the historical development of the theory of project appraisal, concluded that some of the problems a firm faces when engaging in project appraisal had been solved and these solutions have passed into general practice. On the other hand, A. A. Robichek (1967)[21] , argued that "most crucial problems, such as how to handle uncertainty, have, as yet, no agreed treatment".

Geoffrey Knott (1998)[22], on his own part recognizes the strategic nature of investment decision in achieving business objectives. He therefore stated that care is essential in the appraisal of projects for two main reasons:

(i) Investment involves a complete commitment of resources for a long period, a commitment that may be impossible or extremely difficult to reverse.

(ii) The ever-increasing trend towards the creation of larger business units by amalgamation and globalization means that serious economic and social consequences can flow from bad investment decisions.

In his own contribution John Lewington (1998)[23], summarized objectives of project appraisal as follows:

- Determine whether the project meets the organization's criteria for financial return on the investment.

---

20 R. H. PARKER, Management Accounting: An Historical Perspective, Macmillan, London, 1969, Chapter 3.

21 A. A. ROBICHEK (ed) Financial Research and Management Decisions. J. Wiley & Sons, New York, 1967, pp. 1-26.

22 KNOTT GEOFFREY- Dealing with Risk in Investment Decisions. 3rd Edition 1998.

23 LEWINGTON JOHN- Gower Handbook of Management Skills (3rd Edition) – 1998. Project Management Article Pages351-353

- Ensure that the estimates present an accurate/practical/realistic view of the project.
- Appraise the risks in relation to the economic returns.
- Determine the benefits and effects of the project on the organization's future strategies and policies.

In summary, Project Appraisal is aimed at evaluating whether or not the current sacrifice is worthwhile vis-à-vis the objective of the investor. Despite the multiple objectives of a firm, the main objective of a private enterprise is maximization of owner's wealth, or the present value of future cash flows. On the other hand, the objective of the public sector will include:

(i) Minimization of cost

(ii) Ability to operate efficiently and effectively

(iii) To break-even

(iv) To act in the public interest

Consequently, all investment opportunities will be viewed from the perspective of expectations, and associated risks and uncertainties

(c) The Importance of Project Appraisal

To any investor, importance of investment appraisal cannot be over-emphasized because it is an important tool in the process of making investment decisions.

More often than not, projects of long-term investment requires substantially large financial

outlay which make it very necessary to plan and evaluate the degree of risk and success attached to them. Project appraisal therefore helps in analyzing investment programmes in such a way that investors become aware of the need for wise scouting for funds and judicious spending.

Investment and return require some projections of future events. Such projections require an assessment of future events, which are caused by environmental factors (such as; climatic, economic, socio-political, technological forces, etc).

On environmental factors, John Lewington also observed that "the ability of an organization to respond to environmental stimuli will depend on a number of factors such as; attitude of mind of management to change, internal politics and management's perception of problem or opportunity, organization's size and structure, bureaucratic complexity and internal inertia in launching new idea; and perceived threats/risk of the change".

He went further by saying that "small organizations may be quick to perceive new opportunities, but will sometimes lack the financial resources to exploit fully the environmental change. Large organizations will have resources, but internal politics, bureaucratic systems and organizational inertia may stifle innovation". He concluded that "most projects should be appraised on their economic justification. The stronger the economic justification, the more likely the project is to be raised to reality".

In the light of these observations, it therefore becomes imperative that a project is properly packaged and appraised bearing in mind all factors that could positively or negatively influence the decision making process.

Also, David Scott, Jr., et al (1999)[24] in their write up on problems in project ranking stated that there are "three general types of ranking problems: the size disparity problem, the time disparity problem, and the unequal lives problem". According to them, each involves the possibility of conflict in the ranks yielded by the various discounted cash flow capital-budgeting decision criteria. They went further to say that "in most cases, this disparity is not critical; however, for mutually exclusive projects, the ranking order is important".

In conclusion, the analysis of these authors shows the importance of project appraisal in project ranking for selection purpose. It also reveals that project appraisal helps in the formulation of a sound depreciation and asset replacement policy, hence it allows for the selection of the most economic assets and also may indicate the timing for replacement before assets become obsolete.

The application of cost-benefit analysis in project appraisal helps to place side by side the benefits and costs that are expected in an investment. This therefore throws light on the need for ascertaining whether the investment is worthwhile or not. Even though it is sometimes

24 SCOTT F. DAVID JR., MARTIN D JOHN, PETTY J. WILLIAM & KEOWN ARTHUR J - Basic Financial Management, 8th Edition (1999)

difficult to quantify some of these benefits (i.e. social benefits) the need for prudent spending can be ascertained with a good cost benefit analysis.

Finally, investment appraisal enhances planning process and decision-making. Project planning is concerned with deciding in advance what, when, how and who will take the necessary actions to accomplish established objectives. Problems of choice that faces firms and management of an organization will be ameliorated with the application of an appropriate appraisal method.

2.3 APPRAISAL TECHNIQUES

Below are the most commonly used investment appraisal techniques:

- Payback period
- Accounting Rate of Return
- Net Present value (NPV)
- Internal rate of return (IRR)
- Profitability Index (or present value index or benefit/cost Ratio)

The methods of computation/calculation of the first four have been thoroughly discussed in Chapter one. However, this section shall be reviewing comments expressed by various writers on the first four.

(i) Payback Period:

Apologists for payback justify the method on the grounds that;

1 It is simple to use and easy to understand

2 Projects which return their outlay quickly leave the investor less exposed to risk and uncertainty,

3 And that under capital rationing, the sooner the money is returned the sooner can other profitable investments be undertaken.

F. M. Wilkes et al (1999)[25], looked at these payback justifications and stated as follows:

"It is tempting to argue that reason 1 ought not to carry much weight but in practice it often does. Reason 1 is less vulnerable to rational attack when, as under uncertainty, the theoretical underpinning of more sophisticated methods are often less than perfect. The more that uncertainty increases with time, the more force there is in reason 2. In industries where the pace of technological change is fast, the use of arbitrary and quite short horizons can be made more convincing. But the criticisms of lack of discounting or allowance for interest charges and lack of consideration for the cash-flow pattern within the payback period remain. Reason 3 also has something in it, but this does not justify ignoring more precise methods for dealing with capital rationing".

25 SAMUELS J. M., WILKES F. M. & BRAYSHAW R. E. - Financial Management and Decision Making, 1999 Edition, Page 94 -- 95

Wilkes et al went on to say that, the greater the uncertainty, the more the uncertainty increases with time and the poorer the quality of information available to the decision makers, the less there is to be said against the use of payback. They concluded by saying that the use of payback method could only be justified, if the need for simplicity overrides all other considerations. However, they added that the more information exists on probabilities, cash flow data, time of capital shortage, etc., the more there is to be said for DCF-based approach.

(ii) Accounting Rate of Return (ARR):

Unlike the payback period, ARR do not at least consider returns over the whole life of projects and the timing of returns. Equal value is effectively given to return of ₦1,000 after one year and the same return after ten years. The measures are conservative if the larger returns come near the start of the project, when the averaging of returns understates the value of the project and thus provides a margin of safety. But, on the whole, the averaging of undiscounted returns obscures important differences between otherwise similar projects in the timing of larger returns. This is important if, as is usually the case, uncertainty increases with distance from the present.

Wilkes et al, again stated that most UK firms use several methods of appraisal – around three typically. According to them; nine out of ten used PBP but upwards of eight out of ten use a DCF method (IRR somewhat more that NPV). Only around four out of ten use ARR.

(iii) Discounted Cash Flow (DCF) Methods:

The Discounted cash Flow (CDF) methods of investment appraisal include the Net Present Value (NPV) technique and the Internal Rate of return (IRR). They both imply familiarity with compound interest. The compound interest concept underlies all financial transactions involving time-delayed receipts and payments.

I. Fisher $(1907)_{26}$, in his work on the "Theory of Interest" made use of the concept of maximization of Net Present Value (NPV) as an investment aim. His writings provided the foundation for much of the later development in this area.

J.M. Keynes $(1936)_{27}$, made use of the Internal Rate of Return (IRR) concept as part of his explanation of investment behaviour. In his model, all projects with an IRR greater than their cost of funds are accepted.

Unfortunately at that time, these and other writings by economist interested in capital and interest theory went unnoticed by the business world.

In the fifties, Joel Dean (See note 18), and other writers, tried to persuade the business world to abandon such crude yardsticks as Payback Period (PBP) and the Accounting Rate of Return (ARR) in favour of more scientific methods. Two major improvements, derived from

---

26 I. FISHER, The Rate of Interest, Macmillan, 1907 – Revised and extended and issued as the Theory of Interest and Money, Macmillan, 1936, pp. 135 – 136

27 J. M. KEYNES, The general Theory of Employment, Interest and Money, Macmillan, 1936, pp. 135-136.

the work of these theoretical economists were suggested:

- That projects should be appraised on the basis of expected cash flow; and
- That allowance should be made by the use of compound interest formulae for the timing of cash flows.

KASHIM IBRAHIM LIBRARY

In 1949, A. A. Robichek[28], conducted a survey and came with a finding that only 2% of a sample of American companies used investment appraisal techniques, which allowed for the interest factor in the timing of receipts. In 1965 when another survey was conducted to measure the speed of acceptance of discounting methods of capital budgeting, it was discovered that almost 50% of similar sample used discounting techniques (i.e. NPV and IRR).

Bierman and Smidt (1966)[29] and Porterfield (1965)[30], in America and Merret and Sykes[31] - in Britain, observed that the above improvements were generally accepted and were passing into business practice. They concluded that methods of investment appraisal (i.e. ARR and PBP) which do not allow for time preference will not lead to optimizing shareholders' welfare at least. This is because they involve adding together, as if equally valuable, monies received at different times.

RECEIVED 26 APR 2005 ZARIA NIGERIA Ahmadu Bello University

(iv) Net Present Value (NPV):

The NPV decision rule for a single project can be summarized as follows:

---

28 See note 21

29 H. BIERMAN and S. SMIDT, The Capital Budgeting Decision, Macmillan, 2nd edition, 1996, Chap. 6

30 J. T. S. PORTERFIELD, Investment Decisions and Capital Costs Prentice Hall, Englewood Cliffs, 1965, p. 12

31 A. J. MERRETT and A. SYKES, Capital Budgeting and Company Finance, Longmans, 1966.

477012

Table 2.1

Outcome	Decision
NPV>0	Accept
NPV<0	Reject
NPV=0	Inconclusive

Michael Bromwich (1970)[32], considered two ways of applying compound interest methods; the NPV and the IRR methods. His finding was that, "a project's NPV measures the rise in share prices which would occur once the market knew the project has been accepted (providing its existence was previously unknown)". The acceptance of a project by a quoted company sends a signal to the market that something good is in the pipeline to increase the shareholders' worth.

However, he went further to introduce the cost of capital dimension into his findings by saying that "the IRR is the maximum annual rate that it would be worth paying for funds to finance a project".

Bierman and Smidt, in their contribution, said that the NPV measures the amount of extra

32 MICHAEL BROMWICH, Capital Budgeting – Survey, edited by John Sizer in "readings in Management Accounting chap. 9 pg. 203, pp 4.

current consumption that a project makes available to shareholders provided that there is a good market in which they can realize the incremental value.

There are other comments that do not revolve round the NPV decision rule but which are basically on the pattern of cash flow. Some of such comments are those of F. M. Wilkes et al $(1999)_{33}$ that stated that "projects which produce their best returns in the distant future will be more severely affected by a rise in interest rates than those with larger returns nearer to the present". This is simply because during NPV computation the discounting factors gradually decline from year zero to subsequent years. Of course, this observation also has a bearing on the IRR arising from the figures under consideration for both NPV and IRR.

F. M. Wilkes et al, also drew attention to the fact that NPV may give different decisions at different discounting rate. Below is an example: Table 2.2

Project	Outlay	Cash flow		NPV			
		Yr. 1	Yr. 2	@10%	@25%	@30%	@35%
A	-100	80	60	22.3	2.4	-3.1	-7.8
B	-120	40	100	-1.0	-24.0	-30.1	-35.5
C	-60	40	50	17.7	4.0	0.4	-2.9
D	-30	30	20	13.8	6.8	4.9	3.2

Extracted from F. M. Wilkes et al pg. 67.

They went on to demonstrate the conflicting outcomes arising from changes in interest rate this way:

---

33 SAMUELS J. M., WILKES F. M. & BRAYSHAW R. E. - Financial Management and Decision Making, 1999 Edition.

Case 1: Supposing all worthwhile projects are to be selected, at 10% discount rate, projects A, C and D should be accepted and project B rejected as indicated by NPV rule.

Case 2: Supposing selection is to be made between mutually exclusive projects. If only two projects were to be chosen these should be the two with the highest NPV, therefore A and C would be chosen.

If the 25% discount rate is appropriate, the NPV rule would still identify A, C and D as worthwhile, but if only two projects were required these would now be C and D. F. M. Wilkes et al therefore concluded that, "a change in the discounted rate has different effects across the projects".

(v) Internal rate of Return (IRR):

The IRR or DCF rate of return or yield of a project is the discount rate required to make the present value of the returns equal to the initial outlay. Hence, IRR is the rate of discount for which NPV is zero. The project's IRR is the maximum interest rate that the investor can afford to pay. The single project decision rule is:

If the project's IRR exceeds the cost of Capital, accept the investment. If the IRR is less than the cost of capital, reject the investment. This can be summarized as follows:

Table 2.3

Outcome	Decision
i>r	Accept
i<r	Reject
i=r	Inconclusive
Where i = IRRR r = cost of capital	

Merret and Sykes (1963)[34], argued in favour of the IRR method, and that management were used to thinking in terms of rates of return. In support of this point, F. M. Wilkes et al, stated that "this to the extent that it is true, is fair enough; decision-making tools are made to fit people and not the other way about". But IRR has also been criticized on the grounds that it is a percentage; that it contains the implicit assumption that returns are re-invested at a rate equal to the IRR.

James C. Van Horne (1990)[35], noted that the IRR does not always provide correct ranking of mutually exclusive investment projects. He went further to say that only rarely would the IRR represent the relevant rate for re-investment of intermediate cash flows.

However, he said that many financial managers feel that; in practice, the IRR is easier to

34 A. J. MERRETT and A. SYKES, The finance and Analysis of Capital Projects, Longmans, 1963 chap. 5 pg 149.
35 James C. Van Horne, Fundamentals of Financial Management (5th Edition) Pg 277.

visualize and interpret than NPV, but like other authors, he concluded that the shortcoming of the IRR method is the possibility of multiple IRR.

F. M. Wilkes et al, defined "a-well -behaved project as one for which an accounting profit (undiscounted returns) exceed outlay and in which an initial cash flow out is followed by non-negative returns". If a project's cash flow includes more than one negative and positive returns, there may be a multiple yield problem: the IRR is ambiguous.

They went on to say that under this situation, to use an IRR approach, the cash flow must be modified to give a single IRR figure but without changing the project's NPV. This method is known as the extended yield method, it brings negative returns towards the present, discounted approximately, to be absorbed by earlier positive returns, or if a negative value still remains at t =1, to be added to the outlay. This process produces a cash flow with an unchanged NPV but which has only one figure for IRR.

In my opinion any alteration or modification of figures of cash flow to arrive at stable IRR is a distortion of the reality of what the true situation is, hence it could be termed a doctored/tailor made outcome.

Net Present Value versus Internal Rate of return

Geoffrey Knott (See note 22), comparing NPV with IRR states that, "the weakness of the IRR approach, as regards mutually exclusive investments, is that it is only a relative measure

of profitability, whether the investment is ₦100 or ₦ 1million the IRR could be the same. NPV on the other hand, is an absolute measure of profitability".

F. M. Wilkes et al, in support of Geoffrey Knott, also submitted that one weakness of the IRR rule is that it considers only the benefits to be obtained and the scale of the benefits to be obtained. For instance, projects with cash flow of this pattern; -6, 4, 5 and –600, 400,500 have the same IRR, when in actual fact the latter project gives much greater total value than the former.

On the issue of scale of investment/benefits, Geoffrey Knott concluded that, "given a choice between mutually exclusive investments, the NPV approach is safer to use than IRR. but if knowledge of the latter is needed by Management, it can be calculated on the incremental method". He went on to say that in situations where projects have more than one IRR, the NPV comes to the rescue. "This is because at the required rates of return between the two extremes, the NPV is positive and therefore acceptable, outside these, the project does not meet the required rate".

F. M. Wilkes et al declared that the NPV rules give the same accept/reject decision for a single project. But where several investments are involved there may be conflict. In a situation like this, the IRR should be used in a particular way to give decisions consistent with NPV. According to them, two distinct situations will be distinguished:

Case 1: Selection of all worthwhile projects;

Case 2: Selection between mutually exclusive projects.

In both cases it is assumed that there are no financial or other constraints on choice. When NPV is used in case 1 all projects with positive NPV are selected. In case 2 the projects with the greater NPV are preferred, so long as these are positive. In case 1, the IRR approach selects (correctly) all projects with IRR above the NPV discount rate. But in situation 2 it is not correct to select those projects with the greatest IRR. Decisions taken are formerly correct.

On this, they concluded that where cost is to be minimized, the options producing the least present value of costs should be selected. If the revenue stream is the same in each case, the problem can be expressed in maximization terms by subtracting the cost alternatives from the revenues and selecting the option that produces the greatest NPV.

J. Hirshleifer (1958)[36], in his theoretical treatment of investment appraisal which lays down the requirements a decision rule needs to fulfill if optimal investment is to be achieved argued that, both methods (NPV and IRR) give the same accept/reject advice. However, he pointed out the weakness in both rules. He argued that assumption underlying the use of a project's NPV as acceptance criteria would allow this amount of incremental current consumption or investment. He went further to say that this assumption would be valid in a perfect capital

36 J. HIRSHLEIFER, " On the Theory of Optimal Investment Decision". Journal of Political Economics, 1958, pg. 73-80 and pg. 108.

market where everyone could borrow and lend at the same rate; where, for example, any future sum could be exchanged on the market for its equivalent at a different date. He concluded that, in practice, different equity holders might well face different rates of interest or not have equal access to credit. The same line of argument can be applied to IRR tests.

Michael Brownwich again stated that the two methods (NPV and IRR) in their naïve form do not always give the same advice when it is necessary to rank projects, e.g. where for physical reasons only one of the several projects can be undertaken, or where the number of projects which can be undertaken is limited by the availability of funds.

Merret and Sykes (1963)[37], claimed that in practice, the IRR has some advantages. For example, it may be easier to use where in uncertain situation, risk is allowed for by requiring a higher rate of return from risky projects (it is suggested that this may not be the best way of allowing for certainty). However, in the literature, there is no doubt that NPV method is a more general method applicable to a wider range of cases.

