



# Evaluation of Capital Budgeting and Investment Decisions in Nigeria

## —A Study of Selected Industrial Firms in Imo State

Adolphus Ngozika Obi<sup>1</sup>, Samuel Oluwaseun Adeyemo<sup>2</sup>

<sup>1</sup>Bursary Department, Federal Polytechnic, Nekede, Owerri, Nigeria

<sup>2</sup>Department of Mathematics and Statistics, Federal Polytechnic, Nekede, Owerri, Nigeria

Email: [sammyadeyemo@gmail.com](mailto:sammyadeyemo@gmail.com)

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### Abstract

The study was primarily undertaken to evaluate the processes of capital budgeting and investment decision in Nigeria. Particularly, it is an evaluation of the processes of capital budgeting and investment in capital assets in some manufacturing firms operating in Imo state. This study is aimed at evaluating the processes and procedures that Nigerian manufacturing firms adopt when budgeting for their long-term investments and the organizational structures that drive capital budgeting and investment decisions in the selected manufacturing firms as well as the impact of the economic environment on their ability to budget effectively. The study involved a survey of eight (8) out of the fourteen (14) active manufacturing firms in the state. A sample size of two hundred and forty (240) respondents was drawn from the selected firms, they were administered with structured questionnaire. The data collected were analyzed using tables, frequency, percentages, descriptive statistics, the t-test of population mean and the z-test of difference of means. The analysis revealed that: the firms budget for their capital investments using mainly the payback method of investment appraisal. The researcher therefore concluded that managers tend to be overconfident in that they overestimate the precision of their information and their ability to control risk; and though the sampled firms understand the obvious advantages of the net present value and the other sophisticated investment appraisal techniques over the payback method, they still adopt the later because of the nature of their economic environment, their size, lack of sufficiently qualified personnel, paucity of funds and their weak organizational structure. The researcher recommended that firms should hire risk-averse managers to make investment decisions on their behalf because the manager's overconfidence serves to reduce the moral hazard that his risk aversion creates. Government at all levels in Nigeria should put in place a revolving fund to meet the long-term funding needs of the manufacturing sector which most of the banks are unwilling to provide at affordable interest rates. The present heavy tax burden on manufacturing firms by the Federal, States and Local governments should be discouraged.

## Keywords

**Capital Budget, Business Risk, Discounted Cash Flow, Weighted Average Cost of Capital**

**Subject Areas: Business Analysis, Business Finance and Investment**

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## 1. Introduction

Capital budgeting is the process by which firms determine how to invest their capital. Included in this process are the decisions to invest in new project, reassess the amount of capital already invested in existing projects, allocate and ration capital across divisions and acquire other firms. In essence, the capital budgeting process defines the set and size of a firm's real assets, which in turn generate the cash flows that ultimately determine its profitability, value and viability. In principle, a firm's decision to invest in a new project should be made according to whether the project increases the wealth of its shareholders.

Efficient allocation of capital usually referred to as capital budgeting is one of the most important functions of financial management in modern times. This function involves the firm's decision to commit its funds in long-term assets and other profitable activities. The firm's decision to invest funds in long-term assets is of considerable significance since they tend to influence its wealth, determine its size, set the pace and direction of its growth and affect its business risk, Pandey (1981) [1]. Capital budgeting addresses the question of how a company decides to make investments in additional capacity or in new products and to replace worn-out fixed assets. Awomewe and Ogundele, (2008) [2], in their thesis "The importance of the payback method in capital budgeting decision", submitted to the school of management, Blekinge Institute of Technology, wrote: "the capital budgeting decision has been a very topical issue in the sustenance of a company. Several companies have lost their identity or liquidated due to wrong capital budgeting decision they made at one particular time or the other. Based on these prevalent problems in industries and the effect of globalisation on industries, it is important to use effective method to analyze investment before decision is made. Capital budgeting is extremely important because the decision made involves the direction and opportunity for future growth of the organisation."

Under conditions of global economy, the steady increase in the variety and scale of uncertainties, competitive interactions and risks prevail, and the difficulty to make reasonable investment decisions is growing. The effective allocation of scarce resources can best be achieved with a sophisticated capital investment process. The process increases the probability of making relevant investments by ensuring that corporate strategy will be followed, that all investment opportunities will be considered appropriately and consistently, and that the counter-productive political aspect of informal decision-making will be minimized.

Because capital investment decisions rank among the most critical types of managerial decisions made in a firm and can have major long-term implications, both positive and negative, for the success of a firm, managers must understand how capital investment decisions are made if they are to participate in improving corporate performance.

Researches on capital budgeting and investment decisions in Nigeria have concentrated on the techniques used such as the payback period, net present value, internal rate of return, accounting rate of return, profitability index, etc. They established that Nigerian companies actually adopted one or more of these techniques but the outcomes have not been adequate.

Capital budgeting is becoming increasingly more important as a kind of managerial tool in recent years. One important responsibility of a financial manager is to choose investments with satisfactory cash flows and rates of return. It therefore follows that a financial manager must be able to decide whether an investment is worth undertaking and be able to choose intelligently among two or more alternatives. To do this, a procedure called capital budgeting is used to compare, evaluate and select the desired project or investment, Graham and Harvey (2001).

Making correct capital budgeting and investment decision (e.g. whether to accept or reject a proposed project), often requires recognising and correctly estimating the potentialities associated with projects. Inadequate evaluations and decision tools risk the possibility of applying scarce resources to areas which provide a return less than the cost of capital, resulting in a destruction of value, Brigham (1992) [3].

Most of the time, firms are attracted to any market opportunity or projects which will increase the owners' equity. However, due to limitations of the new projects and availability of funds, management needs to use capital budgeting techniques to determine which projects will achieve the best return over an applicable period of time, Nasser (2010) [4]. He further summarised the procedures for capital budgeting as involving the accurate estimation of the project cost, correctly forecasting its cash flows, evaluating the associated risks, calculating the firm's cost of capital and using these to determine the present and net present values of the project.

A given Nigerian manufacturing firm operates in an environment where accurate and reliable data are inadequate. The infrastructures needed to support its investments are weak and limited while its capacity to hire and retain sufficiently qualified personnel is hampered by lack of funds. This economic scenario poses a lot of challenges to the ability of the firm to correctly budget for its long-term expenditure that determines its survival and growth. It is for this reason that this study sets out to evaluate the process of capital budgeting and investment decisions in the selected Nigerian firms with a view to unveiling the factors that drive the processes and making recommendations that will engender better results.

### 1.1. Statement of the Problem

Capital investment decisions rank among the most critical types of managerial decisions made in a company and can have major long-term implications, both positive and negative. For the success of a company, managers must understand how capital investment decisions are made if they are to participate in improving corporate performance.