H. M. Weingartner (1966)[38], stress the need for distinguishing whether investment proposals are mutually exclusive or contingent projects. He defined a mutually exclusive project as one where the acceptance of one leads to the rejection of the other. While a contingency occurs when acceptance for a project depends on the acceptance of one or more other projects. H.

---

37 A. J. MERRETT and A. SYKES, The Finance and Analysis of Capital Projects, Longmans, 1963. Chap. 5.
38 H. M. WEINGARTNER, "Capital Budgeting of Interrelated Projects: Survey and Synthesis" Management Science Vol. 12, 1966 pp 485-516.

Bierman and S. Smidt (1971)[39], theoretically considered two mutually exclusive projects shown below and observed that the IRR can produce a wrong recommendation for mutually exclusive investments.

IRR for two projects of different size Table 2.4

	Cash flows in years		I.R.R. (%)
	0 (₦)	1 (₦)	
Project 1	-10,000	+12,000	20
Project 2	-15,000	+17,700	18

The IRR of project 1 is 20% and that of project 2 is 18%. Apparently, project 1 should be accepted. In this example, they went further, the IRRs do not reflect the differences in capital outlays. Project 2 requires an additional outlay of ₦5,000 and produces additional revenue of ₦5,700 in year 1. This incremental revenue produces a yield of 14% on the additional investment. If the company can obtain funds at less than 14% then project 2 is preferable to project 1.

In another study, J.R. Franks and H.H. Scholefield (1979)[40] considered another case where two projects have the same capital outlay, but different IRRs and they are mutually exclusive:-

I.R.R. for two projects of the same size: Table 2.5

	Cash flows in years			I.R.R (%)	NPV @ 5% Disc Rate
	0 (₦)	1 (₦)	2 (₦)		
Project 1	-10,000	+2,000	+12,000	20	2,789
Project 2	-10,000	+10,000	+3,125	25	2,358

39 H. BIERMAN and SMIDT, The Capital Budgeting Decision, 3rd edition (New York: The Macmillan Company (London: Collier-Macmillan, 1971).

40 J. R. FRANKS and H.H. SCHOLEFIELD, Corporate Financial Management, 2nd edition, pg. 56–57.

The I.R.R. of project 1 is 20% and that of project 2 is 25%. However, the NPV at 5% is ₦2,789 for project 1 and ₦2,358 for project 2. They concluded that the discrepancy arises because the pattern of cash flows differs and the generated funds are reinvested at different rates.

Michael Bromwich therefore, concluded that the use of discounted cash flow methods are not in themselves sufficient to guarantee optimal investment selection – the firm's capital structure and the cost of capital implied by this must also be considered along with it's dividend policy and the risk profile of the firm's project portfolio.

2.4 BENFEIT-COST ANALYSIS

The purpose of Benefit-Cost Analysis is to:

- Identify the costs in order to tailor resources to effectively and logically prosecute projects;
- Consider the expected benefits, vis-à-vis the costs. It is also necessary to appraise their distribution among the socio-economic income groups. If it is a private sector project, does it increase the company's market share, profits, goodwill, etc?
- Critically study the bearer of the costs. Project appraisal enables the undertaker to consider the sources of funds (taxes, loans, new shares, rights issue, debentures, internal or external, etc.). What are the implications of the sources of funds for the project.

The Concept of Cost:

Cost can be classified into two broad categories viz: the implicit and explicit. The former can also be referred to as the opportunity cost arising from scarce resources and competing uses. This becomes necessary in order to select those projects that yield the greatest net benefits to the beneficiaries.

The other component of cost of projects is the explicit cost that can also be sub-divided into (i) fixed and (ii) variable. These are the actual resources consumed in the execution of any project. The former is incurred irrespective of the level of output. Fixed costs are incurred on capital equipment, machinery, fixtures and fittings, buildings, etc, and this cost does not vary in the short run. On the other hand, variable costs vary with the level of production and include costs of raw material, electricity bills, etc.

The concept of Benefits:

Benefits have a wide dimension and connotation. This stems from the fact that benefit/cost analysis has a wider scope that tends to include social indices in its evaluation of benefits. "Profitability, which is the major index in the appraisal of private projects is considered too narrow when dealing with public projects"[41].

Benefits could be direct or indirect depending on its nature. Benefits could be

41 T. FAKIYESI, - Introduction to Cost Benefit Analysis. Lecture delivered at the FITC's Course on Project Analysis and Investment Appraisal" -- Owerri, 20th – 31st August, 1990.

measurable, i.e., coinciding with pecuniary/monetary benefits. There is also a classification based on whether the benefits are private or social. Private benefits can be internalized while social benefits can be externalized.

There are various methods for estimating the future stream of benefits/costs of projects, among these are:

- Projection/extrapolation method
- Forecasting
- Discounting
- Econometric approach

The merits and demerits of the respective methods have to be carefully studied before selection for use.

A private sector organization identifies and appraises a project from a micro-perspective e.g. interests of the stock holders, while the public sector project analyst focuses more on the macro-economy and the attendant benefits. Perhaps it is in this context that analysts speak of social profitability.

Benefit-Cost Analysis and Capital rationing:

F. M. Wilkes et al viewed capital rationing from multiple perspectives. They started by looking at the various forms it could take and concluded with the importance of benefit cost

ratio in project ranking.

According to them capital rationing may arise in several ways. Funds for investment may not be unlimited at all points in time and there may be limitations on the availability of resources such as skilled labour, raw materials or machinery. Constraints also arise where projects are contingent and where there are limits on the investment levels themselves. There may also be acceptable limits to values taken by key financial ratios and management may try to avoid cash-flow patterns producing large fluctuations in year-to-year profits or which would inhibit the firm's ability to declare adequate dividend.

They stated that capital-rationing approach could take two major forms. That is, hard capital rationing – where constraints are externally determined and soft capital rationing – arises with internal, management – imposed, limits on investment expenditure. They went on to say that self-imposed restrictions are often prudential in character and can relate to questions of control within, and of, an organization. "In a perfect market hard capital rationing would not occur while soft capital rationing would be irrational".

They faulted the use of NPV or IRR as the basis for ranking projects in a rationing situation. In their comparative analysis between NPV/IRR approaches and the Benefit-cost ratio approach, it was very clear that neither the NPV nor the IRR methods produced the optimal selection of investments like the Benefit-cost ratio approach did.

They therefore concluded that, "the correct procedure is to rank the alternatives according to the ratio of NPV to initial outlay (i.e. Benefits-Cost ratio of profitability index). This is because the project at the top of the benefit-cost ratio list has the highest achievement of objective per unit of scarce resource. Once the first project according to the ranking is accepted in full, the maximum gain in the objective for the next unit of resource spent is achieved through investment in project 2. When project 2 is fully accepted, project 3 produces the best increase in NPV per naira spent and so on. This assumes that projects cannot be repeated".

2.5 DEALING WITH RISK AND UNCERTAINTY IN PROJECT APPRAISAL

In investment decisions, sometimes a distinction is drawn between risk and uncertainty – Risk meaning that cash flow values have known probability distributions. Uncertainty is said to exist when various outcomes are possible but probability information is incomplete or does not exist. In this section these two words shall be used interchangeably.

There are various techniques used for analyzing total project risk. Amongst these are:

- Subjective or Informal Approach
- Net Present Value Payback Approach
- Risk-Adjusted Discount Rate (RADR)
- Hurdle rate Approach
- Certainty-equivalent Approach
- Simulation Approach

- Sensitivity Approach

(i) Subjective or Informal Approach:

This involves making investment decisions based upon the decision-maker's subjective feelings about a project's risk in relation to expected return. Where the investor is evaluating two mutually exclusive investments having approximately equal net present values, he will most probably choose the less risky one. This informal approach to decision making is commonly used because it is both simple and inexpensive. The decision becomes more complicated when two projects under consideration have different net present values as well as different levels of perceived risk. The decision-maker must determine again subjectively whether the additional risk will be offset by sufficiently higher returns. Even though subjective decision - making is often useful, more precise methods yield more valuable information in many cases.

(ii) Net Present Value Payback Approach:

In some firms a combination of Net Present Value (NPV) with Payback (PB) is used when analyzing project risk. Payback period is the length of time required to recover the net investment. However, cash flow estimates tend to become more uncertain farther into the future. Therefore, the application of payback cut-off point can help reduce this degree of uncertainty. For example, a firm may decide not to accept projects unless they have positive NPV and have payback of less than some stated number of years. This method is also simple

and inexpensive but has some weaknesses such as:

- Choice of which payback to apply is subjective and is not directly related to the variability of returns from a project.
- It fails to recognize that some projects are more risky than others during their start-up period.
- This approach may cause a firm to reject some actually acceptable projects.

Geoffrey Knott (see note 22), stated that "except liquidity problems, the use of a fixed, arbitrary payback period as a criteria for decision making technique will almost always discriminate against profitability". He went on to say that some people tried to justify the use of payback period technique by discounting the cash flows under consideration. Despite this modification, he said that this approach does not take into account (a) Cash flows after the payback period, and (b) the range of probable outcomes of payback cash flows. According to him, the latter may be risky, in which case both the payback and profitability criteria may not be satisfied.

He concluded by saying that "if payback does not consider profitability then it is only being used to screen out risky projects, and might be effective in respect of:

- Long-life projects; this is simply because the more delayed cash flows are, the riskier they become;
- Swiftly changing areas of technology, where early obsolescence has to be protected against.

- Investments in countries with an uncertain political future, e.g. those in which revolutionary or repressive groups are active.
- Brand new products, where future demand is completely uncertain.

However, payback period could be used as an arbiter of acceptability in situations where competing projects are equally profitable and with similar risk characteristics.

(iii) Risk-Adjusted Discount rates Approach (RADR):

David F. Scott, Jr. et al (1999)[42], described this approach as "a method for incorporating the project's level of risk into the capital-budgeting process, in which the discount rate is adjusted upward to compensate for higher than normal risk or downward to adjust for lower than normal risk". The use of RADR is based on the concept that investors will rationally demand higher returns for more risky projects. Once the firm determines the appropriate required rate of return for a project with a given level of risk, cash flows are discounted at the - risk-adjusted discount rate.

On the RADR, David F. Scott et al concluded that, "the logic behind the risk-adjusted discount rate stems from the idea that if the level of risk in a project is different from that in the firm's typical project, then management must incorporate the shareholder's probable reaction to this new endeavor into the decision-making process". This is necessary because, a

42 David F. Scott Jr., John D. Martin, J. William Petty and Arthur J. Keown – Basic Financial Management (8th edition, 1999) Pg.405

project may appear to have a positive NPV, but if you had used the appropriate, higher required rate of return, the project may actually have a negative NPV.

The risk-adjusted discount rate approach has several advantages among which are:

- It allows the decision-maker to evaluate projects more efficiently by assigning each one a definite level of risk. Projects that initially seem undesirable because they have lower expected returns might turn out to be more attractive if they are shown to have lower risk levels that could help to off-set some other high risk investments.
- It provides the decision-maker with a single number on which to base accept-reject decision, thereby eliminating the problem of having to make a risk-return trade-off at decision time.

(iv) Hurdle Rate Approach:

This is similar to the risk-adjusted discount rate method except that the Hurdle Rate Method is used with the Internal Rate of Return (IRR) decision criterion instead of the Net Present Value criterion. If K^*_A is defined as the risk-adjusted requiring return for project A instead of the risk-adjusted discount rate, the hurdle rate for A is K^*_A

If a project's IRR is greater than the hurdle rate, the project is accepted, if the IRR is less than the hurdle rate, the project is rejected.

It has the same strength and weaknesses as the risk-adjusted discount rate approach.

However, decision-makers often prefer the hurdle rate method because the accept-reject criterion is in the form of rates of return rather than NPV.

(v) Certainty Equivalent Approach:

A certainty equivalent factor is the ratio of the amount of cash someone would require with certainty at a point in time in order to make him or her indifferent between that certain amount and an amount expected to be received with risk at the same point in time. The project is adjusted for risk by converting the expected risky cash flows to their certainty equivalents and then computing the NPV of the project. The risk-free rate, and not the firm's cost of capital is used as the discount rate for computing the NPV. This is done because the cost of capital is a risky rate, reflecting the firm's average risk, and using it would result in a double counting of risk.

Certainty equivalent factors range from 0 – 1.0. The higher the factor, the more certain the expected cash flow.

(vi) Certainty Equivalent versus Risk-Adjusted Discount Rate Methods:

The certainty equivalent penalizes or adjusts downward the value of the expected annual after-tax cash flows, which results in a lower NPV for a risky project. The RADR, conversely, leaves the cash flows at their expected value and adjusts the required rate of return upward to compensate for added risk. In both cases, the project's NPV is being adjusted downward to compensate for additional risk.

The RADR makes the implicit assumption that risk becomes greater as we move further out in time. David F. Scott, Jr. et al, summarized the computational differences between the two as follows:

Table 2.6

Computational steps in Certainty Equivalent and Risk-Adjusted Discount Rate methods		
Steps	**Certainty Equivalent**	**RADR**
1	Adjust the expected cash flows, downward for risk by multiplying them by the corresponding certainty equivalent coefficient	Adjust the discount rate upward for risk, or down in the case of less than normal risk.
2	Discount the certainty equivalent risk-less cash flows back to the present using the risk-free rate of interest.	Discount the expected cash flows back to present using the risk-adjusted discount rate.
3	Apply the normal decision criteria, except in the case of the IRR, where the risk-free rate of interest replaces the required rate of return as the hurdle rate.	Apply the normal decision criteria except in the case of the IRR, where the RADR replaces the required rate of return as the hurdle rate.

David F. Scott et al, concluded their contributions on these two methods by saying that if performed properly, either of these methods can do a good job of adjusting for risk. However, by far the most popular method of risk adjustment is the RADR. The reason for the popularity of the RADR over the certainty equivalent approach is purely and simply because of its ease of implementation.

The certainty equivalent approach of considering risk is viewed as being conceptually sound for the following reasons:

- The decision-maker can adjust separately each period's cash flows to account for the specific risk of those cash flows. This is normally not done when the risk-adjusted discount rate approach is applied.
- Decision-makers must introduce their own risk preferences directly into the analysis. Consequently, the certainty equivalent NPV provides and unambiguous basis for making a decision. Decision rule is that projects with positive NPV should be accepted and negative NPV indicates rejection.

(vii) Simulation Approach:

This is a financial planning tool that models some event. When simulation is used in capital budgeting, it requires that estimates be made of the probability distribution of each cash flow element (revenues, expenses, and so on). Computers have made it both feasible and relatively inexpensive to apply simulation techniques to capital budgeting decisions. This method is generally more appropriate for analyzing larger projects.

The computer program is run a number of different times, using different randomly selected input variables in each instance. Thus, the program can be repeated or iterated, and each run is termed iteration. In each iteration, the NPV for the project would be computed accordingly. The results of these iterations are then used to plot a probability distribution of the project's NPVs and to compute a mean and a standard deviation of returns. This information provides the decision-maker with an estimate of a project's expected returns, as well as its risk. Given this information, it is possible to compute the probability of achieving an NPV that is greater or less than any particular value. However, it takes considerable time

and effort to gather the information necessary for each of the input variables and to correctly formulate the model.

(viii) Sensitivity Analysis:

This is a procedure by means of which the change in NPV is calculated for a given change in one of the cash flow elements, such as product price. In other words, a decision-maker can determine how sensitive a project's return is to changes in a particular variable.

Because sensitivity analysis is derived from the simulation approach, it also requires the definition of all relevant variables that influence the NPV of project. The appropriate mathematical relationships between these variables must also be defined in order that the cash flow from the project may be estimated and the NPV computed. Rather than dealing with the entire probability distribution for each of the input variables, however, sensitivity analysis allows the decision-makers to use only the "best estimate" of each variable to compute the NPV.

Among their contributions on sensitivity analysis and simulation, F. M. Wilkes et al, stated that, "there is no clear dividing line between where sensitivity analysis ends and simulation begins. For example, scenario sensitivity analysis has been called deterministic simulation. Balance sheet projections, giving values of financial statistics if particular projects were undertaken are an example of deterministic simulation or projective sensitivity analysis. However, simulation is usually taken to mean that random variables are involved".

2.6 FINANCIAL STATEMENT ANALYSIS

Ralph K. Osayameh (1986)[43], likened statistics with bikinis in that "what they reveal is important, but what they hide is essential". He went further to say that "ratios are applied to credit analysis as a technique designed to aid the appraisal of financial statements from the view point of a lending banker, the uses which an analyst makes of them depend on his experience and credit judgment".

"Analysis and interpretation of company financial statements are specialized art or science of translating accounting data in form of figures and notes into a language lucid and intelligible enough to a lay man who needs such information"[44]. Financial statements are prepared for general purposes, specific users would have to analyze the statement to suit the usage to which he/she wants to put the statements.

The fact that a set of financial statement has been prepared does not guarantee its credibility, reliability and legality if it is not based on sound system of accounting and managerial controls. The authenticity of any set of financial data depends on the books and records from which it has been constructed on the one hand and its compliance with accepted standards within the industry in which it is to be used.

---

43 RALPH OSAYAMEH – Practice of Banking Vol. 2 F&A Publisher Ltd,. 1986.

44 AKINBOWALE OLAGUNJU, "Financial Statement Analysis" Lecture delivered at the F.I.T.C. Course on Project Analysis and Investment Appraisal, August 1990 at Owerri.

Financial statement analysis may be for management appraisal, investment appraisal, merger and acquisition, proposed marketing strategies, product development and diversification purposes, partnership admission or dissolution, director's appointment, business valuation, for business consolidation purpose, goodwill ascertainment, etc.

The overall position of the firm, in this sense, can best be gauged by comparing the ratios between various connected items. A ratio is meaningful only if there is an underlying relationship between the numbers being compared. Ratios can provide great help to management in the planning and control of a business, but they must be used with caution and with a full understanding of the limitations of the figures.

Some commonly used ratios are:

1. Profitability Ratios:

   a. Return on Capital Employed: $= \frac{\text{Profit}}{\text{Capital employed}}$

   b. Earnings per Share: $= \frac{\text{Profit available to Ordinary Shareholders}}{\text{Number of issued shares}}$

   c. Dividend per Share: $= \frac{\text{Total dividends paid}}{\text{Number of issue shares}}$

   d. Price/Earnings Ratio: $= \frac{\text{Market Price per Share}}{\text{Earnings per share}}$

   e. Dividend Yield: $= \frac{\text{Dividend per Share}}{\text{Price per Share}}$

2 Liquidity Ratios

a. Current Ratio: $= \frac{\text{Current Assets}}{\text{Current Liabilities}}$.

b. Acid Test ratio: $= \frac{\text{Current Assets Less Stock}}{\text{Current Liabilities}}$

c. The Borrowing Ratio: $= \frac{\text{Total Borrowings}}{\text{Net-worth}}$

Ratio (c) could be termed "gearing ratio" computed by the formula:

$$\frac{\text{Debt Capital}}{\text{All long term capital}}.$$

3. a. Average Credit Granted $= \frac{\text{Average Debtors}}{\text{Sales}} \times 12$

b. Average Credit Taken $= \frac{\text{Average Creditors}}{\text{Purchases}} \times 12$

4. Working Capital Ratio $= \frac{\text{Working Capital}}{\text{Sales}}$

5. Inventory Turnover $= \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$

Another ratio is one that compares earning with the cost of outside-borrowed money to which can be added capital repayments if desired. The easy form is

6. Repayment Capacity $= \frac{\text{Profit (i.e. EBIT)}}{\text{Interest charges on outside borrowed money}}$.

The ratio provides a good indication of the margin of safety (or lack of it) in a business' commitments to outside lenders.

7. Operating Ratios

(i) - Capital Turnover = Sales: Total Capital employed

- Equity Turnover = Sales: Equity

- Current Assets Turnover = Sales: Current assets

- Working Capital Turnover = Sales: Working Capital

- Stock Turnover = Sales: Stock

- Debtors Turnover = Sales: Debtors.

(ii) Return

- Net Profit : Sales

- Net Profit : Working Capital

- Net Profit : Total Capital Employed

- Net Trading Profit: Trading Capital Employed

- Net Profit : Equity

This chapter has been devoted to literature review and other associated important topics on project appraisal. It is worth mentioning that cost benefit analysis, risk and uncertainty adjustment, capital rationing, and financial statement analysis and interpretation of ratios are crucial tools usually incorporated into project appraisal for investment decisions.

Also, while a lot of us would agree on the fact that the discounted cash flow methods of appraisal are the best, I am quick to remind us of the statement of Michael Bromwich in which he made a conclusion that "the discounted cash flow methods are not in themselves sufficient to guarantee optimal investment selection, the firm's capital structure and the cost of capital must be considered along with dividend policy and the risk profile of the firm's

project portfolio".

Bearing in mind that many organizations have used some of these appraisal techniques in project selection or project financing decisions, the big question now is why is the rate of project failures or minimal performance so high. This question is what the concluding part of this chapter and the proceeding chapters will be addressing.

2.7 HYPOTHESES TO BE TESTED

For the purpose of guidance through this research work, a number of hypotheses have been formulated, and would be tested to draw logical or empirical consequences. For this purpose there are the null hypotheses and the alternative hypotheses.

If the null hypothesis is rejected, we conclude that the population mean is not the figure originally asserted. But if the null hypothesis is not rejected it is important to appreciate that we do not conclude that the population mean is the figure asserted.

Non-rejection of the null hypothesis only signifies that there is no evidence that the true mean is not as asserted; it does not mean that there is evidence that it is correct. Mathematically, the null hypothesis is identified as H_0 and the alternative hypothesis as H_1.

The hypotheses formulated for this research are: Table 2.7

	Null (Ho)	Alternative (Hi)
1	That the discounted cash flow (DCF) techniques of appraisal are the most ideal and commonly used techniques **by banks** in Nigeria.	That the discounted cash flow (DCF) techniques of appraisal are not the most ideal and commonly used techniques **by banks** in Nigeria.
2	That the discounted cash flow (DCF) techniques are the most ideal and commonly used appraisal technique by **development banks.**	That the DCF techniques are not the most ideal and commonly used appraisal techniques **by development banks.**
3	That both the NPV and the IRR always give the same advice when it **is not necessary to rank projects** for consideration.	That both the NPV and the IRR do not always give the same advice when it is **not necessary to rank projects** for consideration.
4	That both the NPV and the IRR always give the same accept/reject advice when it is **necessary to rank projects** for consideration.	That both the NPV and the IRR do not always give the same accept/reject advice when it is **necessary to rank projects** for consideration.
5	That most problems, such as how to handle project risk and uncertainty are reasonably taken care of through risk and uncertainty adjustment techniques by **banks in Nigeria.**	That most problems, such as how to handle project risk and uncertainty are not reasonably taken care of through risk and uncertainty adjustment techniques by **banks in Nigeria.**
6	That most problems, such as how to handle project risk and uncertainty were adequately taken care of through risk and uncertainty adjustment techniques **by NACB.**	That most problems, such as how to handle project risk and uncertainty were not adequately taken care of through risk and uncertainty adjustment techniques **by NACB.**
7	That good quantitative appraisal (i.e. DCF	That good quantitative appraisal (i.e. DCF

	techniques, PBP, ARR, etc) report would always lead to approval of loan request.	techniques, PBP, ARR, etc) report would not always lead to approval of loan request.
8	That dearth of loan able funds was a common problem of development banks in the late 1990s.	That dearth of loan able funds was not a common problem of development banks in the late 1990s.
9	That capital rationing was widely used by Nigerian banks to handle the problem of shortage of loan-able funds.	That capital rationing was not widely used by Nigerian banks to handle the problem of shortage of loan-able funds.

CHAPTER 3

3.1 RESEARCH DESIGN

This research work is divided into five chapters. Chapter one is the introduction to the study and it provides a solid informative insight to the background of the research, that is, the Nigerian financial system, the Nigerian Agricultural and Co-operative Bank and the basic appraisal techniques. The chapter, like the other ones will be of good use to future researchers. Chapter two is about review of previous works of different authors and other ancillary topics. Chapter three describes the research design and therefore identifies data collection methods, research instruments and the selection of sample size. It also discussed the nature of field works and problems encountered during data collection. The fourth Chapter is devoted to summary of questionnaire responses, data analysis, testing of hypotheses and interpretation. Chapter five covers summary of findings, recommendations and conclusion.

3.2 DATA COLLECTION

For the purpose of this research work, data were collected from both primary and secondary sources. The primary source was through the use of questionnaire while the secondary source included various publications and works of different authors and N.A.C.B. The primary source provided the information needed for testing the hypotheses formulated in this research work. However, the secondary data was mainly used for the introductory and literature review aspect of the research work.

3.3 DESCRIPTION OF RESEARCH INSTRUMENT

The primary data was collected mainly through the use of questionnaires that were handed out to officials of banks whose positions and nature of work are relevant to this research. Considering the technical nature of the research work, only officers who are knowledgeable in loan packaging and processing were considered suitable to respond to questions raised in the questionnaire. The questionnaires were used to obtain information on investment loans, that is, projects with their loan volume above ₦100,000.

The questionnaires contain both open ended and close-ended questions. The close-ended questions were to encourage quick response for time saving while the open ended questions were designed to enable the respondents provide some information that cannot be obtained through the use of close ended questions. The open-ended questions were to also seek respondent's personal opinion.

Other instruments were the author's first-degree project work, newsletters of the Chartered Institute of Bankers of Nigeria, publications from relevant institutions and textbooks of authors mentioned in the literature review. Also, for summary of responses and data analysis computer provided a lot of assistance.

3.4 SELECTION OF SAMPLE SIZE

The sampling technique employed is the purposive type. Project and appraisal being a highly technical operation, means that to be reasonable in the research work, only officers of banks that are directly responsible for loan processing should be considered for sampling.

Also, as a matter of comparative analysis, it was considered necessary that a look at the practices of other banks will provide a good basis of judgement as regards the practices of the research case study. In doing this, it was also discovered that a blanket or general basis of comparison might not be reasonable since there are some level of differences in the nature of banking operations. Hence, the general sample size even though was banking institutions had to be categorized into the following:

- Commercial Banks
- Merchant Banks
- Development Banks
- The case study of the research, that is, the defunct Nigerian Agricultural and Co-operative Bank (even though a development bank had to be isolated for the purpose of the research)

It is worth mentioning that for an exercise like this, the researcher would find it very expensive and problematic covering all the banking institutions that make up the general sample size. Problematic in the sense that even organizations with statutory power to collect periodic reports find it difficult getting those reports. One can then imagine what a student researcher may have to contend with.

To be able to manage the problems and cost, the general sample size was narrowed down, on the basis of population by bank type, to at least:

- Ten Commercial Banks served with 20 copies of questionnaire.
- Four Merchant Banks served with 8 copies of questionnaire
- Four Development Banks served with 12 copies of questionnaire
- NACB - Head office, one zonal office and two branch offices served with 10 copies.

It is therefore worth noting that the representation was not on the strict basis of population size. Rather, more emphasis was placed on relativity. Also, it was decided that each bank should have at least two respondents but not more than four. Selection for sampling purpose was therefore based on the following:

(i) That officials of the banks providing information for the purpose of this research must be persons who are involved in the operations relevant to this research.

(ii) That such officers have reasonable experience to enable them provide correct information.

The questionnaires were administered on the following selected sample size after a pre-test (carried out at NACB branch office, Lagos) in order to ascertain the validity and efficacy of the instrument and its applicability.

ESTIMATED/ACTUAL NUMBER OF RESPONDENTS

Table 3.1

REPRESENTATION	NUMBER GIVEN*	EXPECTED RESPONSE	ACTUAL	
			NO.	%
Commercial Banks	20	20	20	100
Merchant Banks	8	8	8	100
Development Banks	12	12	12	100
NACB: Head office	4	4	4	100
Zonal offices	2	2	2	100
Branch offices	4	4	4	100
TOTAL	50	50	50	100%

* Number given refers to number of officers of each category of banking institutions considered for our sample size.

3.5 CONDUCT OF FIELD WORK

The questionnaires administered to all the banking institutions were delivered through linkmen who helped to distribute them to the relevant officers of the department responsible for loan processing. They were also sent back to me through the same route. In short, 90% of the questionnaires were administered through friends and old colleagues currently working in those banks that were reached with the questionnaires. These banks were located in Victoria Island, Broad Street and Marina

in Lagos. Others are NACB: Hospital road Kaduna, Akure Zonal office, Ibadan and Lagos branch offices.

Reaching all these fields was quite burdensome and costly. Attempts to reach Nigerian Deposit and Insurance Co-operation (NDIC) were frustrated by one problem or the other. This compelled me to make do with NDIC report that I could lay my hands on.

3.6 PROBLEMS ENCOUNTERED

The problems encountered during the data collection process were not too different from those generally encountered when researching into a critical operation of an organization. Initially, even friends were hesitant providing the link. However, after a careful thought some ended up requesting that we adhere to the secrecy clause in the questionnaire. I would like to say that a lot of problems were encountered in trying to establish contacts and co-operations of respondents particularly in Lagos where every one seems to need thirty-six hours a day instead of the 24hours God-given time per day. Despite all the assistance, distribution and collection of questionnaires were almost frustrating.

However, I would like to conclude that I received a good percentage of all the encouragement needed for the success of this research from my lovely wife, friends and former colleagues and a few officers that I met in some of the banks visited. As for NACB, I was able to draw heavily on my goodwill, being an ex-staff of the bank.

Another problem encountered was on question B.8 because it requires digging into clients' records. After receiving responses from the commercial and Merchant banks it was apparent that there was going to be a problem in obtaining information for that question. The apparent problem was however averted in the case of NACB where I was able to lay my hands on some copies of loan appraisal papers of NACB. At the end of the whole exercise I was able to gather all the information I needed for the successful completion of this research.

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter is divided into three main sections, namely:

4.1 Summary of responses to questions.

4.2 Data analysis.

4.3 Testing of hypotheses and interpretation of findings.

4.1 SUMMARY OF RESPONSES TO QUESTIONS:

This section deals with responses to questions contained in the questionnaires. The responses are extracted, summarized and tabulated with percentages. Data analysis is made easier to compute from the summary of responses.

Summary Of Responses:

Table 4.1

QUESTIONS	COMMERCIAL BANKS			MERCHANT BANKS			DEVELOPMENT BANKS			NACB LTD		
	Sample Size	Response	% Response	Sample Size	Response	% Response	Sample Size	Response	% Response	Sample Size	Response	% Response
A.1 Which category of the following banking institutions do you belong:	20			8			12			10		
a) Development ( )								12.00	100.00		10.00	100.00
b) Commercial ( )		20.00	100.00									
c) Merchant ( )					8.00	100.00						
A.2 Respondent's department:_____	20	20.00	100.00	8	8.00	100.00	12	10.00	100.00	10	10.00	100.00
A.3 Does your bank appraise investment loan proposals before granting approval to loan requests?	20			8			12			10		
Yes ( )		20.00	100.00		8.00	100.00		12.00	100.00		10.00	100.00
No ( )												

A.4 To grant approval to loan requests does your bank just rely on feasibility study report submitted by loan applicants without in-house appraisal?	20			8			12			10		
Yes ( )												
No ( )		20.00	100.00		8.00	100.00		12	100.00		10.00	100.00
A.5 How many applications for investment loan do you receive per quarter?	20			8			12			10		
a) Less than 50 ( )		5.00	31.25		5.00	62.50		4.00	40.00		1.00	10.00
b) 51 – 100 ( )		8.00	50.00		3.00	37.50		3.00	30.00		4.00	40.00
c) 101 – 150 ( )		1.00	6.25					2.00	20.00		3.00	30.00
d) 151 – 200 ( )		1.00	6.25					1.00	10.00		2.00	20.00
e) above 200 ( )		1.00	6.25									
A.6 What percentage of loan requests in A.5 above usually get approved for funding	20			8.00			12.00			10.00		
a) Less than 20% ( )								3.00	30.00		1.00	10.00
b) 21 – 40% ( )		10.00	62.50		4.00	50.00		4.00	40.00		4.00	40.00
c) 41 – 60% ( )		4.00	25.00		2.00	25.00		3.00	30.00		3.00	30.00
d) 61 – 80% ( )		2.00	12.50		2.00	25.00					2.00	20.00
e) Over 80% ( )												
B.1 Does your bank use Accounting Rate of Returns (ARR) to appraise long-term loans.	20.00			8.00			12.00			10.00		
Yes		9.00			-			-			-	
No		11.00			8.00			12.00			10.00	
B.2 Does your bank use Payback Period (PBP) to appraise long- term loans.	20.00			8.00			12.00			10.00		
Yes		20.00			6.00			-			-	
No		-			2.00			12.00			10.00	
B.3 Does your bank use Net Present Value(NPV) to appraise long- term loans.	20.00			8.00			12.00			10.00		
Yes		20.00			8.00			12.00			10.00	
No		-			-			-			-	

B. 4 Does your bank use Internal Rate of Return (IRR) to appraise long- term loans.	20.00			8.00			12.00			10.00		
Yes		15.00			8.00			12.00			10.00	
No		5.00			-			-			-	
B.5 Does your bank use Benefit/Cost Ratio (BCR) to appraise long- term loans.	20.00			8.00			12.00			10.00		
Yes		14.00			8.00			12.00			10.00	
No		6.00			-			-			-	
B.6 What other factor(s) do you apply to loan appraisal besides technical (i.e. NPV, IRR, PBP, BCR, etc) criterion?	20.00			8.00			12.00			10.00		
Character		20.00			8.00			12.00			10.00	
Capacity		20.00			8.00			12.00			10.00	
Collateral		20.00			8.00			12.00			10.00	
Results of Financial report analysis.		12.00			5.00			8.00			9.00	
Supply of raw materials		4.00			3.00			10.00			8.00	
Benefits to the Nation		6.00			2.00			7.00			6.00	
Economic Sector of the project		6.00			3.00			5.00			2.00	
Experience and management skill		16.00			6.00			10.00			9.00	
Where good outcome was falsified		2.00			1.00			2.00			-	
Where control is too difficult to effect		4.00			2.00			8.00			7.00	
Where other risks supercede the good outcome		5.00			3.00			4.00			6.00	
Inability to make required contribution		12.00			5.00			10.00			8.00	
Portfolio constraints and amount involved		8.00			7.00			6.00			4.00	
Unsatisfactory checks		18.00			6.00			12.00			10.00	
B.7 Would your bank, on the basis of good outcome of quantitative appraisal (i.e. NPV, IRR, PBP, BCR, etc) approve a loan request?	20.00			8.00			12.00			10.00		
Yes ( )		3.00	18.75					1.00	10.00		1.00	10.00
No ( )		13.00	81.25		8.00	100.00		9.00	90.00		9.00	90.00

C.1 Do you understand the meaning of *the following risk and uncertainty* adjustment techniques:	20.00			8.00			12.00			10.00		
a) Risk-Adjusted Discount Rate ( )		10.00	50.00		7.00	90.00		12.00	100.00		10.00	100.00
b) Risk-Adjusted Payback Period ( )		14.00	70.00		8.00	100.00		12.00	100.00		7.00	70.00
c) Certainty equivalent ( )		8.00	40.00		6.00	75.00		12.00	100.00		10.00	100.00
d) Sensitivity Analysis ( )		18.00	90.00		8.00	100.00		12.00	100.00		8.00	80.00
e) Break-even Analysis ( )		20	100		8.00	100.00		12.00	100.00		10.00	100.00
C.2 Mark the method(s) used by your bank to adjust for risk and uncertainty in project appraisal	20.00			8.00			12.00			10.00		
a) Risk-Adjusted Discount Rate ( )		14.00	70.00		8.00	100.00		12.00	100.00		10.00	100.00
b) Risk-Adjusted Payback Period ( )		18.00	90.00		-	-		-	-		-	-
c) Certainty equivalent ( )		6.00	30.00		-	-		7.00	60.00		10.00	100.00
d) Sensitivity Analysis ( )		10.00	50.00		8.00	100.00		12.00	100.00		-	-
e) Break-even Analysis ( )		20.00	100.00		8.00	100.00		12.00	100.00		-	-
c.3 Is your bank currently experiencing shortage of loan able fund?	20.00			8.00			12.00			10.00		
Yes ( )		3.00	18.75		4.00	50.00		10.00	100.00		8.00	80.00
No ( )		13.00	81.25		4.00	50.00		0.00	0.00		2.00	20.00
c.4 Does your bank use temporary sectoral blacklisting (i.e. Management decides that within a particular period no loan should be given to particular sector(s)?	20.00			8.00			12.00			10.00		
Yes ( )		12.00	75.00		8.00	100.00		8.00	80.00		9.00	90.00
No ( )		4.00	25.00					2.00	20.00		1.00	10.00
c.5 Do you understand what capital rationing is all about?	20.00			8.00			12.00			10.00		
Yes ( )		10.00	62.50		5.00	62.50		10.00	100.00		4.00	40.00
No ( )		6.00	37.50		3.00	37.50					6.00	60.00
c.6 Does your bank use capital rationing as a basis for granting approval to loan requests?	20.00			8.00			12.00			10.00		
Yes ( )		7.00	46.67		3.00	37.50		2.00	20.00		2.00	25.00
No ( )		8.00	53.33		5.00	62.50		8.00	80.00		6.00	75.00

c.7 If c.6 is no, give reasons why capital rationing is not used by your bank	20.00			8.00			12.00			10.00		
Because it does not consider other risks												
I don't know why we don't use it												
It does not provide for desired sectoral spread												
Because we must give support to deserving client												
We are not experiencing shortage of fund												
Each project is approved on its own merit.												