The challenge faced by empiricists when testing for the presence and impact of managerial biases on capital budgeting and investment decisions is to develop a plausible measure of their biases. Although managerial overconfidence is likely to lead firms to overinvest, simply uncovering incidences of overinvestment to prove or disprove any behavioural theory of capital budgeting and investment decisions-making is generally insufficient. The reason is simple; many alternative theories revolving around asymmetric information or agency arguments can lead to the same predictions, Stein (2003) [5].

As such, in order to make a convincing case about behavioural influences on capital budgeting, researchers must associate some measure of overconfidence with firms' eventual investment decisions and the outcome of these decisions. For a long time, such overconfidence were hard to find in finance, especially for agents making important decisions within corporations.

As Stein (2003) [5] argues, ample evidence from psychology shows that individuals tend to be biased in their estimates of probabilities and that these biases affect their economic decisions. For the most part, however, the lack of direct overconfidence measures prevented empiricists from making a convincing case about the effects of this bias on capital budgeting decisions. The effects of overconfidence and optimism on capital budgeting points to the tendency of managers to overestimate project cash flows. This leads to overinvestment, especially if firms do not adopt any control mechanisms aimed at trimming estimated cash flows. A natural instrument to counterbalance the inflated cash flows resulting from the behavioural biases of decision-makers is the discount rate that they use to calculate net present values. More specifically, the prescription of an inflated discount rate to calculate a project's net present value should serve to reduce the effect of the manager's bias on his cash flow estimates.

In this circumstance, though the sampled firms budget for their capital expenditure using the recognised investment appraisal methods, their investment decisions have not been as accurate as expected because the very economic factors that were used could not be properly controlled in an uncertain business environment in which they operate. The outcomes of their investment decisions have led to huge losses, downsizing, declining capacity utilization and in some cases, closure of operations.

### 1.2. Research Objectives

The five (5) main objectives the researcher sets out to achieve through this study are as follows:

- 1) To identify the extent to which Nigerian manufacturing firms apply capital budgeting processes in their decisions to acquire long-term assets.
- 2) To examine the processes and procedures followed in the firm's decision to commit current funds into the acquisition of long-term assets.
- 3) To enquire into the organizational structure in place in respect of making capital investment decisions for

the firm.

4) To determine the investment appraisal method(s) that is most popular among Nigerian manufacturing firms.

5) To examine the extent to which the economic environment affects the firm's capital budgeting and investment decisions.

### 1.3. Research Questions

The researcher wishes to use this study to provide answers to the under listed five (5) questions.

- 1) To what extent does your firm apply capital budgeting in its decisions to acquire capital assets?
- 2) Does your firm follow any laid down rules in its decision to commit current funds into the acquisition of long-term assets?
- 3) Who takes the final decision on whether or not the firm should acquire its long-term assets?
- 4) Which among the recognized investment appraisal techniques does your firm commonly use when budgeting for capital expenditure?
- 5) How has the economic environment affected the outcomes of your firm's capital budgeting and investment decisions?

### 1.4. Research Hypothesis

Based on the enormous challenges posed by capital budgeting and investment decisions on the profitability, survival and growth of a given firm, the hypothesis of this study is as follows:

**H<sub>0</sub>:** The economic environment in which the firm operates does not significantly affect the outcome of its capital budgeting and investment decisions.

**H<sub>i</sub>:** The economic environment in which the firm operates significantly affects the outcome of its capital budgeting and investment decisions.

## 2. Literature Review

The economists usually reserve the term investment for transactions that increase the magnitude of real aggregate wealth in the economy. This includes the purchase (or production) of new real durable assets such as factories and machines, Parker (2010) [6]. Jiambalvo (2001) [7] in establishing the strong relationship between capital budgeting and investment decision wrote thus: "investment decisions involving the acquisition of long-lived assets are often referred to as capital expenditure decisions because they require that capital (company funds) be expended to acquire additional resources. Investment decisions are also sometimes called capital budgeting decision".

Firms generally and manufacturing firms in particular are known to have adopted some of the investment appraisal methods in selecting projects that best meet their corporate objectives. Some of the investment appraisal methods to be discussed in this study include the payback period, net present value, internal rate of return, accounting rate of return, and the profitability index. Each of these methods involves some processes that could lead to sound investment decisions and it will be seen at the conclusion of this research how diligently Nigerian manufacturing firms process their investment decisions and the factors that impact on the process.

Most academicians state that effective allocation can best be achieved with a sophisticated capital investment process. They assume that a sophisticated process increases the probability of making relevant investments by ensuring that corporate strategy will be followed, that all investment opportunities will be considered appropriately and consistently, and that the counterproductive political aspect of informal decision-making will be minimized, Kersyte (2011) [8]. Because capital investment decisions rank among the most critical types of managerial decisions made in a firm and can have major long-term implications, both positive and negative, for the success of a firm, managers must understand how capital investment decisions are made if they are to participate in improving corporate performance.

Effective investment decision-making is essential to corporate survival and long-term success. These decisions help to mould firm's future opportunities and develop competitive advantage by influencing among other things, its technology, its processes, its working practices and its profitability. There are several important features for capital budgeting decision-making to be effective, Adams *et al.* (2004) [9]:

- It is dynamic, not static. It explicitly recognises that the quality of information can be improved over time. Thus capital budgeting should be a sequential, multiple decision process that integrates the information needed to obtain cash flow estimates into the financial analysis of the cash flows.
- It is linked to the strategy implementation in relation to the firm's multiple stakeholders. Therefore, project proposals should be supported by relevant non-financial data and forecasts.
- It recognises the options inherent in value-enhancing capital budgeting.
- It takes a cross-functional approach. The quality of estimates of expected cash flows and the uncertainty in cash flows are critical. Since the underlying information for these estimates come from many functions within the firm, those providing information must see themselves as strategic partners in the process.
- It views the firm's compensation system as a centrepiece of capital budgeting. Unless the way in which managers and employees are rewarded is aligned with how capital is allocated, there will always be a possibility for poor decisions.
- It stresses the importance of performance-based training. The people using capital budgeting must understand it, buy into it and implement it consistently across the entire firm. Cross-functional training designed to enhance the performance of those involved is essential.

The research of investment management literature shows that two main approaches defining capital budgeting can be distinguished: the normative approach and the process approach.

### 2.1. The Normative Approach

The normative approach represents the traditional theory on capital budgeting presenting rules on which basis the enterprise can make an investment decision. According to this approach, the emphasis is on the financial evaluation and selection of the long-term investment in assets, and the development of advanced capital budgeting techniques and their application in various situations are key issues, Madhani and Pankaj (2008) [10], Angelou and Economides (2009) [11].