Source: Fieldwork

4.2 Data Analysis

This section is devoted to, analyses and interpretations of questions contained in the questionnaires administered on respondents.

The following principles were used for the purpose of data analysis:

1. Statistical Formulae:

   a. Mean ($\bar{X}$) of frequency distribution

   This is given as $\bar{X} = \frac{\Sigma fx}{\Sigma f}$ or $\frac{\Sigma fx}{n}$

   Where $\bar{X}$ = Mean
   f = Frequency
   x = Values of variable X
   n = Sample size or number of observations
   Σ = Summation or addition (Sigma).

   SOURCE: Frank Owen and Ron James, Statistics, Polytech. Publishers Ltd. 2nd Edition, Pg. 72.

b. Standard deviation (δ) which is given as:

$$\delta = \sqrt{\frac{\Sigma(x-\bar{x})^2}{n}} \quad \text{or} \quad \sqrt{\frac{\Sigma f(x-\bar{X})^2}{n-1}}$$

Here δ = Standard deviation, and f, n, x, $\bar{X}$, Σ are as represented in (a) above.

SOURCE: G. S. Monga, Mathematics and Statistics for Economics, Vik as publishing House, PVT Ltd., 3rd Edition, Pg. 442.

2. Percentages and Ratios were also used. Percentages are given to "Yes" or "No" group as the basis of analysis.

3. Pie-charts are also used in analyzing some of the questions in the questionnaires, 360^0 represents the total response population.

Also used, is the Spearman rank-order correlation coefficient, with this formula:

$$\rho = 1 - \frac{6\Sigma d^2}{N^3 - 1}$$

where d^2 = Difference in rank squared
N = Sample size
ρ = Rank order correlation coefficient.

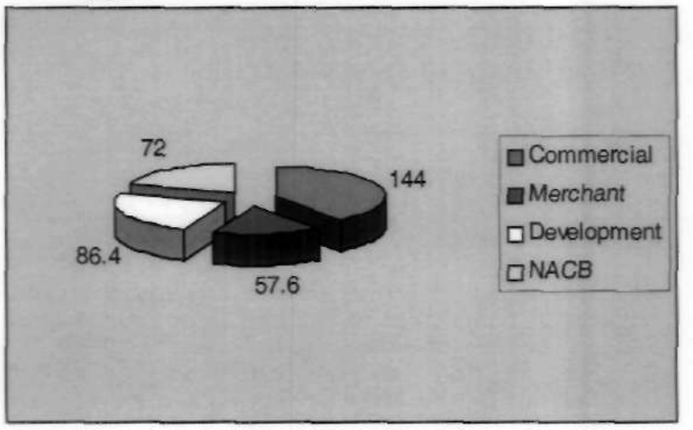
Below are the analyses of each of the questions:

Question A.1: Which category of the following banking institutions do you belong?

Table 4.2.1

Variable	Respondents	%	Degree
Commercial	20	40	144
Merchant	8	16	57.6
Development	12	24	86.4
NACB	10	20	72
Total	50	100	360

Fig.4.1



Calculation of Degree for Pie Chart

- Commercial Banks $= \frac{20}{50} \times 360^0 = 144^0$
- Merchant Banks $= \frac{8}{50} \times 360^0 = 57.6^0$
- Development Banks $= \frac{12}{50} \times 360^0 = 86.4^0$
- NACB $= \frac{10}{50} \times 360^0 = 72^0$

From the above analysis, it shows that the questionnaires were administered with more emphasis on relativity in terms of the population of commercial and merchant banks vis-à-vis the total population of banks in Nigeria. Also, in terms of comparison of likes, i.e., NACB as a development bank with other development banks.

On this basis commercial banks were given high sample size, while merchant banks had the lowest figure because they represent the middle of the road practitioners of the activities of commercial and development banking.

From the above, it shows that the three categories of banking institutions defined in the sample size were given good representation in selecting the sample size.

Question A.2: Respondent's department.

This question was asked to help confirm that respondents were from the relevant department of the sample size. This also helps to ascertain the reliability of responses.

Table 4.2.2

Variables	Response	Relevance	Relevance %
Commercial	20	20	100
Merchant	8	8	100
Development	12	12	100
NACB	10	10	100
TOTAL	50	50	100

Source: Fieldwork

The analysis above indicates that all the respondents were from the relevant

department of the sample size. Hence, their responses are reliable.

Question A.3: Does your bank appraise investment loan proposals before granting approval to loan requests?

Table 4.2.3

Variables	Respondents %			
	Commercial Banks	Merchant Banks	Development Banks	NACB
Yes	100%	100%	100%	100%
No	-	-	-	-
Total	100%	100%	100%	100%

Source: Fieldwork

From the above analysis, all the respondents agreed that their banks appraise investment loan proposals. It can also be concluded that all banks appraise investment loan proposals.

Question A.4: To grant approval to loan requests, does your bank rely on feasibility study report submitted by loan applicants without in-house appraisal?

This question was asked to find out whether some banks rely solely on feasibility study to grant loans. It was also to collaborate question A.3.

Table 4.2.4

Variables	Respondents %			
	Commercial Banks	Merchant Banks	Development Banks	NACB
Yes	-	-	-	-
No	100%	100%	100%	100%
Total	100%	100%	100%	100%

Source: Fieldwork

KASHIM IBRA...

None of the banks rely solely on feasibility study to grant approval to loan request. This further supports the earlier responses in A.3, that all banks conduct in-house appraisal of loan requests before taking decision on approval or rejection.

Question A.5: How many applications for investment loan do you receive per quarter?

a. Commercial Banks Table 4.2.5(a)

Variables	X	f	fx	$X-\bar{X}$	$(X-\bar{X})^2$	$f(X-\bar{X})^2$
Less than 50	50	5	250	-35	1203	6016
51 – 100	75.5	8	604	-9	84	675
101 – 150	125.5	1	125.5	41	1666	1666
151 – 200	175.5	1	175.5	91	8247	8247
Above 200	200	1	200	115	13297	13297
Total		16	1355			29901

477012
HG
4028.V3
Ola

Mean $\bar{X} = \frac{\Sigma fx}{\Sigma f}$

$$\frac{1355}{16} = 85$$

Standard deviation $\delta = \sqrt{\frac{\Sigma f(x-\bar{X})^2}{n-1}}$

$$\delta = \sqrt{\frac{29,901}{16-1}}$$

$$= \sqrt{\frac{29,901}{15}}$$

$$= 44.7 \quad \Omega \quad 45$$

KASHIM IBRAHIM LIBRARY
RECEIVED
26 APR 2005
ZARIA NIGERIA
Ahmadu Bello University

From the above analysis, commercial banks received between 50-100 applications for investment loan per quarter. That explains the mean of 85 that falls within the 50 – 100 class range.

b. Merchant Banks Table 4.2.5(b)

Variables	X	F	fx	$X-\bar{X}$	$(X-\bar{X})^2$	$f(X-\bar{X})^2$
Less than 50	50	5	250	-10	91	457
51 – 100	75.5	3	226.5	16	254	762
101 – 150	125.5	0	0	66	4348	0
151 – 200	175.5	0	0	116	13442	0
Above 200	200	0	0	140	19723	0
Total		8	476.5			1219

$$\text{Mean } \bar{X} = \frac{\Sigma fx}{\Sigma f} = \frac{476.5}{8} = 60$$

$$\text{Standard deviation } \delta = \sqrt{\frac{\Sigma f(x-\bar{X})^2}{n-1}}$$

$$\delta = \sqrt{\frac{1219}{8-1}}$$

$$= \sqrt{\frac{1219}{7}}$$

$$= \underline{13}$$

Analysis above indicates that merchant banks received between 50 – 100 investment loan applications per quarter. This explains the mean of 60 that falls within the 50 – 100 range.

c. Development Banks Table 4.2.5(c)

Variables	X	F	fx	$X-\bar{X}$	$(X-\bar{X})^2$	$f(X-\bar{X})^2$
Less than 50	50	4	200	-35	1246	4984
51 – 100	75.5	3	226.5	-10	96	288
101 – 150	125.5	2	251	40	1616	3232
151 – 200	175.5	1	175.5	90	8136	8136
Above 200	200	0	0	115	13156	0
Total		10	853			16641

$$\text{Mean } \bar{X} = \frac{\Sigma fx}{\Sigma f} = \frac{853}{10} = 85$$

$$\text{Standard deviation } \delta = \sqrt{\frac{\Sigma f(x-\bar{X})^2}{n-1}}$$

$$\delta = \sqrt{\frac{16,641}{10-1}}$$

$$= \sqrt{\frac{16641}{9}}$$

$$= \underline{\underline{43}}$$

From the above analysis, development banks received between 50 – 100 investment loan applications per quarter. That explains the mean of 85 that agrees with the 50 – 100 range.

d. NACB Table 4.2.5(d)

Variables	X	F	fx	$X-\bar{X}$	$(X-\bar{X})^2$	$f(X-\bar{X})^2$
Less than 50	50	1	50	-58	3358	3358
51 – 100	75.5	4	302	-32	1053	4212
101 – 150	125.5	3	376.5	18	308	924
151 – 200	175.5	2	351	68	4563	9126
Above 200	200	0	0	92	8473	0
Total		10	1079.5			17620

Mean $\bar{X} = \frac{\Sigma fx}{\Sigma f} = \frac{1079.5}{10} = 108$

Standard deviation $\delta = \sqrt{\frac{\Sigma f(x - \bar{X})^2}{n-1}}$

$$\delta = \sqrt{\frac{17620}{10 - 1}}$$

$$= \sqrt{\frac{17620}{9}}$$

$$= \underline{44}$$

Analysis above indicates that NACB received between 101- 150 investment loan applications per quarter. Hence, the mean of 108 that agrees with the 101- 150 range.

Question A.6: What percent of loan request in A.5 above usually get approved for funding.

a. Commercial Banks Table 4.2.6(a)

Variables	X	F	fx	$X- \bar{X}$	$(X- \bar{X})^2$	$f(X- \bar{X})^2$
Less than 20	20	0	0	-21	420	0
21 – 40	30.5	10	305	-10	100	1000
41 – 60	50.5	4	202	10	100	400
61 – 80	70.5	2	141	30	900	1800
Over 80	80	0	0	40	1560	0
Total		16	648			3200

Mean $\bar{X} = \frac{\Sigma fx}{\Sigma f} = \frac{648}{16} = 41$

Standard deviation $\delta = \sqrt{\frac{\Sigma f(x - \bar{X})^2}{n-1}}$

$$\delta = \sqrt{\frac{3200}{16-1}}$$

$$= \sqrt{\frac{3200}{15}}$$

$$= \frac{15}{}$$

From the above analysis, between 41 – 60% of applications received per quarter by commercial banks were usually approved for funding. Hence, the mean of 41%, which falls within the range of 41 – 60%.

b. Merchant Banks Table 4.2.6(b)

Variables	X	F	fx	$X-\bar{X}$	$(X-\bar{X})^2$	$f(X-\bar{X})^2$
Less than 20	20	0	0	-26	650	0
21 – 40	30.5	4	122	-15	225	900
41 – 60	50.5	2	101	5	25	50
61 – 80	70.5	2	141	25	625	1250
Over 80	80	0	0	35	1190	0
Total		8	364			2200

Mean $\bar{X} = \frac{\Sigma fx}{\Sigma f} = \frac{364}{8} = 46$

Standard deviation $\delta = \sqrt{\frac{\Sigma f(x-\bar{X})^2}{n-1}}$

$$\delta = \sqrt{\frac{2200}{8-1}}$$

$$= \sqrt{\frac{2200}{7}}$$

$$= \frac{18}{}$$

Between 41 – 60% of applications received by Merchant banks usually get

approval for funding. Hence, the mean of 46, that falls within the range of 41 – 60%.

c. Development Banks

Table 4.2.6(c)

Variables	X	F	fx	$X-\bar{X}$	$(X-\bar{X})^2$	$f(X-\bar{X})^2$
Less than 20	20	3	60	-13	178	535
21 – 40	30.5	4	122	-3	8	32
41 – 60	50.5	3	151.5	17	294	882
61 – 80	70.5	0	0	37	1380	0
Over 80	80	0	0	47	2176	0
Total		10	333.5			1450

$$\text{Mean } \bar{X} = \frac{\Sigma fx}{\Sigma f} = \frac{333.5}{10} = 33$$

$$\text{Standard deviation } \delta = \sqrt{\frac{\Sigma f(x-\bar{X})^2}{n-1}}$$

$$\delta = \sqrt{\frac{1450}{10-1}}$$

$$= \sqrt{\frac{1450}{9}}$$

$$= \underline{13}$$

From the above analysis, between 21 – 40% of applications received by Development Banks usually get approval for funding. The mean of 33% that falls within the 21 – 40% range explains this.

d. NACB Bank Table 4.2.6(d)

Variables	X	F	fx	$X-\bar{X}$	$(X-\bar{X})^2$	$f(X-\bar{X})^2$
Less than 20	20	1	20	-23	550	550
21 – 40	30.5	4	122	-13	168	671
41 – 60	50.5	3	151.5	7	50	149
61 – 80	70.5	2	141	27	732	1463
Over 80	80	0	0	37	1336	0
Total		10	434.5			2833

$$\text{Mean } \bar{X} = \frac{\Sigma fx}{\Sigma f} = \frac{434.5}{10} = 43$$

$$\text{Standard deviation } \delta = \sqrt{\frac{\Sigma f(x-\bar{X})^2}{n-1}}$$

$$\delta = \sqrt{\frac{2833}{10-1}}$$

$$= \sqrt{\frac{2833}{9}} = \underline{18}$$

From the above analysis, between 41 – 60% of loan applications received by NACB got approved for funding. The mean of 43 that falls within the 41 – 60% range explains this.

Question B.1 – B.5:

B.1 Does your bank use Accounting Rate of Return (ARR) to appraise long-term loans?

B.2 Does your bank use Payback period (PBP) to appraise long-term loans?

B.3 Does your bank use Net Present Value (NPV) to appraise long-term loans?

B.4 Does your bank use Internal Rate of Return (IRR) to appraise long-term loans?

B.5 Does your bank use Benefit Cost Ratio (BCR) to appraise long-term loans?

Table 4.2.7

VARIABLE	Commercial Banks		Merchant Banks		Development Banks		NACB	
	Yes	No	Yes	No	Yes	No	Yes	No
B.1: Accounting Rate of Returns (ARR)	9	11	-	8	-	12	-	10
B.2: Payback Period (PBP)	20	-	6	2	-	12	-	10
B.3: Net Present Value (NPW or NPV)	20	-	8	-	12	-	10	-
B.4: Internal Rate of Return (IRR)	15	5	8	-	12	-	10	-
B.5: Benefit/Cost Ratio (BCR)	14	6	8	-	12	-	10	-

Analysis above indicates that only commercial banks use ARR as an appraisal technique. The PBP method of appraisal is more widely used by commercial and merchant banks. All the banks use NPV, IRR, BCR. However, the development banks (NACB inclusive) use NPV, IRR and BCR more frequently than the commercial and merchant banks. This could be due to the fact that development banks' lending is more usually on long term while the commercial and merchant banks lend on short-term. It is also observed that commercial and merchant banks place so much emphasis on profitability while development banks (NACB inclusive) place much emphasis on economic viability. Even though these two phrases may have some similarity, they differ in that profitability as it is measured by commercial banks may in some cases, not adequately take care of risk and uncertainty. However, one may conclude that it is the frequency of use (as regards the nature of lending) that differs among the banks and not that the commercial and merchant banks do not use discounted cash flow techniques at all.

Question B.6: What other factor(s) do you apply to loan appraisal besides technical (i.e. NPV, IRR, PBP, BCR, etc) criterion?

Table 4.2.8

Variables	Commercial Banks	Merchant Banks	Development Banks	NACB	Total
Character	20.00	8.00	12.00	10.00	50
Capacity	20.00	8.00	12.00	10.00	50
Collateral	20.00	8.00	12.00	10.00	50
Results of Financial report analysis.	12.00	5.00	8.00	9.00	34
Supply of raw materials	4.00	3.00	10.00	8.00	25
Benefits to the Nation	5.00	2.00	7.00	6.00	20
Economic Sector of the project	6.00	3.00	5.00	2.00	16
Experience and management skill	18.00	6.00	10.00	9.00	43
Where good outcome was falsified	2.00	1.00	2.00	-	5
Where control is too difficult to effect	4.00	2.00	8.00	7.00	21
Where other risks supercede the good outcome	5.00	3.00	4.00	6.00	18
Inability to make required contribution	12.00	5.00	10.00	8.00	35
Portfolio constraints and amount involved	8.00	7.00	6.00	4.00	25
Unsatisfactory checks	18.00	6.00	12.00	10.00	46

All the variables were obtained from the consolidation of factors mentioned by Respondents. Revelations above show that before granting approval to loan request, at least 14 qualitative factors, in addition to quantitative appraisal techniques, may be considered by banks.

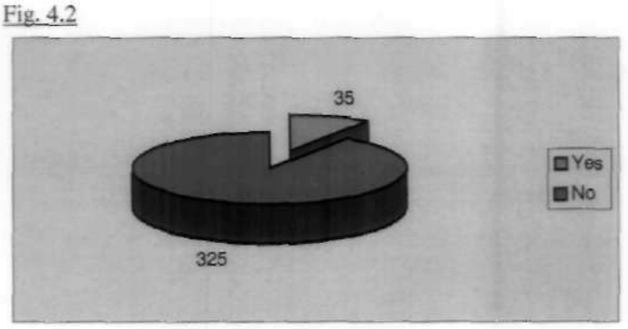
Question B.7: Would your bank, on the basis of good outcome of quantitative appraisal (i.e. NPV, IRR, BCR, PBP, etc.) approve a loan request?

Table 4.2.9

	Commercial Banks		Merchant Banks		Development Banks		NACB		Total
	Response	% Response	Response	% Response	Response	% Response	Response	% Response	% Response Average
Yes	3	19	0	0	1	10	1	10	9.75
No	13	81	8	100	9	90	9	90	90.25
Total	16	100	8	100	10	100	10	100	100

The total responses can be represented as follows on a pie chart

Fig. 4.2



Yes = $\frac{9.75}{100} \times 360^0 = 35^0$

No = $\frac{90.25}{100} \times 360^0 = 325^0$

KASHIM IBRAHIM LIBRARY

From the above analysis, one may conclude that good outcome of technical appraisal does not necessarily mean that a loan will be granted. This point may be important to applicants who while presenting application for loan ignore to take a critical look at some other factors.

Also, this point should make credit or investment appraisal officers to always look deep and wide into all factors that may be directly and indirectly relevant to the success or failure of a project. Officers should not just be guided by quantitative

methods a lone, a lot of attention should be given to qualitative methods too.