Although rigorous evaluation tools are important components of a sophisticated capital budgeting process, investment success depends on improving the entire process. Almost three decades ago, it was noted that too much emphasis was being placed on methods of ranking and selecting capital budgeting proposals. Focusing on the simple selection phase is myopic, and a more global approach is necessary to fully understand the capital budgeting process, Farragher *et al.* (1999) [12], Adler (2000) [13], Burns and Walker (2009) [14]. Therefore, from this point of view the capital budgeting process must be viewed in its entirety and the informational needs to support effective decisions must be built into the firm's decision support system.

### 2.2. The Process Approach

The process approach to capital budgeting endorses broader perspectives, attempting to explain the way firms actually bring into effect their investment decisions, the way the investment opportunities are identified and analysed, the way the decisions are made, the way the returns on investments are evaluated, Ducai (2009) [15]. The models deriving from the process approach are mostly based on extensive case studies achieved in the enterprises to identify the decisive stages related to the investment opportunity. Therefore the scientific literature on the subject tends to be strongly empirically oriented.

Maccarrone (1996) [16] stated that capital budgeting should be viewed in the wider context of strategic planning and identified six fundamental phases in the capital budgeting process. At first, investment opportunities are identified, then, development and evaluation are performed by collecting relevant and detailed information for each alternative, and evaluating their profitability and global attractiveness. A screening of investment proposals which have passed through the previous phase might be necessary because of financial or strategic factors. As a result, some projects might be cancelled or postponed to another planning period. Authorisation or project approval and implementation/control are the next phases. Final stage is the post-auditing, that enables the comparison of the outcomes of each project with budget targets in order to assess forecast accuracy and identify error patterns with a feedback effect on the whole decision process. Under post-audit and control, if a project does not appear to be developing as expected, the firm may want to abandon the project and reallocate its capital, Prueitt and Park (1997) [17].

Koch *et al.* (2009) [18] also listed six stages in the process as: identification, search, information acquisition, selection, financing and implementation/control. Whereas Burns and Walker (2009) [14] described the capital

budgeting process in terms of four phases: identification, development, selection and control. The identification phase comprises the overall process of project idea generation including sources and submission procedures and the incentives/reward system, if any. The development phase involves the initial screening process relying primarily upon cash flow estimation and early screening criteria.

The selection phase includes the detailed project analysis that results in acceptance or rejection of the project for funding. Finally, the control phase involves the evaluation of project performance for both control purposes and continuous improvement for future decisions. All four phases have common areas of interest including personnel, procedures and methods involved, along with the rationale for each.

As the literature review above described, various researchers have applied various labels, yet the main idea of the process sequence is almost the same and the stages/phases of the investment are, in substance, proposal initiation, proposal development, proposal management and project approval. An investment proposal is initiated in response to identification of a need or a problem. The development of the proposal includes estimation of the costs and benefits, and evaluation of alternatives. Proposal management is the guiding of the investment proposal through the organisation, culminating in project approval.

These stages have been found to occur in a bottom-top manner, with some iteration between contiguous stages. Proposals are initiated and developed by the division specialists thought to be closest to the relevant product market or operation and thus to have the best information with which to identify needs and opportunities. Division managers conduct proposal management. The participation of senior management is indirect, consisting primarily of providing the organizational structure and strategic contexts for the investment decision.

This generalised model, describing a complex multi-stage process, is the standard process model of capital investment or the Bower-Burgelman model, Maritan and Coen (2004) [19]. However, the capital budgeting process of investing in strategic projects that generate new capabilities is considerably different. Senior managers are directly involved in the definition and impetus stages of these projects as well as indirectly involved through setting the structural and strategic contexts.

### 2.3. The Organisational Structure for Effective Capital Budgeting and Investment Decisions

In Nigeria generally and Imo State in particular, studies have shown that only few firms can lay claim to having a well-developed, efficient and practical capital-budgeting plan. Due to various economic constraints faced by the Nigerian firm, structuring for effective capital budgeting process is often overlooked, not given the desired attention or jettisoned altogether. How an organisation is structured plays key roles in directing its operations, hence very vital in its decision making process. The capital budgeting process involves some levels of actions and decisions within the firm and only those firms that are properly structured get them right most of the times.

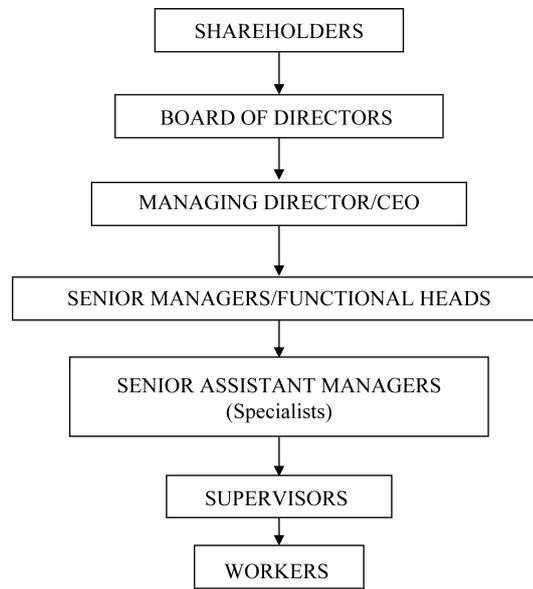
A typical capital budgeting process involves four broad stages, Pandey (1981) [1].

- Project generation.
- Project evaluation.
- Project selection.
- Project execution.

These broad stages must be supported by the equivalent levels of organisational structure to ensure smooth and successful operations. Appleby (1981) in explaining the levels of organisation wrote “that small firms have a simple organisational structure. In this structure, there is specialisation of jobs, but it is flexible. Often, jobs are made to fit the person available, example, if the sales manager has aptitude for figures, he may be placed in charge of Accounts with its obvious negative impact on the system. This is typical of manufacturing firms in Imo State as they are mainly of the small and medium size categories; they lack adequate resources needed to employ the relevant personnel. In this type of structure, rules are few and decisions are largely based on experience.

As the firm expands, more specialists and managers are required. At this level of organisation, duties are more specific and the qualities and qualifications needed by the personnel for each job are less personal but strictly based on qualification, ability and capacity of the individual. Detailed rules governing all aspects are formulated to guide managers in the running of their departments.

A typical structure of the firm that guides its operations including capital budgeting and investment activities is shown in **Figure 1**.



**Figure 1.** A typical organisational structure. Source: Appleby, R.C. (1981) [20]. Modern business administration, 3rd edition.

- **SHAREHOLDERS:** They contribute their fund (capital) to establish the firm and do not take part in the day to day running of the business of the firm.
- **BOARD OF DIRECTORS:** They establish the corporate objectives of the firm and make strategic corporate decisions.
- **MANAGING DIRECTOR/CHIEF EXECUTIVE OFFICER (CEO):** Operates business in order to accomplish corporate objectives.
- **SENIOR MANAGERS/FUNCTIONAL HEADS:** Co-ordinate activities to attain corporate objectives.
- **SENIOR ASSISTANT MANAGER (Specialists):** They assist senior managers and act as their deputies. They provide specialists' inputs into the operations of their departments/units.
- **SUPERVISORS, example, Foremen:** They work to put Management's plan into effective action, allocating individual work and ensuring that they are accomplished.
- **WORKERS:** They carry out the instructions of their supervisors and work to translate corporate plans into tangible results.

Generally speaking, for any firm to be effective, its structure must be adequate and duties at each level properly specified, recognized and respected. However, the nature of operations of an organisation dictates the structure that will effectively drive it. For manufacturing firms, the functional approach has been widely recommended, and the functional departments that are found under the control of the managing director/chief executive officer are as shown in **Figure 2**.

The structure which is typical of a manufacturing firm harmonises the activities of individual functions towards achieving the corporate strategic and tactical plans. They combine their know-how to effectively drive the hierarchy of plans of the firm. The inadequacies of organisational structure in the sampled Nigerian firms adversely affected their overall performances.

#### 2.4. Organisational Structure for the Finance Function

Since capital budgeting and investment decision in a firm is a major function of the finance department, it follows that a well structured and properly staffed finance function holds the key to the realisation of this very corporate objective. Ross *et al.* (2001) [21] demonstrated a balanced finance department required in a good organisational structure (**Figure 3**).

The essence of a well defined organisational structure for the finance department is to support the implementation of capital expenditure and project control with particular reference to the financial procedures that may be

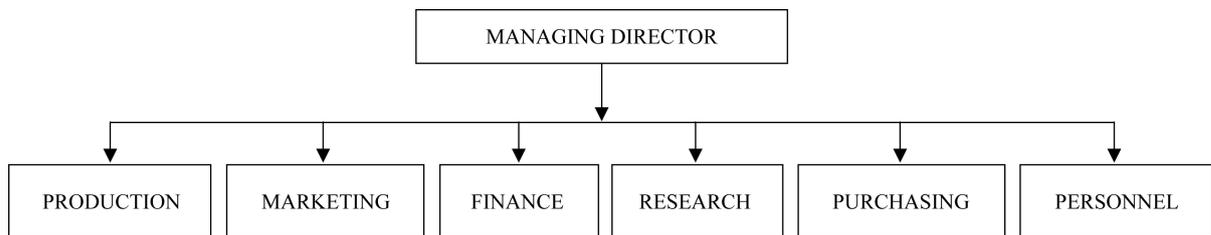


Figure 2. Functional approach to organisational structure.

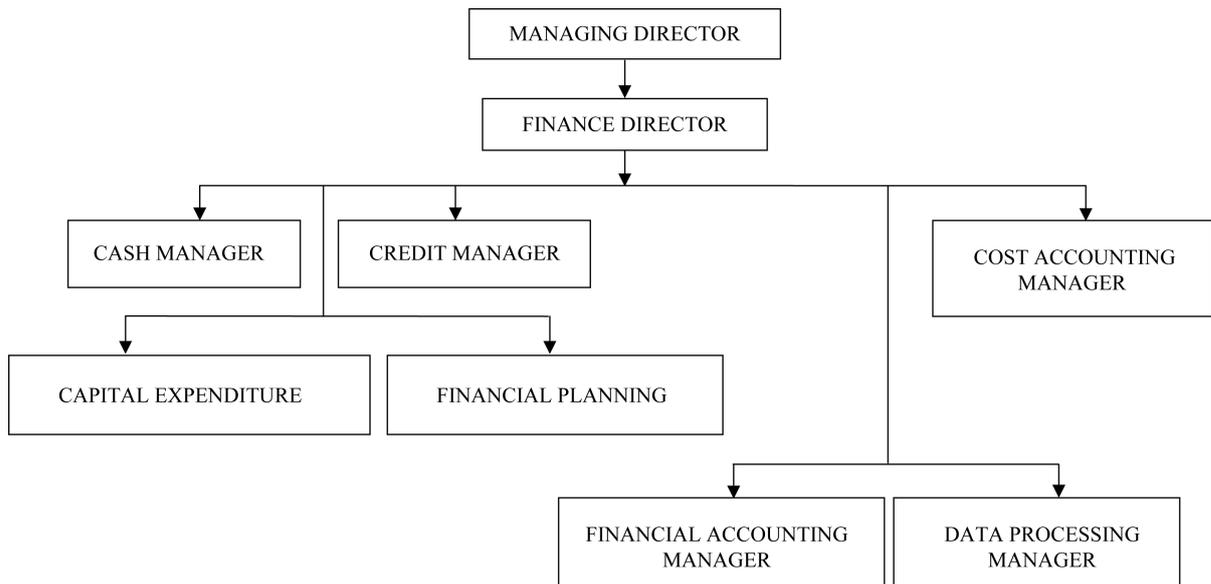


Figure 3. Organisational structure for the finance department. Source: Ross *et al.* (2001) [21]. Fundamentals of corporate finance.

adopted to ensure proper project authorisation and evaluation; measure progress at all stages of completion and report to management information on projects as an aid to their successful completion or modification, Norman Thornton (1978) [22].

### 3. Research Methodology

It is true that an empirical research work cannot be achieved by mere classroom work only. Some special methods are usually adopted in such a study to arrive at some conclusions at the end. Consequently, some special data gathering techniques which relate to the nature of the study (Capital Budgeting and Investment Decision in Nigeria with focus on some manufacturing firms in Imo State) have been adopted.

#### 3.1. Research Design

The survey research method has been adopted in this study. Anyanwu (2000) [23] defined the survey method of research as the investigation of the behavior, opinion or other manifestations of a group of people by questioning them. The survey may involve all or some of them and hence the associated concepts of population and sampling.

#### 3.2. Sampling Design/Plan

Data collection for the research work is made from two main sources, namely:

- Primary sources, and
- Secondary sources.

**Primary Sources:** These are from questionnaires administered on the staff of the selected manufacturing firms located in Imo State. Questionnaire is therefore the major primary source of data for this research work. The researcher designed questions which were administered on the relevant staff of the eight (8) manufacturing firms sampled in the course of the study.

The questions were structured so as to obtain direct answers from the respondents using simple words they could easily understand, hence the reasonably high participation (95%) achieved. The nature of this topic necessitated the use of questionnaire because in this part of the world corporate financial information are not easily disclosed to non staffers; in some instances, some of the employees are not privileged to have to have access. Those who responded did so because of the confidentiality associated with the use of questionnaire.

**Secondary Sources:** These are from already existing materials which are relevant to the topic of the study. Data were mainly sourced from the review of available relevant documents and these included textbooks, journals, seminars and workshop papers, research work, among others.