Question C.1 Do you understand the meaning of the following risk and uncertainty adjustment techniques?

Table 4.2.10

Variable	Commercial Bank		Merchant Bank		Development Bank		NACB	
	Yes	No	Yes	No	Yes	No	Yes	No
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
a. Risk-Adjusted Discount Rate (RADR)	50	50	90	10	100	-	100	-
b. Risk-Adjusted Payback Period (RPP)	70	30	100	-	100	-	70	30
c. Certainty Equivalent (CE)	40	60	75	25	100	-	100	-
d. Sensitivity Analysis (SA)	90	10	100	-	100	-	80	20
e. Break-Even Analysis (BEA)	100	-	100	-	100	-	100	-

From the above tabulation one may be able to conclude that the respondents in the Merchant and Development Banks, and NACB understand the techniques listed in (a) – (b) of question C.1. This is because not less than 50% of the respondents responded with yes.

In the case of Commercial bank respondents, one may also conclude that they understand what a, b, d and e means. However, the commercial bank respondents seem not to understand what "c" means.

Question C.2 Mark the method(s) used by your bank to adjust for risk and uncertainty in project appraisal

Table 4.2.11

Variable	Commercial Bank		Merchant Bank		Development Bank		NACB	
	Yes	No	Yes	No	Yes	No	Yes	No
a. Risk-Adjusted Discount Rate (RADR)	14	6	8	-	12	-	10	-
b. Risk-Adjusted Payback Period (RPP)	18	2	-	8	-	12	-	10
c. Certainty Equivalent (CE)	6	14	-	8	7	5	10	-
d. Sensitivity Analysis (SA)	10	10	8	-	12	-	-	10
e. Break-Even Analysis (BEA)	20	-	8	-	12	-	-	10

*Yes + No = Sample size. Therefore, if you are not saying yes, it is assumed you are saying No.

Analysis above shows that all the banks except NACB use sensitivity analysis to adjust for risk and uncertainty in appraising loan projects. Instead, NACB uses Risk-Adjusted-Discount-Rate and Certainty-Equivalent. Only commercial banks use Risk-Adjusted-Payback-Period. Again, only NACB does not use Break-Even Analysis, while commercial, merchant and development banks use it.

Since what we are trying to achieve is a comparison of the practices in the banking system with the practices in NACB, the appropriate test will be based upon the difference in the proportions of two related samples.

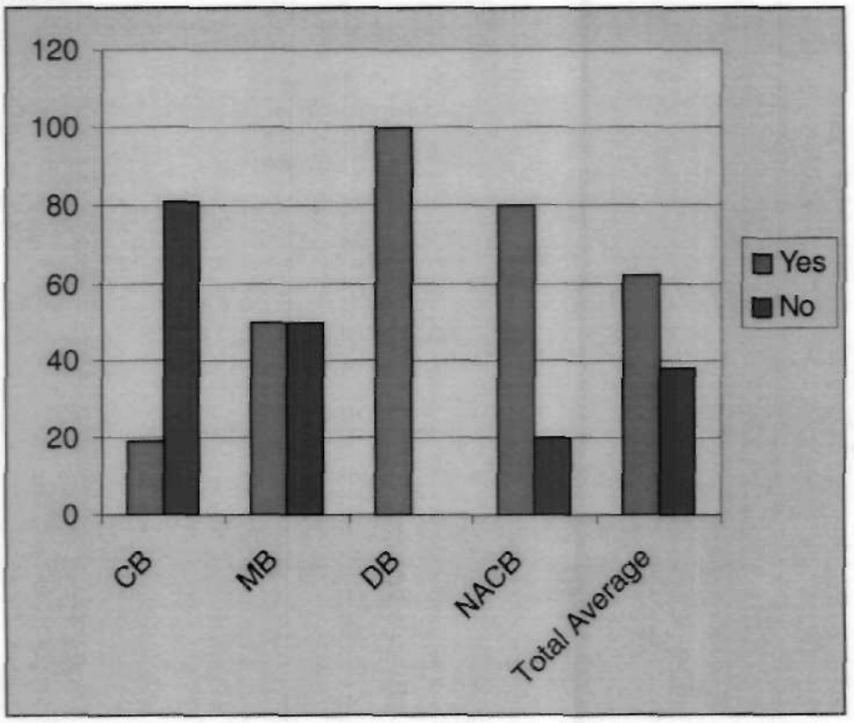
Question C.3: Is your bank currently experiencing shortage of loanable fund?

Table 4.2.12

Variables	Response %				Total % Average
	Commercial Banks	Merchant Banks	Development Banks	NACB	
Yes	18.75	50	100	80	62.2
No	81.25	50	-	20	37.8
Total	100	100	100	100	100

This can be graphically represented as follows:

Fig. 4. 3



Analysis above indicates that between1996 and 1999 development banks in Nigeria badly experienced shortage of loan-able funds. Also, merchant banks appeared not to be comfortable too, even though their situation was not as bad as those of development banks. Commercial banks may be considered as not having problems

with loan-able funds.

Findings above explain why most of the merchant banks were clamoring for universal banking so that they may be able to take deposits from the public like their commercial bank counterparts.

Question C.4: Does your bank use temporary sectoral blacklisting (i.e. Management decides that within a particular period no loan should be given to particular sector(s))?

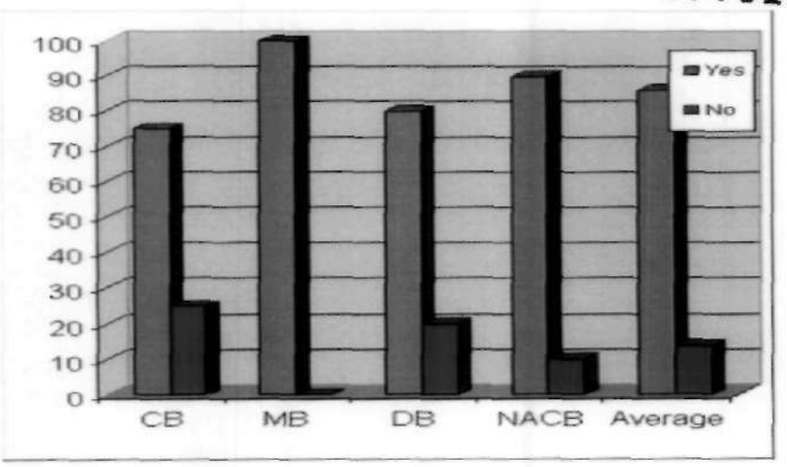
Table 4.2.13

Variables	Respondents %				Total % Average
	Commercial Banks	Merchant Banks	Development Banks	NACB	
Yes	75	100	80	90	86.3
No	25	0	20	10	13.8
Total	100	100	100	100	100

From the above analysis, one could conclude that all banks used temporary sectoral blacklisting to avoid funding some high-risk-sector projects. This finding can be presented pictorially as follows.

477012

Fig.4.4

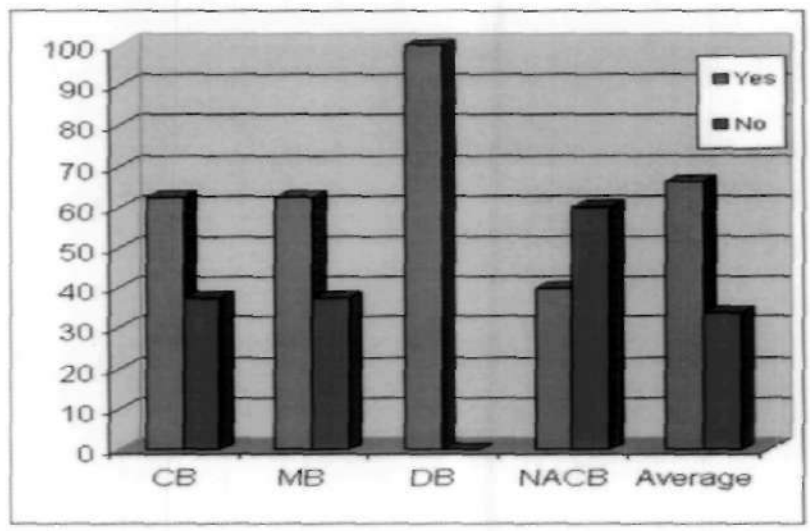


Question C.5: Do you understand what capital rationing is all about?

Table 4.2.14

Variables	Respondents %				Total % Average
	Commercial Banks	Merchant Banks	Development Banks	NACB	
Yes	62.5	62.5	100	40	66
No	37.5	37.5	0	60	34
Total	100	100	100	100	100

Fig.4.5



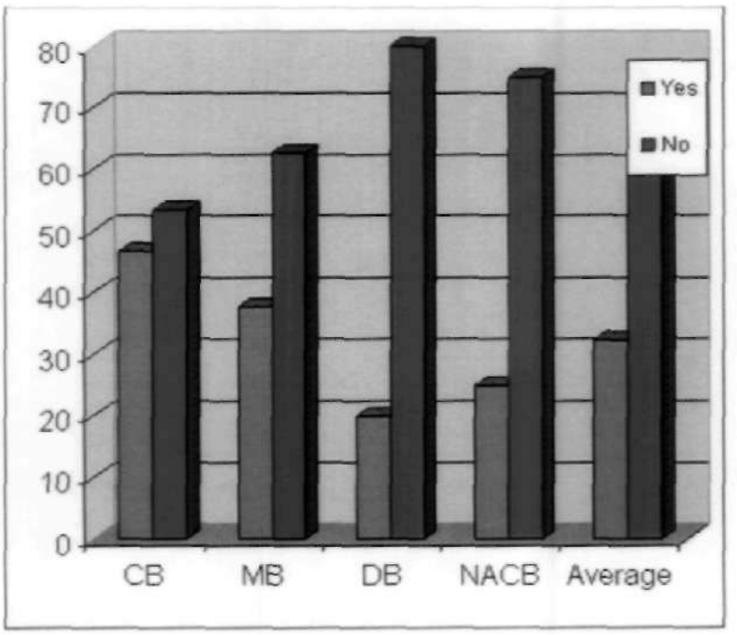
Analysis above shows that there is the awareness on what capital rationing is all about. However, this awareness is higher among development bankers.

Question C.6: Does your bank use capital rationing as a basis for granting approval to loan requests?

Table 4.2.15

Variables	Respondents %				Total % Average
	Commercial Banks	Merchant Banks	Development Banks	NACB	
Yes	46.67	37.5	20	25	32
No	53.33	62.5	80	75	68
Total	100	100	100	100	100

Fig.4.6



From the above the above analysis one may conclude that capital rationing is not widely used by bankers in Nigeria. However, I wish to express my doubt on whether it is in use at all in Nigeria. This doubt is based on the fact that discussions with some of the respondents revealed that what some of them called capital rationing is far from it. What some called capital rationing is just the normal selection criteria without the application of the principles of capital rationing.

Question C.7: If C.6 is no, give reasons why capital rationing is not used by your Bank

Very few people responded to this question. Below are some of the statements of the few respondents:

1. Because it does not consider other risks.
2. I don't know why we don't use it.

3. It does not provide for desired sectoral spread.
4. We must give support to deserving clients.
5. We are not experiencing shortage of funds.
6. Each project is approved on its own merit.

From the above, reasons 3,2 and 6 in that order were considered the three highest reasons for why capital rationing is not commonly used by banks in Nigeria. While reasons 2 & 5 may be tenable, I would like to disagree that capital rationing if applied to decision-making process will not permit the attainment of all the other reasons. It is possible to use capital rationing and still achieve:

- Desired sectoral spread
- Support deserving clients
- Approve projects on merit
- Consider other risks

Question D.1: (For NACB only): Provide the NPV and the IRR of 5 projects that were formulated and appraised some years ago.

No respondent was interested in answering this question. However, I was able to lay my hands on some "Projects Management Papers" of NACB from which I extracted the information that could be used for the purpose of this research.

Table 4.2.16 (a)

VARIABLES	
I.R.R	Average NPV
15 – 20%	162,736
20.01 - 25%	635,457
25.01 - 30%	1,246,657
30.01 - 35%	894,512
35.01 - 40%	759,737
40.01 - 45%	321,428
45.01 - 50%	441,007
Above 50%	2,158,452
TOTAL	

Analysis below shows that if I.R.R is to be the basis for selecting projects for approval, the projects will be considered in the following ranking order:

Table 4.2.16 (b)

VARIABLES	
I.R.R	Average NPV
Above 50%	2,158,452
45.01 - 50%	441,007
40.01 - 45%	321,428
35.01 - 40%	759,737
30.01 - 35%	894,512
25.01 - 30%	1,246,657
20.01 - 25%	635,457
15 - 20%	162,736
TOTAL	

Also, if the NPV is the basis for selecting projects for approval, the projects will be considered in the following ranking order:

Table 4.2.16 (c)

VARIABLES	
I.R.R	Average NPV
Above 50%	2,158,452
25.01 - 30%	1,246,657
30.01 - 35%	894,512
35.01 - 40%	759,737
20.01 - 25%	635,457
45.01 - 50%	441,007
40.01 - 45%	321,428
15 – 20%	162,736
TOTAL	

To test for the relationship between I.R.R and NPV, a computation of the rank-order co-efficient of correlation will be used.

Table 4.2.16 (d)

VARIABLES		RANKING		DIFFERENCE IN RANK - (D)		D^2
I.R.R	Average NPV	IRR	NPV	(+)	(-)	
Above 50%	2,158,452	1	1	-	-	-
25.01 - 30%	1,246,657	2	6	-	4	16
30.01 - 35%	894,512	3	7	-	4	16
35.01 - 40%	759,737	4	4	-	-	-
20.01 - 25%	635,457	5	3	2	-	4
45.01 - 50%	441,007	6	2	4	-	16
40.01 - 45%	321,428	7	5	2	-	4
15 – 20%	162,736	8	8	-	-	-
TOTAL				8	8	56

Spearman Rank-order Correlation Coefficient =

$$\rho = 1 - \frac{6\Sigma d^2}{N^3 - N}$$

$$= 1 - \frac{6(56)}{8^3 - 8}$$

$$= 1 - \frac{336}{512 - 8}$$

$$= 1 - 0.667$$

ρ = 0.333

Analysis above shows that a significant relationship does not exist between IRR and NPV.

4.3 TESTING OF HYPOTHESES AND INTERPRETATION

The null and alternative hypotheses will be tested in order to ascertain their validity. Both the percentage (%) method and the two-tailed tests (at 5% level of significance or 95% confidence) will be used.

"For the percentage method, the decision rule is to accept the Null hypothesis if the percentage calculated is higher than that of the Alternative hypothesis, and to reject the Null hypothesis if the percentage calculated is lower than that of the Alternative hypothesis.

In the case of the two-tailed tests, the hypothesis will be accepted or rejected at a 5% level of significance under the following conditions:

- Reject Ho if $Z > +1.96$

  or if $Z < -1.96$

  Otherwise do not reject Ho

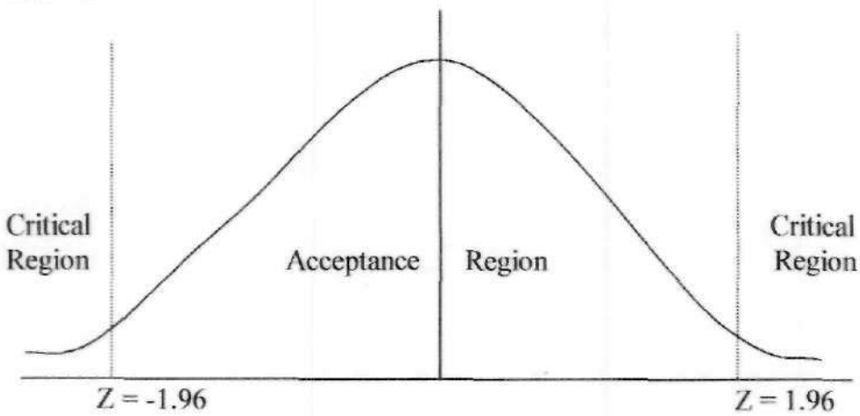
- Accept H_1 if $Z < +1.96$

  or if $Z > -1.96$

The critical values of Z for the two-tailed tests of 5% level of significance is $\pm$ 1.96. Therefore, the set of Z scores inside the range – 1.96 to 1.96 constitutes the region of acceptance.

Source: Murray R. Spiegel, Schaum's outline series, McGraw Hill Book Co. 1st Edition, Pg.167.

Fig. 4.3.1



For the purpose of testing the hypotheses for the mean (sample one), the following formula will be applied:

$$Z = \frac{\bar{x} - \mu}{\frac{\delta}{\sqrt{n}}}$$

Where z = Statistical scores

$\bar{x}$ = Sample mean

μ = Population mean

δ = Standard deviation

n = Sample size or number of observation.

Also used is the test based upon the difference in the proportions of two related samples. This test has been developed by McNemar . The formula is as follows:

$$Z \cong \frac{Ps_1 - Ps_2}{\sqrt{\bar{P}(1-\bar{P})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

With $\bar{P} = \frac{X_1 + X_2}{n_1 + n_2}$

$Ps_1 = \frac{X_1}{n1}$

$Ps_2 = \frac{X_2}{n_2}$

Where Ps_1 = Sample proportion in population 1

Ps_2 = Sample proportion in population 2

X_1 = Number of successes in sample 1

X_2 = Number of successes in sample 2

n_1 = Sample size for population 1

n_2 = Sample size for population 2

$\bar{p}$ = Pooled estimate of the population proportion.

In the case of the two-tailed tests, the hypothesis will be accepted or rejected at a 5% level of significance under the following conditions:

- Reject Ho if $Z > +1.96$

  or if $Z < -1.96$

  Otherwise do not reject Ho

- Accept H_1 if $Z < +1.96$

  or if $Z > -1.96$

The critical values of Z for the two-tailed tests of 5% level of significance is $\pm$ 1.96. Therefore, the set of Z scores inside the range – 1.96 to 1.96 constitutes the region of acceptance.

KASHIM IBRAHIM LIBRARY

Also, the nonparametric method of hypotheses testing is made use of "Non-parametric test procedures may be broadly thought of as either:

(1) Those whose test statistic does not depend upon the form of the underlying population distribution from which the sample data were drawn;

(2) Those which are not concerned with the parameters of a population; or

(3) Those for which the data are of "insufficient strength" to warrant meaningful arithmetic operators".

Some of its advantages are:

(i) Non-parametric methods may be used all types of qualitative data, data in rank form as well as data that have been measured more precisely (interval or ratio scaling).

(ii) Easy to apply and quick to complete when the sample sizes are small.

(iii) It makes fewer, less stringent assumptions than do the classical procedures.

(iv) It permits the solution of problems that do not involve the testing of population parameters.

For this research work, the spearman Rank-Order Correlation Coefficient (usually designated as Rho) is used. It should be emphasized that Rho is being used as a measure of correlation in this problem because there is interest in the degree of relationship between sets of ranked data.