### 3.3. Sampling Unit

The population covered in this study comprises of thirty (30) staff from each of the eight sampled manufacturing firms, the representation composed of the following:

- Finance Section
- Productive Section
- Personnel Section
- Marketing Section

### 3.4. Sampling Size

The simple random sampling procedure was used to select the sample from the population in each of the eight firms. The sample was randomly selected and the breakdown of sample figures achieved is as stated below:

- |  |    |
|--|----|
| • Finance Section                        | 15 |
| • Production Section                     | 8  |
| • Personnel Section                      | 4  |
| • Marketing Section                      | 3  |
| • Total respondents sampled in each firm | 30 |

Therefore, the researcher sampled thirty (30) staff from each of the eight selected manufacturing firms, this gives a total sample size of two hundred and forty (240) staff used for this study.

### 3.5. Sampling Procedure

The sampling procedure adopted for this study was a simple-random sampling that is to say that a frame/map of the whole departments was made and replacement was avoided. The simple random sampling, a probability sampling method allows the samples to be selected with a known probability. In probability sampling, each element/person has a known (non-zero) chance of being considered.

### 3.6. Method of Data Analysis

The methods that were adopted in analyzing the data collected from the questionnaire instrument are:

- The percentages;
- The descriptive statistics
- The t-test of population mean, and
- The Z-test of difference of means.

Computer application packages SPSS and MS Excel were used in the data analysis.

## 4. Analysis, Results/Findings, Discussions

This section deals with the presentation of data collected from primary sources and analysis represented in tabular form. It emphasizes on the presentation of data, graphical representation of the data and appropriate tests of hypotheses stated in chapter one.

The research was carried out to evaluate capital budgeting and investment decisions in Nigeria with particular reference to manufacturing firms in Imo state. Eight out of the identified fourteen firms were surveyed. A sample of 240 respondents was selected for this research. Prior to the main survey, a preliminary study (pilot study) was conducted as reported in the dissertation proposal.

#### 4.1. Analysis/Results

The records of the returned questionnaire are here under presented in a tabular format. Of the 240 questionnaire administered, 228, representing 95% were completed and returned.

**Tables 1-16** show the frequencies and percentages of the responses of the respondents with respect to the questions on the questionnaire.

**Table 1.** Duration of service.

	Frequency	Percent	Valid Percent	Cumulative Percent
LESS THAN 2 YEARS	20	8.8	8.8	8.8
2 - 4 YEARS	42	18.4	18.4	27.2
Valid 5 - 7 YEARS	55	24.1	24.1	51.3
8 - 10 YEARS	51	22.4	22.4	73.7
MORE THAN 10 YEARS	60	26.4	26.4	100.0
Total	228	100.0	100.0	

Source: Sample survey, 2013.

#### **Interpretation:**

Majority of the respondents have served their firms for more than five (5) years.

**Table 2.** Section/department of respondent.

	Frequency	Percent	Valid Percent	Cumulative Percent
Finance Section	115	50.4	50.4	50.4
Valid Productive Section	60	26.3	26.3	76.8
Personnel Section	32	14.0	14.0	90.8
Marketing Section	21	9.2	9.2	100.0
Total	228	100		

#### **Interpretation:**

50.4% of respondents are from the finance section, 26.3% of respondents are from the production section, 14% of respondents are from the personnel section and 9.2% of respondents are from the marketing section.

**Table 3.** Does your firm apply capital budgeting process in making investment decisions?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid YES	172	75.4	75.4	75.4
NO	56	24.6	24.6	100.0
Total	228	100.0	100.0	

Source: Sample survey, 2013.

**Interpretation:**

75.4% of respondents indicated that capital budgeting process is applied in making investment decisions in the manufacturing firms considered.

**Table 4.** To what extent does your firm apply capital budgeting in its decisions to acquire capital assets?

	Frequency	Percent	Valid Percent	Cumulative Percent
	To a Great Extent	91	39.9	39.9
	To a Less Extent	15	6.6	46.5
Valid	In Very Few Cases	10	4.4	50.9
	As Determined by the MD/CEO	107	46.9	97.8
	Not Applicable	5	2.2	100.0
Total		228	100.0	

Source: Sample survey, 2013.

**Interpretation:**

39.9% of respondents indicated that capital budgeting process is applied in making investment decisions to a great extent and 46.9% indicated that capital budgeting process is applied in making investment decisions as deemed fit by the MD/CEO in the manufacturing firms considered.

**Table 5.** Which one among the listed techniques does your firm commonly use when budgeting for capital expenditure?

	Frequency	Percent	Valid Percent	Cumulative Percent
	Payback Period	90	39.5	39.5
	Accounting Rate of Return	40	17.5	57.0
Valid	Internal Rate of Return	30	13.2	70.2
	Net Present Value	46	20.2	90.4
	Profitability Index	20	8.8	99.1
	None of the Above	2	0.9	100.0
Total		228	100.0	

Source: Sample survey, 2013.

**Interpretation:**

39.5% of respondents indicated that payback period technique is employed by their firm when budgeting for capital expenditure. 17.5% use Accounting rate of return, 13.2% use internal rate of return, 20.2% use Net present value and 8.7% use Profitability Index in the manufacturing firms considered.

**Table 6.** Which of the above mentioned methods do you recommend to your firm as the most appropriate in making investment decision?

	Frequency	Percent	Valid Percent	Cumulative Percent
	Payback Period	75	32.9	32.9
	Accounting Rate of Return	40	17.5	50.4
Valid	Internal Rate of Return	36	15.8	66.2
	Net Present Value	50	21.9	88.2
	Profitability Index	27	11.9	100.0
Total		228	100.0	

Source: Sample survey, 2013.

**Interpretation:**

32.9% of respondents indicated that they would recommend the payback period technique to their firm as the most appropriate technique when making investment decisions. 21.9% would recommend Net Present Value 17.5% would recommend Accounting Rate of Return, 15.8% favoured the Internal Rate of Return while 11.9% recommended the Profitability Index.

**Table 7.** Which of the under listed factors influences your firm in deciding to invest in long-term assets?

	Frequency	Percent	Valid Percent	Cumulative Percent
Availability of Funds (only)	15	6.6	6.6	6.6
Overall Corporate Need (Only)	20	8.8	8.8	15.4
Valid Proprietor' Need (Only)	50	21.9	21.9	37.3
Market Need (Only)	10	4.4	4.4	41.7
Investment Climate (Only)	10	4.4	4.4	46.1
All of the Above	123	53.9	53.9	100.0
Total	228	100	100	

Source: Sample survey, 2013.

**Interpretation:**

53.9% of respondents indicated that all the listed factors influenced their firm's decision in long term investment. 21.9% agreed that the need of the proprietor is the major factor.

**Table 8.** Does your firm follow any laid down rules in its decision to commit current funds into the acquisition of long-term assets?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid YES	72	31.6	31.6	31.6
NO	48	21.1	21.1	52.6
NO IDEA	80	35.1	35.1	87.7
NEUTRAL	28	12.3	12.3	100.0
Total	228	100.0	100.0	

Source: Sample survey, 2013.

**Interpretation:**

35.1% of the respondents indicated that they have no idea if laid down rules are adhered to in the firm's decision to commit current funds into the acquisition of long term assets. 31.6% said yes, 21.0% said no while 12.3% are indifferent in the manufacturing firms considered.

**Table 9.** Who takes the final decision on whether or not the firm should acquire its long-term assets?

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid MD/CEO	138	60.5	60.5	60.5
Board of Directors	72	31.6	31.6	92.1
Management Committee	18	7.9	7.9	100.0
Total	228	100.0	100.0	

Source: Sample survey, 2013.

**Interpretation:**

60.5% of respondents affirmed that the MD/CEO takes the final decision on whether or not the firm should acquire long term assets. 31.6% indicated that the decision is taken by the board of directors while 7.9% said that the management committee has a role to play in such final decision in the manufacturing firms considered.

**Table 10.** How do you describe the economic environment of Nigeria in general and Imo State in particular as it affects your firm's operations?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Harsh	98	43.0	43.0	43.0
	Discouraging	118	51.8	51.8	94.7
	Encouraging	12	5.2	5.2	100.0
Total		228	100.0	100.0	

Source: Sample survey, 2013.

**Interpretation:**

51.8% of respondents affirmed that the economic environment is discouraging to their firms operations while 43% indicated that the economic environment is harsh to their firms operations in the manufacturing firms considered.

**Table 11.** The economic environment in which the firm operates does not significantly affect the outcome of its capital budgeting and investment decisions?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	13	5.7	5.7	5.7
	Agree	25	11.0	11.0	16.7
	Disagree	73	32.0	32.0	48.7
	Strongly Disagree	117	51.3	51.3	100.0
Total		228	100.0	100.0	

Source: Sample survey, 2013.

**Interpretation:**

51.3% of respondents strongly disagreed that the economic environment in which the firm operates does not significantly affect the outcome of its capital budgeting and investment decision. 32.0% disagreed, 11.0% agreed and 5.7% strongly agreed.

**Table 12.** Do you agree that a good organizational structure plays positive role in your firm's capital budgeting processes?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	118	51.8	51.8	51.8
	Agree	98	43.0	43.0	94.8
	Disagree	7	3.1	3.1	97.9
	Strongly Disagree	5	2.1	2.1	100.0
Total		228	100.0	100.0	

Source: Sample survey, 2013.

**Interpretation:**

51.8% of respondents strongly agreed that a good organisational structure plays positive roles in firm's capital budgeting processes. 43.0% agreed, 3.1% disagreed and 2.1% strongly disagreed.

**Table 13.** There is a significant relationship between capital budgeting and the firm's organisational structure.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	104	45.6	45.6	45.6
	Agree	85	37.3	37.3	82.9
	Disagree	25	11.0	11.0	93.9
	Strongly Disagree	14	6.2	6.2	100.0
Total		228	100.0	100.0	

Source: Sample survey, 2013.

**Interpretation:**

45.6% of respondents strongly agreed that there is a significant relationship between capital budgeting and the firms' organisational structure. 37.2% agreed, 11.0% disagreed and 6.2% strongly disagreed. 82.9% cumulatively agreed on this.

**Table 14.** The decision as to whether or not the firm should invest in long-term assets is not the preserve of any officer of the firm to make.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	35	15.4	15.4	15.4
	Agree	44	19.3	19.3	34.6
	Disagree	84	36.8	36.8	71.5
	Strongly Disagree	65	28.5	28.5	100.0
Total		228	100.0		

Source: Sample survey, 2013.

**Interpretation:**

36.8% of respondents disagreed that the decision as to whether the firm should invest in long term assets or not is not the preserve of any officer of the firm to make. 28.5% strongly disagreed, 15.4% strongly agreed and 19.3% agreed. 65.3% of the respondents cumulatively disagreed with this while 34.7% agreed.

**Table 15.** Your firm's employees are adequately qualified for the job they do as regards capital budgeting.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	19	8.3	8.3	8.3
	Agree	33	14.5	14.5	22.8
	Disagree	75	32.9	32.9	55.7
	Strongly Disagree	101	44.3	44.3	100.0
Total		228	100.0		

Source: Sample survey, 2013.

**Interpretation:**

44.3% of respondents strongly disagreed that most staff employed in the firm are adequately qualified to handle budgeting. 8.3% strongly agreed to this. 77.2% of the respondents cumulatively disagreed with this.

**Table 16.** What percentage could you quantify the economic environment of Nigeria in general and Imo state in particular as it affects your firm's operations descriptive statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
Percentage	228	20	58	28.45	14.361

Source: Sample survey, 2013.

**Interpretation:**

The responses were graded from 0% to 100% indicating what the economic environment is to the firm's operation. 100% indicates a perfect encouraging situation and 0% indicates a perfect harsh condition. The minimum response was 20% and the maximum was 58%. The mean of all observations was 28.45% and the standard deviation was 14.361.

**4.2. Test of Hypothesis on the Population Means**

Test Statistic is

$$Z = \frac{\bar{X} - \mu_0}{s/\sqrt{n}}$$

where;  $\bar{X} = 28.45$  (sample mean)

$$\mu_0 = 50$$

$$s = 6.361 \text{ (sample standard deviation)}$$

$$n = 228$$

**Decision:** We shall reject  $H_0$  if  $Z_{\text{calculated}} > Z_{\alpha}$ , otherwise, we do not reject  $H_0$ .

$$Z_{\alpha} = 1.65$$

$$\alpha = 0.05$$

$$Z = \frac{28.45 - 50}{14.361/\sqrt{228}} = -22.66$$

**Conclusion:** Since the  $|Z| > Z_{\alpha}$ , we shall reject  $H_0$  and thus conclude that the average effect of economic environment on firm's operations less than 50% confirming that the economic situation is discouraging and not favourable to the firms' operations.