The formula [38] for Rho is

$$P = 1 - \frac{6\Sigma d^2}{N^3 - 1}$$

Where d^2 = Difference in rank raised to power two

N = Sample size.

The significance of Rho may be determined by computing student's t. In this regard, the sampling distribution of Rho follows the "t" distribution N-2 degrees of

freedom. The computed value of "t" is found by:

$$t = \rho \sqrt{\frac{N-2}{1-\rho^2}}$$ with N-2 degrees of freedom.

The decision rule, using student's "t" calls for accepting Ho if the computed value of t is less than the critical value at 5% level of significance. Otherwise Ho should be rejected.

Before we go ahead to test the hypothesis formulated for this research it is important to state as follows:

Question A.2 Shows that respondents to the research questionnaires were from the relevant department of the sample size. This also helps to confirm the reliability of responses.

Question A.3 Indicates that banks carry out appraisal before granting approval to long-term loan requests.

Question A.4 Shows that banks don't rely solely on feasibility reports submitted to them by applicants for loan. It also shows that banks conduct in-house appraisal before granting approval to long-term loan requests.

Questions A.5 and A.6: Analysis below shows that only about 50% of applications for long-term loans get approved. This also shows that during appraisal, about 50% of the applications received fall by the way side as a result of applicants' inability to meet banks' lending requirements.

Table 4.3.1

Variables	Commercial Banks	Merchant Banks	Development Banks	NACB	Total
Applications Received	85	60	85	108	338
Applications Approved	41	46	33	43	163
Approval (%)	48%	77%	39%	40%	48%

HYPOTHESIS ONE

NULL (H_O)

That the discounted cash flow (DCF) techniques of appraisal are the most ideal and commonly used techniques by banks in Nigeria.

ALTERNATIVE (H_1)

That the discounted cash flow (DCF) techniques of appraisal are not the most ideal and commonly used techniques by banks in Nigeria.

Questions B.1 – B.5:

Table 4.3.2 (a)

VARIABLE	Commercial Banks		Merchant Banks		Development Banks		NACB	
	Yes	No	Yes	No	Yes	No	Yes	No
Accounting Rate of Returns (ARR)	9	11	-	8	-	12	-	10
Payback Period (PBP)	20	-	6	2	-	12	-	10
Net Present Value (NPW or NPV)	20	-	8	-	12	-	10	-
Internal Rate of Return (IRR)	15	5	8	-	12	-	10	-
Benefit/Cost Ratio (BCR)	14	6	8	-	12	-	10	-

Summarized Average

Table 4.3.2 (b)

VARIABLE	Yes	No	Yes	No
Accounting Rate of Returns (ARR)	9	41	35	65
Payback Period (PBP)	26	24		
Net Present Value (NPW or NPV)	50	-	139	11
Internal Rate of Return (IRR)	45	5		
Benefit/Cost Ratio (BCR)	44	6		

Bearing in mind that NPV, IRR and BCR are the DCF methods of project appraisal, the two-tailed test will be used to test hypothesis one. The following result will assist us to come up with a conclusion:

$$Z \cong \frac{Ps_1 - Ps_2}{\sqrt{\bar{P}(1-\bar{P})\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

With $\bar{P} = \frac{X_1 + X_2}{n_1 + n_2}$

$$Ps_1 = \frac{X_1}{n_1}$$

$$Ps_2 = \frac{X_2}{n_2}$$

Where $Ps_1 = 65 \div 100$

$Ps_2 = 139 \div 150$

$X_1 = 65$

$X_2 = 139$

$n_1 = 100$

$n_2 = 150$

$$\bar{P} = \frac{X_1 + X_2}{n_1 + n_2} = \frac{65 + 139}{100 + 150}$$

$$\overline{P} = 0.832$$

$$Z \cong \frac{0.65 - 0.927}{\sqrt{0.832\ (1 - 0.832)\left(\frac{1}{100} + \frac{1}{150}\right)}}$$

$$\cong \frac{-0.277}{\sqrt{0.1398\ (0.0167)}}$$

$$\frac{-0.277}{0.0483}$$

$$Z = -5.73$$

$$-5.73 < -1.96$$

Since Z has fallen outside the acceptance region, the null hypothesis is rejected while the alternative hypothesis is accepted. This means that the discounted cash flow (DCF) techniques of appraisal are not the most ideal and commonly used techniques by banks in Nigeria.

HYPOTHESIS TWO

NULL (H_O)	ALTERNATIVE (H_1)
That the discounted cash flow (DCF) techniques of appraisal are the most ideal and commonly used techniques by development banks in Nigeria.	That the discounted cash flow (DCF) techniques of appraisal are not the most ideal and commonly used techniques by development banks in Nigeria.

The defunct NACB was also a development bank hence it is herein treated along with the development banks in testing hypothesis two as follows:

Table 4.3.3

VARIABLE	Development Banks		NACB	
	Yes	No	Yes	No
Net Present Value (NPW or NPV)	12	-	10	-
Internal Rate of Return (IRR)	12	-	10	-
Benefit/Cost Ratio (BCR)	12	-	10	-

From the above tabulation it is clear that the null hypothesis should be accepted because 100% of the response disclosed that the DCF appraisal techniques are used in their banks (Development Banks). The alternative hypothesis should therefore be rejected.

477012

It could therefore be concluded that the discounted cash flow (DCF) techniques of appraisal are the most ideal and commonly used techniques by development banks in Nigeria.

HYPOTHESIS THREE

NULL (Ho)	Alternative (H_1)
That both the NPV and the IRR always give the same accept/reject advice when it is not necessary to rank projects for consideration.	That both the NPV and the IRR do not give the same accept/reject advice when it is not necessary to rank projects for considerations.

Question D.1

Table 4.3.4

VARIABLES		RANKING		DIFFERENCE IN RANK - (D)		D^2
I.R.R	Average NPV	NPV	IRR	(+)	(-)	
Above 50%	2,158,452	1	1	-	-	-
25.01 - 30%	1,246,657	2	6	-	4	16
30.01 - 35%	894,512	3	5	-	2	4
35.01 - 40%	759,737	4	4	-	-	-
20.01 - 25%	635,457	5	7	-	2	4
45.01 - 50%	441,007	6	2	4	-	16
40.01 - 45%	321,428	7	3	4	-	16
15 - 20%	162,736	8	8	-	-	-
TOTAL				8	8	56

Using the Spearman Rank-order Correlation Coefficient to test our hypothesis, we use the following formula.

Spearman Rank-order Correlation Coefficient =

$$\rho = 1 - \frac{6\Sigma d^2}{N^3 - N}$$

$$= 1 - \frac{6(56)}{8^3 - 8}$$

$$= 1 - \frac{336}{512 - 8}$$

$$= 1 - 0.667$$

$$\rho = 0.333$$

Analysis above shows that a significant relationship does not exist between IRR and NPV.

The decision rule, using student's "t" calls for accepting Ho if the computed value of t, is less than the critical value at 5% level of significance. Otherwise Ho should be rejected. Thus the null and alternative hypothesis could be tested with the following test statistics:-

$$\text{'t'} = \sqrt{\frac{N-2}{1-\rho_2}}$$

$$\therefore\ t = 0.333\ \sqrt{\frac{8-2}{1-0.333^2}} \qquad \text{With n-2 degree of freedom}$$

$$= \quad 0.333\ \sqrt{6.75}$$

$$= \quad 0.333 \times 2.5978$$

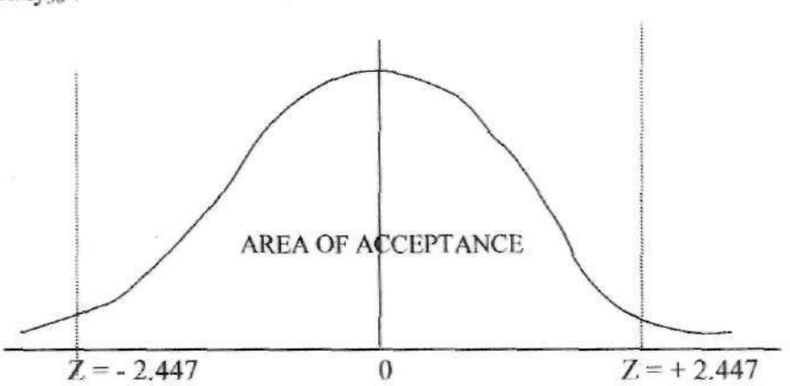
$$= \quad 0.8651$$

KASHIM IBRAHIM LIBRARY

$$\therefore\ t \quad = \quad +0.8651$$

With 0.05 level of significance, the decision rule states that if the computed t falls in the area between ± 2.447, the null hypothesis will be accepted. To locate the critical value of ± 2.447, refer to critical value of t and n-2 or 8-2 = 6 df. Shown schematically[38] :-

Fig.4.3.2



$t = +0.8651 < 2.447$ but falls within the acceptance region; therefore accept the Null hypothesis since the test statistics has not fallen into the rejection area. The alternative hypothesis is therefore rejected.

The conclusion could therefore be drawn that both the NPV and the IRR always give the same advice when it is not necessary to rank projects for approval decisions.

HYPOTHESIS FOUR

NULL (Ho)	Alternative (H_1)
That both the NPV and the IRR always give the same advice when it is necessary to rank projects for consideration.	That both the NPV and the IRR do not always give the same advice when it is necessary to rank projects for considerations.

This point would be more appreciated in a situation where the bank has insufficient fund to finance all the projects listed for consideration. In such a situation, supposing the maximum loan-able fund available to the bank is ₦ 5.1million and the bank decided to use capital rationing as the basis for selecting and funding projects.

Using I.R.R as the basis for capital rationing and assuming that the bank has only ₦ 5,100,000 to lend. Also, using the respective NPV value as assumed loan request and that no project with IRR of less than 25% will be funded. It means

only five projects will be approved as follows:

Table 4.3.5 (a)

VARIABLES			Available funds
I.R.R	Average NPV	Ranking	Balance
Above 50%	2,158,452	1	2,941,548
45.01 – 50%	441,007	2	2,500,541
40.01 – 45%	321,428	3	2,179,113
35.01 – 40%	759,737	4	1,419,376
30.01 – 35%	894,512	5	524,864*
25.01 – 30%	1,246,657		
20.01 – 25%	635,457		
15 – 20%	162,736		
TOTAL			

* This is insufficient to fund the next project.

Also, if the NPV is the basis for selecting projects for approval, only 4 projects would have been considered in the ranking order shown below:

Table 4.3.5 (b)

VARIABLES			Available Funds
I.R.R	Average NPV	Ranking	Balance
Above 50%	2,158,452	1	2,941,548
25.01 - 30%	1,246,657	2	1,694,891
30.01 - 35%	894,512	3	800,379
35.01 - 40%	759,737	4	40,642
20.01 - 25%	635,457		
45.01 - 50%	441,007		
40.01 - 45%	321,428		
15 – 20%	162,736		
TOTAL			

To test hypothesis four the out comes of the IRR and NPV decisions are consolidated as follows:

Table 4.3.5 (c)

VARIABLES		RANKING		DIFFERENCE IN RANK - (D)		D^2
I.R.R	Average NPV	IRR	NPV	(+)	(-)	
Above 50%	2,158,452	1	1	-	-	-
45.01 - 50%	441,007	2	-	2	-	4
40.01 - 45%	321,428	3	-	3	-	9
35.01 - 40%	759,737	4	4	-	-	-
30.01 - 35%	894,512	5	3	2	-	4
25.01 - 30%	1,246,657	-	2	-	2	4
20.01 - 25%	635,457	-	-	-	-	-
15 – 20%	162,736	-	-	-	-	-
TOTAL				7	2	21

Using the Spearman Rank-order Correlation Coefficient to test our hypothesis, we have the following formula.

Spearman Rank-order Correlation Coefficient =

$$\rho = 1 - \frac{6\Sigma d^2}{N^3 - N}$$

$$= 1 - \frac{6(21)}{8^3 - 8}$$

$$= 1 - \frac{126}{512 - 8}$$

$$= 1 - 0.25$$

$$\rho = 0.75$$

The decision rule, using student's "t" calls for accepting Ho if the computed value of

t, is less than the critical value at 5% level of significance. Otherwise Ho should be rejected. Thus the null and alternative hypothesis could be tested with the following test statistics:-

$$\text{'t'} = \sqrt{\frac{N-2}{1-\rho_2}}$$

$$\therefore\ t = 0.75\ \sqrt{\frac{8-2}{1-0.75^2}} \qquad \text{With n-2 degree of freedom}$$

$$= \quad 0.75\ \sqrt{13.7143}$$

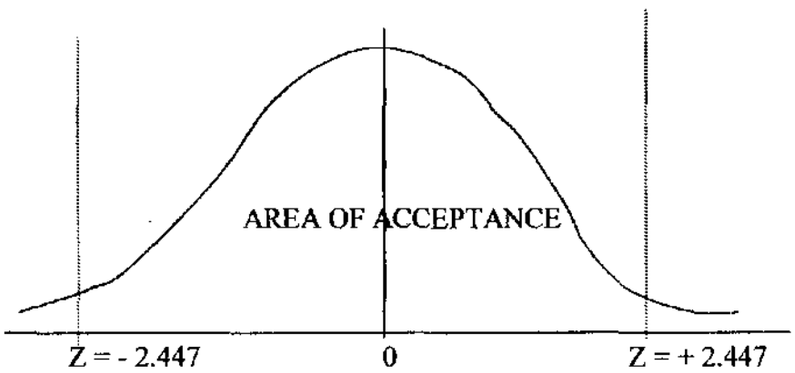
$$= \quad 0.75 \times 3.70$$

$$= \quad 2.7775$$

$$\therefore\ t \ = \ +2.7775$$

With the 0.05 level of significance, the decision rule states that if the computed t falls in the area between ± 2.447, the null hypothesis will be accepted. To locate the critical value of ± 2.447, refer to critical value of t and n-2 or 8-2 = 6 df. Shown schematically[38] :-

Fig.4.3.3



$t = +2.7775 > 2.447$; therefore reject the Null hypothesis since the test statistics has fallen into the rejection area. The alternative hypothesis is therefore accepted.

The conclusion could therefore be drawn that both the NPV and the IRR will not always give the same advice when it is necessary to rank projects for approval decisions.

HYPOTHESIS FIVE

NULL (Ho)	Alternative (H_1)
That most problems, such as how to handle project risk and uncertainty are reasonably taken care of through risk and uncertainty adjustment techniques by banks in Nigeria.	That most problems such as risk and uncertainty are not reasonably taken care of through risk and uncertainty adjustment techniques by banks in Nigeria.

Below is the analysis of the responses given by the respondents to questions.

Question C.1

Table 4.3.6

Variable	Commercial Bank		Merchant Bank		Development Bank		NACB	
	Yes	No	Yes	No	Yes	No	Yes	No
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
a. Risk-Adjusted Discount Rate (RADR)	50	50	90	10	100	-	100	-
b. Risk-Adjusted Payback Period (RPP)	70	30	100	-	100	-	70	30
c. Certainty Equivalent (CE)	40	60	75	25	100	-	100	-
d. Sensitivity Analysis (SA)	90	10	100	-	100	-	80	20
e. Break-Even Analysis (BEA)	100	-	100	-	100	-	100	-

From the above tabulation one may be able to conclude that the respondents in the Merchant and Development Banks, and NACB understand the techniques listed in (a) – (b) of question C.1. This is because not less than 50% of the respondents responded with yes.

In the case of Commercial bank respondents one may also conclude that they understand what a. b, d and e means. However, the commercial bank respondent seems not to understand what "c" means.

Question C.2

Table 4.3.7

Variable	Commercial Bank		Merchant Bank		Development Bank		NACB	
	Yes	No	Yes	No	Yes	No	Yes	No
a. Risk-Adjusted Discount Rate (RADR)	14	6	8	-	12	-	10	-
b. Risk-Adjusted Payback Period (RPP)	18	2	-	8	-	12	-	10
c. Certainty Equivalent (CE)	6	14	-	8	7	5	10	-
d. Sensitivity Analysis (SA)	10	10	8	-	12	-	-	10
e. Break-Even Analysis (BEA)	20	-	8	-	12	-	-	10

*Yes + No = Sample size. Therefore, if you are not saying yes, it is assumed you are saying No.

Analysis above shows that all the banks except NACB use sensitivity analysis to adjust for risk and uncertainty in appraising loan projects. Instead, NACB uses Risk-Adjusted-Discount-Rate and Certainty-Equivalent. Only commercial banks use Risk-Adjusted-Payback-Period. Again, only NACB does not use Break-Even Analysis,

while commercial, merchant and development banks use it.

Since what we are trying to achieve is a comparison of the practices in the banking system with the practices in NACB, the appropriate test will be based upon the difference in the proportions of two related samples. The test as developed by McNemar has the following formula:

$$Z \; \Omega \; \frac{Ps_1 - Ps_2}{\sqrt{\bar{P}(1-\bar{P})\left(\frac{1}{n_1}\right)\left(\frac{1}{n_2}\right)}}$$

To get the input for the above formula we must have to use the averages of the sample data for all the other banks separately and that of NACB separately also.

Below are the averages of the sample sizes:

Table 4.3.8

VARIABLES	Average for Commercial, Merchant & Development Banks		NACB	
	Yes	No	Yes	No
a. Risk-Adjusted Discount Rate (RADR)	34	6	10	-
b. Risk-Adjusted Payback Period (RPP)	18	22	-	10
c. Certainty Equivalent (CE)	13	27	10	-
d. Sensitivity Analysis (SA)	30	10	-	10
e. Break-Even Analysis (BEA)	40	-	-	10
Summarized Averages	27	13	4	6

To test Hypothesis Five using the above formula, the summarized averages can be represented as follows:

Summarized Averages of Question C.2:	YES	NO	Total
Commercial, Merchant & Development Banks	27	13	40
NACB	4	6	10

$$\therefore \quad Z \doteq \frac{Ps_1 - Ps_2}{\sqrt{\bar{P}\,(1-\bar{P})\,\left(\frac{1}{n_1}\right)\,\left(\frac{1}{n_2}\right)}}$$

$$\bar{P} = \frac{27 + 4}{40 + 10}$$

$$= \frac{31}{50}$$

$$\therefore \quad \bar{P} = 0.62$$

$$Ps_1 = \frac{27}{40}$$

$$= 0.675$$

$$Ps_2 = \frac{4}{10} = 0.4$$

$$\therefore \quad Z \doteq \frac{0.675 - 0.4}{\sqrt{0.62\,(1-0.62)\,\left(\frac{1}{40}\right) + \left(\frac{1}{10}\right)}}$$

$$= \frac{-0.275}{\sqrt{0.62 \times 0.038 \times 0.125}}$$

$$= \frac{0.275}{0.172}$$

$= \quad \underline{1.6}$

$\therefore \quad Z \triangleq 1.6 < 1.96$

Therefore the null hypothesis will be accepted since the test statistic has not fallen into the rejection region. The alternative hypothesis is therefore rejected.