**4.3. Findings**

- 1) The research elicited more interest among the long-serving staff as 166 or 73% of the 228 that returned the questionnaire have served their firms for 5 years and above.
- 2) A little above 50% of the respondents are staff of the finance sections of the firms sampled.
- 3) Over 75% of the firms surveyed apply capital budgeting process in making investment decision.
- 4) The extent to which capital budgeting is applied in the decision to acquire capital assets across the firms is largely determined by the Managing Director/Chief executive officer.
- 5) The payback period and Net present value appraisal techniques are more preferred by the firms.
- 6) Most of the staff sampled recommended payback period to their firms.
- 7) The Net present value also enjoys their recommendation.
- 8) All the listed factors: overall corporate interest, availability of funds, investment climate and market need influence the firm's decision to invest in long-term assets, though the proprietor's need seems to be the overriding factor.
- 9) The firms follow some laid down rules in their decision to commit current funds into the acquisition of long-term assets but many of their staff claimed ignorance of the existence of those rules.
- 10) Over 60% of those sampled said that the Managing Director/Chief Executive Officer takes the final decision on whether or not the firm should acquire long-term assets.
- 11) The economic environment in which the firms operate is both harsh and discouraging to their operations.
- 12) More than 83% of the respondents disagreed with the assertion that the economic environment in which the firm operates does not significantly affect the outcome of its capital budgeting and investment decisions.
- 13) Over 94% of the respondents agreed that a good organisational structure plays positive role in their firm's capital budgeting processes.
- 14) 83% of respondents agreed that there is a significant relationship between capital budgeting and the firm's organisational structure.
- 15) Majority of the respondents disagreed that the decision as to whether or not the firm should invest in long-term assets is not the preserve of any officer of the firm to make.

16) Only about 23% of the respondents agreed that employees of the firm are sufficiently qualified for the job they do as regards capital budgeting.

#### 4.4. Discussion of Findings

The responses to the research questions have been analyzed using simple percentage ratios. The analysis show that the responses and the results from the test of hypotheses flow in the same direction.

Most of the firms surveyed belong to the small and medium sized categories. Out of the listed 14 active manufacturing firms in Imo State, only two are public limited liability companies whose shares are quoted on the Nigerian Stock Exchange market. The remaining 12 are private limited liability companies whose shares are not so quoted with all the attendant limitations in relation to access to their financial information, their ability to access funds, capacity to invest in long-term assets, etc.

The firms are mainly managed by their owners who exercise absolute control over their operations, this negates the principle of participatory management which is needed to drive effective capital budgeting process. This is aptly demonstrated in **Table 4** where the result is that majority of the firms apply capital budgeting process as determined by the Managing Director/Chief Executive Officer. The operations of these firms do not necessarily lend themselves to proper internal governance as the wish of the owner-manager prevails most of the time. This is a major drawback on effective capital budgeting process which entails a stage-by-stage approval process to be properly actualized.

There were instances where the owner would buy an equipment at an exhibition he attended without consulting the production manager. The equipment when installed, may not fit into the production programme of the firm, the result is that the expected returns will not materialize and corporate objective not achieved.

It is noticeable from the results in **Table 5** and **Table 6** that most of the firms prefer to use the payback method which has a serious flaw. The Payback method ignores the time value of money, though it is easy to use and simple to calculate and understand. Small business owners rely on Payback period for their capital budgeting decisions because the principles underlying it are easily understood. The payback period shows the small business owner how long it will take him to payback his investment in the project. This concept is more meaningful to a small business owner like a typical Imo state based manufacturer than the other methods, particularly because of the liquidity of the firm, rather than the return on investment. Because cash flows in the distant future are inherently risky, a shorter payback period implies that a project is less risky, Brigham, *et al.* (1992) [3]. He continued; the problems with the payback period are abundant. The payback method ignores those cash flows beyond the payback period, and ignores the time value of money. By ignoring these principles, the payback method does not maximise the return on investment of the firm.

Because of the unpredictable investment climate in Nigeria, the sampled firms continue to prefer the quick recovery of their invested capital to future return on investment. The result is that these firms do not engage in long term planning, and as such are not concerned with long range capital budgeting techniques. In Nigeria, this is justified given the dearth of adequate and reliable financial data, lack of investible funds and such other environmental factors that impact negatively on the business of the firm, Akande (2011) [24].

The more sophisticated investment appraisal techniques like the net present value, internal rate of return, profitability index, accounting rate of return, etc., are not as widely recommended as the payback period despite their obvious advantages because they require the input of experts which the firms are unable to employ.

Since it is the Managing Director/Chief Executive Officer that determines the choice of technique rather than the nature of operation, as depicted in **Table 7**, the result is that even if there are laid down rules guiding capital budgeting and investment decisions in the firms, majority of the employees do not key into it because they are not usually carried along. If the employees do not take active part in the capital budgeting process as suggested in the results, they will not be motivated enough to ensure that expected results are achieved.

The fiscal and economic challenges faced by Nigerian firms were listed by the Director General of the Manufacturers' Association of Nigeria (MAN), Akande, O. O. in the MAN's 40<sup>th</sup> annual report and accounts (2011) [24] to include: weak infrastructure particularly in the area of power supply, inconsistency in fiscal, monetary and trade policies, multiplicity of taxes/levies, dearth of long-term fund/high cost of fund, persistence congestion at the sea ports, etc.

These economic challenges have serious negative effects on the firms' capacity utilization as shown on **Figure 4**.

S/N	SECTOR	Capacity Utilization (Dec. 2010)	Capacity Utilization (Dec. 2011)
1	Food, Beverage and Tobacco	40.3	53.96
2	Textile, Apparel, and Footwear	20	54.22
3	Wood and Wood Products	63.3	49.3
4	Pulp, Paper, Publishing	63.8	52.93
5	Chemical and Pharmaceutical	45.05	45.62
6	Non-Metallic Products	47.9	50.38
7	Domestic/Industrial Plastic and Rubber	59	51.36
8	Electrical and Electronics	29.3	46.02
9	Basic Metal, Iron and Steel	50.3	41.53
10	Motor Vehicle and Miscellaneous Assembly	55.7	43.98
	Grand Total	47.47	48.93

Source: 40<sup>th</sup> annual report and accounts 2011; Manufacturers' association of Nigeria.

**Figure 4.** Average capacity utilization of Nigerian manufacturing firms in 2010 and 2011.

In support of his views, Akande pointed out that average electricity supplied to industrial consumers per day in hours dropped from 9.7 hours in 2010 to 6.7 hours in 2011. Again, average interest rate increased from 18.7% in 2010 to 22.03% in 2011.

The combined effects of all the economic factors mentioned above are that forecasting which is the basis of capital budgeting becomes difficult and estimates used in making capital expenditure decision unrealistic. Assets acquired will not be fully utilised due to policy inconsistency of the government and persistent weak infrastructure needed to drive capacity utilisation. This scenario makes capital investment very unpredictable and risky as depicted in the results shown on **Table 10** and **Table 11**.

An organisational structure defines functions, functionaries, their limits of authority and relationships. It is the people that make up an organisation, their individual and collective actions make the organisation work. Like all other operations of the firm, capital budgeting and investment decisions must be driven by the inputs of the relevant personnel properly organized and working in a synergy, hence the positive relationship established between capital budgeting and the firm's organisational structure (see **Table 12** and **Table 13**).

When an organisation is properly structured, important decisions like capital investment will not be the preserve of any officer but a result of a well coordinated effort of a group of well motivated employees working towards achieving a corporate objective. The result shown in **Table 14** contradicts this collective approach to management through the instrumentality of an effective organisational structure. Over 65% of the respondents disagreed with the statement that "the decision as to whether or not the firm should invest in long-term assets is not the preserve of an officer of the firm to make". This is supported by another 77% who also disagreed that the firm's employees are adequately qualified for the job they do as regards capital budgeting and investment decision-making as shown on **Table 15**.

These results support the already established fact that the capital investment decisions these firms make depend largely on the personal perception of the owner-manager and not necessary as dictated by the nature of the assignment on hand. It is usually the owner-manager that determines how much to invest, how to invest, where to invest and when to make the investment. The hiring of employees in most of these firms do not depend on qualifications and skills but on some other considerations like relationship, tribe, readiness to accept low salary, among others.

## 5. Summary

From the computations and analysis of data, the findings are summarized as follows:

- 1) Manufacturing firms in Imo State do budget for their capital investments.

- 2) The payback method is the most commonly applied by the firms.
- 3) The proprietor's need is the most important factor in the decision of the firm to invest in long-term assets.
- 4) Some laid down rules are followed in the firms' capital budgeting and investment decision process but such rules are not properly brought to the knowledge of the relevant the staff.
- 5) It is the managing director/chief executive officer that determines the nature and magnitude of the firm's capital budgeting and investment decisions.
- 6) The Nigerian economic environment does not encourage the operations of the firm's including their capital budgeting and investment decision processes.
- 7) A good organisational structure has a significant positive relationship with the firm's ability to budget properly for its capital investments.
- 8) Lack of sufficiently qualified personnel in the employment of the firms impact negatively on their choice and application of capital budgeting and investment appraisal techniques.

## 5.1. Conclusion

Managers tend to be overconfident in that they overestimate the precision of their information and their ability to control risk. Firm managers are especially prone to such a bias as their overconfidence leads them to decision-making roles and proves to be difficult to learn away in an economic environment with infrequent and imprecise feedback.

In capital budgeting situations, overconfidence leads managers to overinvest. As the existing empirical literature shows, overconfidence leads managers to invest free cash flows more rapidly, to start more new firms, invest in more novel projects and to stick with an unprofitable investment policy for too long. Learning, inflated hurdle rates and contractual incentives can reduce the investment distortions that result from managerial overconfidence but do not appear sufficient to eliminate them. The literature on the impact of managerial biases on capital budgeting is still relatively young. Most of the progress on directly linking proper measures of executive overconfidence to their firm's investment policy has been made in the last five to ten years. In this author's view, the fact that managerial traits seem to systematically and persistently correlate with the investment policies of firms remains a puzzle in need of more research. In addition to a deeper exploration of the interaction between contractual incentives, overconfidence and investment policy, a productive direction is to study the entire set of tradeoffs that overconfidence brings to an organization. That is, the overaggressive investment policy that comes with managerial overconfidence could be the cost for larger benefits elsewhere in the firm. For example, recent work on the leadership role of overconfident agents seems to indicate that overconfidence is valuable for the internal workings of the firms. In the same vein, overconfidence can increase efficiency, the likelihood of survival and economic growth. In this light, the overall net present value of overconfidence in their firms is possibly positive, despite the capital budgeting and investment decisions mistakes that they prompt.

Though, the firms understand the obvious advantages of the net present value and other techniques over the payback method, the later is commonly applied by the firms sampled because of the nature of their economic environment, their small and medium size, lack of sufficiently qualified personnel and their weak organisational structure. In other words, they lack the very factors needed for effective capital budgeting and investment decision processes.

## 5.2. Recommendations

1) Nigerian firms should hire risk-averse managers to make investment decisions on their behalf because the manager's overconfidence serves to reduce the moral hazard that his risk aversion creates. The manager's risk aversion makes his investment decisions overly cautious, but his overconfidence provides a naturally offsetting force by making the manager think that his information and skill allow him to control risk better than he really can. Again, contractual incentives must come with a transfer of risk from the risk-neutral firm to the risk-averse manager, they are cheaper and more efficient if the manager can commit to an investment strategy that is as close to first-best as possible. This is precisely what overconfidence achieves; the biased manager naturally follows an investment policy that is more in line with the shareholders' objective, and so compensation arrangements can be more efficient.

2) Nigerian firms should also avoid mistakes when they decide to enter a new market. Firms systematically overrun their budget for new projects and overestimate their eventual market share with the effect, to properly

take their competition into account when they assess their prospects for success in a new market. The tendency of individuals to overestimate their skills relative to those of their peers can be particularly detrimental when these individuals must compete with their peers.

3) Managers should learn from the outcomes of their investment decisions and appropriately adjust their beliefs about their ability to process information. If this were the case, managers' expectations should become better calibrated over time and, as a result, they should make fewer investment mistakes. The feedback that managers get about their investment decisions should be precise, qualitative and timely.

4) Government at all levels should put in place a revolving fund to meet the long-term funding needs of the manufacturing sector which most banks are unwilling to provide at affordable interest rates. This will encourage capital investments by these growing manufacturing firms resulting to the corresponding growth of the national economy.

5) The power generation, transmission and distribution installations in the country should be made to function properly to enable the firms put their capital assets into maximum use. This is the perfect way of increasing capacity utilization of Nigerian firms which is presently on the steady decline as reported by MAN.

6) The present heavy tax burden on manufacturing firms resulting from the continuous imposition of taxes and levies especially by the States and Local Governments should be discouraged. Tax administration in the country should be harmonised to avoid multiplicity and encourage long-term financial planning by Nigerian firms.

7) Proprietors of manufacturing firms in Imo State should encourage the full development of the structure of their organisations with its attendant benefits which include: clear definition of functions, proper allocation of responsibilities to relevant officers, clear reporting lines and limits of authority which are the ingredients of effective and efficient management. The staff must be made aware of the policies of the firm as their full understanding thereof motivates them to put in their best towards achieving corporate objectives.

8) Firms in the manufacturing sector should engage sufficiently qualified personnel that are relevant in their drive for growth. The resort to the rule of the thumb approach to capital budgeting and investment decision process is no longer feasible in the face of the prevalent information revolution that has forced changes in the way firms operate.

### 5.3. Suggestion for Further Research

The research was conducted in Imo State which is not one of the industrial states in Nigeria. Manufacturing firms operating in Imo State belong mainly to the small and medium size category. They lack of adequate funds needed for capital investment, recruitment and retention of sufficiently qualified personnel and their organisational structures are not yet well developed. It was therefore, not easy to obtain such results that could fully describe capital budgeting and investment decision processes in Nigerian manufacturing firms.

As a result, I am suggesting that further research on the topic be carried out on manufacturing firms operating in any of the industrial states of Lagos, Rivers, Anambra, Kano or Kaduna so as to obtain a more representative result.

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