This therefore confirms that most problems, such as how to handle project risk and uncertainty are reasonably taken care of through risk and uncertainty adjustment techniques by banks in Nigeria.

HYPOTHESIS SIX

KASHIM IBRAHIM LIBRARY

NULL (Ho)	Alternative (H_1
That most problems, such as how to handle project risk and uncertainty were adequately taken care of through risk and uncertainty adjustment techniques by NACB.	That most problems, such as how to handle project risk and uncertainty were not adequately taken care of through risk and uncertainty adjustment techniques by NACB.

Table 4.3.9

VARIABLES	NACB	
	Yes	No
a. Risk-Adjusted Discount Rate (RADR)	10	-
b. Risk-Adjusted Payback Period (RPP)	-	10
c. Certainty Equivalent (CE)	10	-
d. Sensitivity Analysis (SA)	-	10*
e. Break-Even Analysis (BEA)	-	10*
Summarized Averages	4	6

* Responses as regards the use of sensitivity analysis and break-even analysis

Using percentage method to test hypothesis six where $Z \geq 50\%$ represents adequacy or acceptance of null hypothesis. On the other hand where $Z < 50\%$, reject null hypothesis.

$$Z = \frac{\text{Yes}}{\text{sample size}} \times 100$$

$$Z = \frac{20}{50} \times 100$$

$$Z = 40\%$$

$$40\% < 50\%$$

Only 40% agreed that the variables were used by NACB. Since $40\% < 50\%$ the null hypothesis should be rejected, while the alternative hypothesis is accepted.

Having accepted null hypothesis five, one wonders why NACB does not use Sensitivity Analysis and Break-even Analysis in adjusting for risk and uncertainty when appraising loan projects. The question becomes relevant because of the importance of these two techniques in project formulation and analysis.

The rationale for NACB ignoring these techniques is questionable, particularly when it is discovered that banks that engage in long-term projects similar to those of NACB use these two techniques in addition to those used by NACB when appraising loan projects.

Bearing in mind the importance and relevance of Sensitivity Analysis and Break-even Analysis one may be right to conclude that most problems, such as how to handle project risk and uncertainty are not adequately taken care of by NACB.

HYPOTHESIS SEVEN

NULL (H_O)

That good quantitative appraisal (i.e. DCF techniques, PBP, ARR, etc) report would always lead to approval of loan request.

ALTERNATIVE (H_1)

That good quantitative appraisal (i.e. DCF techniques, PBP, ARR, etc) report would not always lead to approval of loan request.

Question B.7

Table 4.3.10

Variables	Commercial Banks		Merchant Banks		Development Banks		NACB		Total Average	
	Response	% Response	Response	% Response	Response	% Response	Response	% Response	Response	% Response
Yes	3	19	0	0	1	10	1	10	5	11.36
No	13	81	8	100	9	90	9	90	39	88.64
Total	16	100	8	100	10	100	10	100	44	100

An interpretation of the above analysis shows that 88.64% of the respondents states that good quantitative appraisal report would not always lead to approval of loan request. Only 11.36% states that good quantitative appraisal report would always lead to approval of loan request.

Based on the above interpretation the alternative hypothesis should be accepted while the null hypothesis is rejected.

In conclusion good quantitative appraisal report would not always lead to approval of loan request.

To further collaborate the conclusion above, responses to question B.6 shows that other qualitative appraisal methods are considered before granting approval to a loan request.

These qualitative factors are as follows:

KASHIM IBRAHIM LIBRARY

Question B.6

Table 4.3.11

S/N	SUMMARIZED QUALITATIVE FACTORS	FREQUENCY OUT OF 50 RESPONDENTS	% RESPONSE
1	Character	50	100
2	Capacity	50	100
3	Collateral	50	100
4	Unsatisfactory checks	46	92
5	Inability to meet required contribution	35	70
6	Result of financial report analysis	34	68
7	Portfolio Constraints and the amount involved	25	50
8	Experience and management skill	43	86
9	Supply of raw materials	25	50
10	Benefit(s) to the nation	20	40
11	Where other risks supercede the good outcome	18	36
12	Where project control is difficult to effect	21	42
13	Economic sector of the project	16	32
14	Where good outcome was falsified	5	10

Revelations above show that before granting approval to loan request, at least 14 qualitative factors, in addition to quantitative appraisal techniques, may be considered by banks.

HYPOTHESIS EIGHT

NULL (H_0)	ALTERNATIVE (H_1)
That dearth of loan able funds was a common problem of development banks in the late 1990s.	That dearth of loan able funds was not a common problem of development banks in the late 1990s

Question C.3

Table 4.3.12 (a)

Variables	Response %				Total % Average
	Commercial Banks	Merchant Banks	Development Banks	NACB	
Yes	18.75	50	100	80	63.4
No	81.25	50	-	20	36.6
Total	100	100	100	100	100

From the above table, responses from Development banks and NACB will be consolidated and used to test hypothesis seven. The result of the consolidation is as stated below:

Table 4.3.12 (b)

Variables	Development Banks	NACB	Average
	Response (%)	Response (%)	Response (%)
Yes	100	80	90
No	-	20	10
Total	100	100	100

Analysis above shows that 90% of the respondents agreed that development banks

(NACB inclusive) experienced dearth of loan able funds in the late 1990s, while just 10% disagreed.

Using simple percentage method to test hypothesis seven. Since 90% of the respondent agreed that their banks experienced shortage of loan able funds, the null hypothesis should be upheld while the alternative hypothesis is rejected.

Therefore, it can be concluded that development banks (NACB inclusive) experienced shortage of loan able funds in the late 1990s.

In fact, verbal discussions with the staff of these banks revealed that there was a significant drop in their level of operations. Particularly, large scale project funding was either completely grounded or almost grounded in some cases for a period of almost 4years (i.e., 1995 – 1999).

From the paragraph immediately above, one may also conclude that poor loan recovery (from debtors) and excessive burden of debt servicing (to creditors) were responsible for dearth of loan able funds that development banks (particularly, NACB, NIDB, NBCI, NEXIM and NERFUND) in Nigeria experienced in the 1990s. This is because the shortage of fund experienced by these banks was not that of insufficient fund to meet all the demand for large-scale loans. But the problem was that request for loans could not be granted at all. Hence, normal operations were at a standstill because of a mismatch in their sources and application of funds.

The big question now is, **"Was appraisal inadequacies responsible for the failure of development banks in Nigeria or bad loan management".** Bad loan management includes poor fund flow and foreign exchange management, and bad portfolio management characterized by lack of proper diversification. This should be a topic for further research as to the cause of failure of development banking in Nigeria.

HYPOTHESIS NINE

KASHIM IBRAHIM LIBRARY

NULL (H_O)

That capital rationing was widely used by Nigerian banks to handle the problem of shortage of loan-able funds.

ALTERNATIVE (H_1)

That capital rationing was not widely used by Nigerian banks to handle the problem of shortage of loan-able funds.

Table 4.3.13

Variables	Respondents %				Total % Average
	Commercial Banks	Merchant Banks	Development Banks	NACB	
Yes	46.67	37.5	20	25	32
No	53.33	62.5	80	75	68
Total	100	100	100	100	100

Using the simple percentage to test our hypothesis and taking the total percentage average of responses, 32% of the respondents claimed that capital rationing was used as basis for granting approval to loan request by their banks. On the other hand 68%

claimed that their banks did not use capital rationing for granting approval to loan requests when faced with the problem of shortage of loan-able funds.

The alternative hypothesis should be accepted and the null hypothesis rejected since only 32% spoke in favour of the null hypothesis while 62% spoke in favour the alternative hypothesis.

It could be concluded that capital rationing was not widely used by Nigerian banks to handle the problem of shortage of loan-able funds.

Question C.7 reveals reasons for respondents' banks not using capital rationing to grant approval to loan request when faced with the problem of shortage of loan-able funds. Below are comments of respondents that were rationalized:

1. Because it capital rationing does not consider other risks.
2. I do not know why we don't use it.
3. Capital rationing does not provide for desired sectoral spread.
4. We must give support to deserving clients.
5. We are not experiencing shortage of fund.
6. Each project is approved on its own merit.

- Responses 2 and 5 - Appeared to be tenable while the remaining reasons show that the respondents or their respective banks simply do not understand how

to apply capital rationing to their selection process.

- Reason 1 – This do not hold because capital rationing is usually considered along with risk and uncertainty adjustment.
- Reason 3 – This also does not hold because within each portfolio constraints or sectoral funding arrangements; capital rationing is still feasible as long as availability of fund and specific benchmarks are the critical factors for determining who qualifies for loan.
- Reasons 4 and 6 – These reasons pre-supposes that standards are compromised when using capital rationing. On the contrary capital rationing (where it is strictly applied) works with uncompromising merit and against sentiments. This is because selected projects are considered on the basis of their ranking above those not considered or those deferred. Selection is also from the pool of those that have scaled through appraisal and risk/uncertainty adjustment processes.

KASHIM IBRAHIM LIBRARY

Question C.4: See response summary below:

Table 4.3.14

Variables	Respondents %				Total % Average
	Commercial Banks	Merchant Banks	Development Banks	NACB	
Yes	75%	100%	50%	90%	78.75%
No	25%		50%	10%	21.25%
Total	100	100	100	100	100

Findings above show that Nigerian banks, for one reason or the other, instead of using capital rationing use temporary blacklisting (i.e. management decides that within a particular period no loan should be given to a particular sector or activity).

CHAPTER FIVE

SUMMARY OF FINDINGS, RECOMMENDATION AND CONCLUSION

5.1 SUMMARY OF FINDINGS

This research work is divided into five chapters, chapter one is the introduction to the study and it provides a solid and informative insight to the research background, that is the Nigerian financial system, the defunct Nigerian Agricultural and Co-operative Bank, and the basic appraisal and risk/uncertainty adjustment techniques. Chapter two is about review of previous works of different authors and other ancillary topics. Chapter three describes the research design and therefore identifies data collection methods, research instruments and the selection of sample size. It also highlights the nature of field works and challenges encountered during data collection. Chapter four deal with summary of data, data analysis and test of hypotheses. Chapter five, which is the concluding chapter, is about summary of findings, recommendation and conclusion.

The main objective of this study is to critically examine project appraisal techniques in the defunct NACB and to see if the practices in the organization compares favourably with conventional techniques and practices in similar institutions in the country.
To avoid being narrow scoped, relevant institutions i.e., commercial banks, merchant banks and development banks were considered as part of the research sample size. This is to facilitate comparison that will enhance reasonable deduction as to the adequacy of appraisal techniques in the defunct NACB.

Out of the nine hypotheses tested, four null hypotheses were accepted while five alternative hypotheses were accepted. I present below a synopses of my findings:

First, that the discounted cash flow (DCF) techniques of appraisal are not the most ideal and commonly used appraisal techniques by banks in Nigeria. This is because the Z score of –5.73 < - 1.96 and has fallen outside the acceptance region.

Second,

It could therefore be concluded that the discounted cash flow (DCF) techniques of appraisal are the most ideal and commonly used techniques by development banks in Nigeria. This is because 100% of the response disclosed that the DCF appraisal techniques are used in their banks (Development Banks).

Third, that both the NPV and the IRR always give the same advice when it is not necessary to rank projects for approval decisions. Because the test statistics t = + 0.8651 < 2.447 but falls within the acceptance region

Fourth, that both the NPV and the IRR will not always give the same advice when it is necessary to rank projects for approval decisions. Since the test statistics t = + 2.7775 > 2.447 and falls into the rejection area.

Fifth, that most problems, such as how to handle project risk and uncertainty are reasonably taken care of through risk and uncertainty adjustment techniques by banks in Nigeria. This conclusion is reached because the test statistics has not fallen into the rejection region since $Z \doteq 1.6 < 1.96$.

Sixth, that most problems, such as how to handle project risk and uncertainty are not adequately taken care of by NACB. Since the Z score of 40% is less than 50%. Also, bearing in mind the importance of Sensitivity Analysis and Break-even Analysis in long term project appraisal.

Seventh, that good quantitative appraisal report would not always lead to approval of loan request. Computation shows that 88.64% of the respondents stated that good quantitative appraisal report would not always lead to approval of loan request. At least fourteen qualitative factors, in addition to quantitative appraisal techniques, are normally considered by banks.

477012

Eighth, that development banks (NACB inclusive) experienced shortage of loan able funds in the late 1990s. Because 90% of the respondent agreed that their banks experienced shortage of loan able funds over this period.

Ninth, that capital rationing was not widely used by Nigerian banks to handle the problem of shortage of loan-able funds, this is because 62% spoke in favour of this statement.

5.2 RECOMMENDATION

The following recommendations will go a long way to improve the quality of appraisal techniques in the development banking sector of Nigeria, particularly, in the newly constituted Nigerian Agricultural Co-operative and Rural Development Bank (the successor of NACB). The recommendations are:

(i) **Sensitivity Analysis:** In appraising long-term project loan request, it is necessary that sensitivity analysis be carried out to test the effect of unforeseeable changes in the cost or prices of factors that are very crucial to the success of the proposed project.

This is important in addressing the problem of inflation. Hence, any project that may not be able to accommodate reasonable percentage of adverse fluctuation in the cost/price of critical factors should be seen as highly vulnerable to failure arising from inflation.

(ii) **Break-even Analysis:** This is recommended for use to the newly constituted Nigerian Agricultural Co-operative and Rural Development Bank (the successor of NACB) i.e., if the new bank has not started using it. It is a very important method of determining the minimum capacity utilization level that could keep a project going. The defunct NACB did not use it.

(iii) **Capital Rationing:** It permits merit and also works against the use of sentiments in considering projects for approval. This is because selected

projects are considered on the basis of them ranking above those not considered or those deferred. Selection is also from the pool of those projects that have scaled through appraisal and risk/uncertainty adjustment process.

In applying capital rationing to project approval process, at the planning stage, funds would need to be allocated on the basis of priority to all the sectors to be funded. Capital rationing is thereafter carried out within each sector independently so that within each sector, the best projects are considered. This way, sectoral spread is properly taken care of and a kind of portfolio management process formulated for each sector according to risk and uncertainty. Such portfolio management process should address the issue of debt recovery as a function of risk and uncertainty.

(iv) **Foreign Loans:** The problems that debt servicing of foreign loans brought upon development banks in Nigeria arose from short-sightedness in appraising foreign exchange risks. It is therefore recommended that in future foreign loans should be denominated in local currency in order to check the implications of devaluation of naira. Alternatively, foreign loans should be taken up by the Central Bank of Nigeria and administered to the development banks in naira. This way the foreign exchange risks would be transferred to CBN that has a better shock-absorber for foreign exchange risks. Again, if the foreign loans must be denominated in hard currency, local loans also should be administered in hard currency with repayments to the lending bankers also in

hard currency. The danger in the third option is that foreign exchange risk is passed on to local borrowers and will be detrimental to development.

(v) **Staff Training and Development:** Strong attention should be given to staff training and development because staff performance is a function of knowledge and experience acquired by employees.

(vi) **Computer Literacy:**

An officer of a development bank ought to have a very good working knowledge of computer software that relates to project appraisal and analysis. Particularly, a good working knowledge of Microsoft word and excel are a most for officers in project appraisal department. Therefore, the new Nigerian Agricultural Co-operative and Rural Development Bank must put a lot of resources into training and equipping its project appraisal staff with necessary knowledge and access to relevant computer technology.

KASHIM IBR

(vii) **Reward System:** The new Nigerian Agricultural Co-operative and Rural Development Bank should address the following:

Efficient and effective reward system – this is a great motivator that can propel better performance. Reward system should include; good career progression for outstanding performance and good remuneration system. Where career advancement and remuneration system are not effective, staff turnover may be high, leading to lose of good hands and waste of resources

expended on the training of deserters.

To serve as an incentive to increase productivity; staff welfare, promotion, job enrichment, job security, etc will go a long way to induce and motivate workers to put in their best.

Finally on this note, a very good work environment is needed for an officer who engages in the calculations and computations of figures for project appraisal. The officers' work environment should be conducive and permit concentration for productivity.

5.2 CONCLUSION

A project is the commitment of resources, (both human and non-human) in anticipation of benefits that may occur over a reasonably long period of time.

Project appraisal is a vital tool that helps in no small way in determining the acceptability and desirability of a capital investment. Also, project appraisal is aimed at evaluating whether or not the current sacrifice is worthwhile vis-a vis the objective of the investor(s).

Objectives of project appraisal can be summarized as follows:

- Determine whether the project meets the organization's criteria for financial return on the investment.
- Ensure that the estimates present an accurate/practical/realistic view of the

project.

- Appraise the risks in relation to the economic returns.
- Determine the benefits and effects of the project on the organization's future strategies and policies.

Literature began to reflect the growing academic interest in business finance and project appraisal in the mid fifties. This could be as a result of the desire for more rigorous theoretical methods of investment appraisal arising partially out of the increased complexities of a world of increasingly large-scale investments and rapid technological obsolescence, and out of the success of such methods in helping to wage the Second World War.

R.H. Parker (1969), in his general review of the historical development of the theory of project appraisal, concluded that some of the problems a firm faces when engaging in project appraisal had been solved and these solutions have passed into general practice. On the other hand, A. A. Robichek (1967), argued that "most crucial problems, such as how to handle uncertainty, have, as yet, no agreed treatment".

However, care is essential in the appraisal of projects for two main reasons:

(i) Investment involves a complete commitment of resources for a long period, a commitment that may be impossible or extremely difficult to reverse.

(ii) The ever-increasing trend towards the creation of larger business units by amalgamation and globalization means that serious economic and social

consequences can flow from bad investment decisions.

Consequently, all investment opportunities will be viewed from the perspective of expectations, and associated risks and uncertainties. Bearing this in mind, projects should be appraised and funded or rejected on the basis of their economic justification. The stronger the economic justification, the more likely the project is to be raised to realty.

This research work has been able to conclude that the defunct NACB:

1. Used the discounted cash flow (NPV, IRR and BCR) in appraising projects.
2. That the bank, like all other banks, used qualitative criteria (See appendices III[1-7]) in addition to the quantitative methods in appraising projects. Such qualitative criteria included; Character, Capacity, Collateral, credit checks, ability to meet required contribution, analysis of financial reports of applicant, etc.
3. Did not use sensitivity analysis and break-even analysis in adjusting for risk and uncertainty. Hence its appraisal technique may be considered inadequate.
4. That dearth of loan-able funds was a big problem that development banks (including NACB) had to contend with in the late1990s.
5. Did not use capital rationing for project selection, even in the face of inadequate fund to meet loan requests.

KASHIM IBRAHIM LIBRARY

In the light of observations above, I wish to conclude that just a little value added was necessary to improve the appraisal techniques of the defunct NACB. The little

additions are as follows:

1. The need to conduct sensitivity analysis on every project under appraisal.
2. The need to conduct break-even analysis on projects under appraisal.
3. The need to use capital rationing in determining the best projects to sanction.
4. There is also the need to always prepare a projected balance sheet statement for all projects formulated. This will enable the officers determine realistic values for balance sheet items and also assist in computing projected financial ratios that may assist management in taking decisions when considering projects for approval.

I therefore wish to finally conclude that my recommendations (as stated in 5.2) will be of immense benefits to the new Nigerian Agricultural Co-operative and Rural Development Bank, if those recommendations have not already been incorporated into the bank's appraisal techniques.

BIBLIOGRAPHY

1. BERSENSON, M. L. & LEVINE, D. M. - Basic Business Statistics- Concepts and Applications.

2. BROGHAM, E. F. - Fundamentals of Financial Management, 2nd edition.

3. FAKIYESI, T. - Introduction to Cost Benefit Analysis, F.I.T.C. Course on Project Analysis and Investment Appraisal. August, 1990, at Owerri.

4. FRANKS, J. R. & SCHOLEFIELD, H.H - Corporate Financial Management, 2nd edition.

5. HARVEY, D. A. & McLANEY, E. - Core Busines Studies – FINANCE.

6. HORNGREN, C. T. - Introduction to Management Accounting 5th Edition.

7. MASON, R. D. - Statistical Techniques in Business and Economics, 4th Edition.

8. NACB PUBLICATION
   - NACB Diary, 1990
   - NACB Guide to Applicant – 1990 Edition
   - NACB Digest, Vol. 2, No. 3, August, 1990.

9. NWANKWO, G. O. (PROF.) - Financial system in Nigeria.

10. OLAGUNJU, A. - "Financial Statement Analysis and Investment Appraisal, August, 1990, at Owerri.

11. OSAYAMEH, R. K. - Practice of Banking Vol. 2, F & A Publishers Ltd., 1986.

12. OWULAH, S. I. (DR.) - "Project Costing and Running Cost, Needs Analysis" – F.I.T.C. Course August 1990, at Owerri.

13. SEIZER, J. - Readings in Management Accounting, Penguin Modern Management Readings.

14. SPIEGEL, M. R. - Schaum's Outline Series, McGraw Hill Book Company, 1st Edition, Page 167.

15. CBN/NDIC - A CBN/NDIC Collaborative study on Distress in the Nigerian Financial Service Industry, published in October, 1995.

16. SINKEY J. F. JNR - Commercial Bank Financial Management in the Financial Services Industry, 4th Edition (London: Macmillan). (1992).

17. The National Provident Fund (NPF) is now the Nigeria Social Insurance Ttrust Fund (NSITF).

18. SAMUELS J. M., WILKES F. M. & BRAYSHAW R. E. - Financial Management and Decision Making, 1999 Edition Page 67-70.

19. KNOTT GEOFFREY - Dealing with Risk in Investment Decisions. 3rd Edition 1998.

20. SCOTT F. DAVID JR., MARTIN D. JOHN, PETTY J. WILLIAM & KEOWN ARTHUR J. - Basic Financial Management, 8th Edition (1999).

21.KEWINGTON JOHN - Gower Handbook of Management Skills (3rd Edition) – 1998. Project Management Article Pages351-352

22. The Nigerian Stock Exchange presently has branch offices in Abuja, Ibadan, Kano, Kaduna, Port-Harcourt and Onitsha.

23. SHIM JAE K. & HENTELEFF NORMAN - What every Engineer should know about Accounting and Finance (1995).

QUESTIONNAIRE

DEPARTMENT OF BUSINESS ADMINISTRATION, INSTITUTE OF ADMINISTRATION, AHMADU BELLO UNIVERSITY, ZARIA

RESEARCH TOPIC: AN EVALUATION OF PROJECT APPRAISAL TECHNIQUES AS A CRITERIA FOR SELECTING AND FINANCING PROJECTS -A CASE STUDY OF THE DEFUNCT NIGERIAN AGRICULTURAL AND COOPERATIVE BANK LIMITED

RESEARCH PURPOSE: FOR PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS DEGREE IN BUSINESS ADMINISTRATION (MBA)

NOTE

(i) Rest assured that any information disclosed will be treated as confidential.

(ii) You may write on extra sheet of paper if the space provided is not sufficient

SECTION A:

A.1 Which category of the following banking institutions do you belong:

a) Development ( )

b) Commercial ( )

c) Merchant ( )

A.2 Respondent's department:_____

A.3 Does your bank appraise investment loan proposals before granting approval to loan requests?

Yes ( )

No ( )

A.4 To grant approval to loan requests does your bank just rely on feasibility study report submitted by loan applicants without in-house appraisal?

Yes ( )

No ( )

A.5 How many applications for investment loan do you receive per quarter?

a) Less than 50 ( )
b) 51 – 100 ( )
c) 101 – 150 ( )
d) 151 – 200 ( )
e) above 200 ( )

A.6 What percentage of loan requests in A.5 above usually get approved for funding

a) Less than 20% ( )
b) 21 – 40% ( )
c) 41 – 60% ( )
d) 61 – 80% ( )
e) Over 80% ( )

SECTION B:

B.1 Does your bank use Accounting Rate of Returns (ARR) to appraise long-term loans.

Yes ( )
No ( )

B.2 Does your bank use Payback Period (PBP) to appraise long- term loans.

Yes ( )
No ( )

B.3 Does your bank use Net Present Value(NPV) to appraise long- term loans.

Yes ( )
No ( )

B. 4 Does your bank use Internal Rate of Return (IRR) to appraise long-term loans.

Yes ( )

No ( )

B.5 Does your bank use Benefit/Cost Ratio (BCR) to appraise long- term loans.

Yes ( )

No ( )

B.6 What other factor(s) do you apply to loan appraisal besides technical (i.e. NPV, IRR, PBP, BCR, etc) criterion?

(a) _____

(b) _____

(c) _____

(d) _____

B.7 Would your bank, on the basis of good outcome of quantitative appraisal (i.e. NPV, IRR, PBP, BCR, etc) approve a loan request?

Yes ( )

No ( )

SECTION C:

C.1 Do you understand the meaning of the following risk and uncertainty adjustment techniques:

a) Risk-Adjusted Discount Rate ( )

b) Risk-Adjusted Payback Period ( )

c) Certainty equivalent ( )

d) Sensitivity Analysis ( )

e) Break-even Analysis ( )

C.2 Mark the method(s) used by your bank to adjust for risk and uncertainty in project appraisal

a) Risk-Adjusted Discount Rate ( )
b) Risk-Adjusted Payback Period ( )
c) Certainty equivalent ( )
d) Sensitivity Analysis ( )
e) Break-even Analysis ( )

C.3 Is your bank currently experiencing shortage of loan able fund?

Yes ( )
No ( )

C.4 Does your bank use temporary sectoral blacklisting (i.e. Management decides that within a particular period no loan should be given to particular sector(s)?

Yes ( )
No ( )

C.5 Do you understand what capital rationing is all about?

Yes ( )
No ( )

C.6 Does your bank use capital rationing as a basis for granting approval to loan requests?

Yes ( )
No ( )

C.7 If C.6 is no, give reasons why capital rationing is not used by your bank:

(a)_____

(b)_____

(c)_____

(d)_____

Question D.1: (For NACB only): Provide the NPV and the IRR of 5 projects that were formulated and appraised some years ago.

S/N	NPV	IRR
1		
2		
3		
4		
5		

KASHIM IBRAHIM LIBRARY

NIGERIAN AGRICULTURAL AND CO-OPERATIVE BANK LIMITED
HEAD OFFICE - KADUNA

APPENDIX 1

SUMMARY OF NACB LOAN TRANSACTIONS 1973 -1995

SUB-SECTOR	NO.	APPROVALS (₦ MILLION)	DISBURSED (₦ MILLION)	REPAYMENT (₦ MILLION)
ARABLE	902	360.91	327.87	228.54
TREE CROPS	42	96.39	53.86	69.32
HORTICULTURE	12	24.10	7.92	5.26
MIXED FARMING	116	74.89	66.96	32.61
CATTLE FATTENING	345	66.64	41.13	22.16
POULTRY	490	108.61	88.18	56.79
OTHER LIVESTOCK	167	25.60	14.50	8.67
FISHERY	161	111.40	64.22	30.14
ON-LENDING	124	242.01	216.45	76.58
AGRO-ALLIED	182	431.60	422.45	229.97
AGRO-SERVICES	70	679.29	677.39	454.43
IRRIGATION	7	357.99	251.08	116.60
DIRECT MARKETING	4,351	772.18	527.47	565.92
INTEGRATED PROJECTS	12	23.01	20.48	9.96
FORESTRY	2	8.60	7.68	4.81
RIVER BASIN DEVT. AUTHORITY	12	60.00	60.00	5.00
OIL PALM	12	34.99	6.28	2.09
OTHERS	6	3.93	3.51	0.01
SPECIAL PROJECTS	1,429	80.41	70.09	31.67
SMALL HOLDER SCHEME	288,861	1,092.34	1,017.61	610.02
2ND LIVESTOCK DEVT. PROJECT	27,869	226.22	223.45	168.71
HEAD OFFICE REPAYMENTS	145	785.18	260.68	784.07
TOTAL	325,317	5,666.29	4,429.26	3,513.34

SOURCE:SMALL HOLDER AND STATISTICS DIVISION

HAS/RI/ASO

APPENDIX II

NIGERIAN AGRICULTURAL AND CO-OPERATIVE BANK LIMITED
HEAD OFFICE - KADUNA

OPERATIONS DATA:SUMMARY OF LOANS - LARGE SCALE,SHS,SLDP,AND SPECIAL PROJECTS(IFAD,ECOWAS AND ILO)

1973 TO DECEMBER 1995

PERIOD	NO. APPROVED	AMOUNT APPROVED (=N=)	AMOUNT DISBURSED (=N=)	AMOUNT REPAID (=N=)
1973-85	9,665	668,477,563	478,080,071	160,554,436
1986	9,453	51,242,111	42,413,837	24,340,387
1987	8,402	148,656,402	66,250,461	52,803,112
1988	47,470	407,164,639	262,216,056	101,168,529
1989	52,058	560,003,000	445,769,226	127,002,469
1990	36,897	494,912,000	358,905,302	195,414,959
1991	20,801	429,638,852	165,856,935	197,884,628
1992	28,566	919,077,530	626,661,066	545,491,727
1993	39,032	874,278,854	913,258,286	662,033,901
1994	39,932	766,410,744	639,229,970	734,812,094
1995	33,041	346,392,707	430,627,025	711,840,679
TOTAL	325,317	5,666,254,402	4,429,268,235	3,513,345,921

SOURCE:SMALL HOLDER AND STATISTICS DIVISION

HAS/BOAI/ASO

APPENDIX III

B.1.6 **Conditions To Be Met By Limited Liability Companies**

B.1.6.1 *Provision of:*

(a) *Statutory Certificate of Occupancy of the project site. In certain cases Local Government Certificate of Occupancy with attested survey plan may be accepted. In cases of doubt, it is essential to check with Zonal Legal Officer.*

(b) *Certificate of Occupancy covering the property which is to be used as security together with a valuation report and an approved building plan. The valuation report must be produced by any of the Bank's Estate Officers, and the mortgage value for such security must meet at least the minimum requirement established from time to time. The documents relating to any other security acceptable to the Bank may also be provided.*

(c) *Tax Clearance Certficate for the last three years.*

(d) *Two (2) recent, clear, full-face, black and white, passportsize photographs of the Chief Promoter, the Chairman, the Managing Director and the Company Secretary.*

(e) *Satisfactory status report from the applicant's Bankers, and from any other Bank as the Branch Manager may deem necessary.*

APPENDIX III 2

(f) *Proof of the ability of the applicant to finance at least the minimum financial stake required from applicants.*

(g) *Certificate of Incorporation.*

(h) *Memorandum and Articles of Association (Memarts) which should include:*

- *Agricultural or Agro-Allied business as one of its objects.*
- *Powers to borrow.*
  Authorised share capital of at least 50% of the amount of the loan applied for.

(i) *5 year audited statements of accounts; or audited statements for the past years for companies less than 5 years old; or statement of affairs for newly incorporated companies. The paid up share capital should be at least 50% of the authorised share capital. Satisfactory evidence of any increase in paid up or authorised share capital must be submitted.*

(j) *Satisfactory Search Report from the Registrar of Companies.*

(k) *Resolution of the Board of Directors of the company to exercise its borrowing powers and to borrow a specific amount from NACB Ltd.*

APPENDIX III 3

(l) *List of names of persons authorised by the company to deal with NACB in respect of the loan applied for.*

(m) *Names, addresses and occupations of Directors and share holders; and the list of their share holdings.*

(n) *Details of foreign technical partners for the project, and the partnership agreement, where applicable.*

(o) *Two copies of a detailed feasibility report acceptable to NACB Ltd. (This is required only for projects with proposed loan volumes in excess of certain levels as determined by Executive Director (Operations) from time to time).*

B.1.6.2 *For loan requests in excess of n1 million, the Bank may insist on:*

(a) *Co-financing of syndication.*

(b) *Being represented in the Management and Board of the client company.*

B.1.6.3 *Directors of applicant companies shall be required to:*

(a) *Provide letters of intent to guarantee such loans.*

(b) *Personally guarantee such loans.*

(c) *Provide Tax Clearance Certificate for the last 3 years.*

(d) *Provide the names and addresses of their Bankers; the type of account kept, and their relevant numbers.*

477012

KASHIM IBRAHIM LIBRARY

APPENDIX III

B.1.6.4 The Branch Manager may then obtain status report from the Directors' Bankers (as stated by them); and from any other Banks as he may deem necessary.

B.1.6.5 Where the company is providing a guarantor, following additiona conditions must be satisfied:

(a) Letter of intent to guarantee.

(b) Particulars of properties to back the guarantee.

(c) Two (2) recent, clear, full-face, black and white, passport-siz photographs of the guarantor.

(d) A satisfactory status report from the guarantor's bankers, and fro any other bank as the Branch Manager may deem necessary.

(e) Tax Clearance Certificate in respect of the guarantor for the la three years.

B.1.6.6. At least the conditions listed in items B.1.6.1. (a), (d), (g), (h), (i), (l), (n), (o), B.1.6.3 (a) and B.1.6.5 (a), (b) and (c) must be met before a complet application form is accepted.

B.1.7 **Conditions To Be Satisfied By Co-operative Organisations**

B.1.7.1 Provision of:

(a) Certificate of Registration

(b) Bye-Laws of the Society

(i) The Bye-Laws must permit the society to engage in activities for which a loan is sought.

APPENDIX III 5

(ii) *The loan to be granted should not four times the value of the society's paid up contribution (share capital).*

(iii) *The bye-laws must include powers to borrow.*

(c) *Statutory Certificate of Occupancy of the project site. In certain cases Local Government Certificates of Occupancy with attested survey plan may be accepted. In cases of doubt it is essential to check with the Zonal Legal Officer.*

(d) *Certificate of Occupancy covering the property which is to be used as security together with a valuation report and an approved building plan. The valuation report must be produced by any of the Bank's Estate Officers, and the mortgage value for such security must meet at least the minimum requirement established from time to time. The document relating to any other security acceptable to the Bank may also be provided.*

(e) *Names and addresses of the current officials.*

(f) *Satisfactory status report from the applicant's Bankers, and from any other Bank as the Branch Manager may deem necessary. The Branch Manager shall also obtain status report from the Appex Organisation in the State.*

(g) *A letter of recommendation from the Chief Registrar of Cooperative Societies of the relevant Co-operative Registry.*

APPENDIX III 6

(h) *Five years Audited Statement of Account; or Audited Statement of Accounts of the past years for societies less than five years old; or Audited Statement of Affairs for newly registered societies.*

(i) *List of current members of the Society and their share holdings.*

(j) *Two (2) recent, clear, full-face, black and white, passportsize, photographs of the Chairman, Secretary, and Treasurer. Personal particulars of these people as listed in section B.2.4.2 below shall also be provided.*

(k) *Proof of the ability of the applicant to finance at least the minimum financial state required from this category of applicants.*

(l) *A valid resolution of the Society to borrow a specific amount from NACB Ltd.*

(m) *A list of names of persons authorised by the Society to deal with NACB Ltd in respect of the loan applied for.*

B.1.7.2 *Where the Society is presenting a guarantor, the following additional conditions must be satisfied:*

(i) *Provision of a letter of intent to guarantee from the guarantor.*

(ii) *Particulars of properties to back the guarantee.*

(iii) *Two (2) recent, clear, full-face, passportsize, black and white photographs of the guarantor.*

Where the guarantor is an organization, each principal officer of that organization shall provide two (2) passport-size photographs as described above.

(iv) *Satisfactory status report from the guarantors' Bankers, and from any other Bank as the Branch Manager may deem necessary.*

(v) *Appex Co-operative Union with their own reality are preferred as guarantors. It is not recommended that individual members should guarantee such loan with their own personal realty. There is some evidence that such guarantees lead to dissension to the detriment of the success of the project for which a loan was granted.*

B.1.7.3 *At least the conditions listed in items B.1.7.1. (a), (b), (c), (e), (g), (h), (i), (j), (m), and B.1.7.2. (i), (ii) and (iii) must be met before a completed application form is accepted.*

B.1.8 **Conditions To Be Satisfied By Government Departments And Agencies**

B.1.8.1 Provision of:

(a) *At least two copies of feasibility study acceptable to NACB Limited.*

(b) *Letter of Intent to Guarantee the loan from the relevant Ministry of Finance.*

(c) *An Irrevocable Letter of Authority to deduct at source from Statutory Allocation confirmed by the Central Bank of Nigeria.*

APPENDIX III 8

(d) A copy of the instrument establishing the agency. The original shall be sighted by our Officer and that fact shall be stated on the copy.

B.1.8.2 All of the four conditions listed abour must be met before a completed application form is accepted.

B.1.9 **Applications With Incomplete Documents**

The submission of the required documents shall go simultaneously with the processing of application forms. However, the minimum conditions specified in sections B.1.5.3, B.1.6.6, B.1.7.3 and B1.8.2 must be met before a completed application form is accepted.

B.1.10 **Applications With Complete Documents**

A completed application form with the minimum requirements as indicated in section B.1.9 above can be accepted for processing.

B.2 **PROCEDURE FOR PROCESSING OF COMPLETED LOAN APPLICATION FORMS**

B.2.1 **Registration Of Application Forms**

B.2.1.1 The first step in the processing of a completed loan application form shall be the registration of that form by which each project shall be given a number which shall also be entered in the register of completed application forms received. See Annex 14 for format of tha register.

B.2.1.2 For each project the numbering shall be as follows: