IN-HOUSE PROFESSIONALS IN PROJECT DEVELOPMENT AND IMPLEMENTATION (THE CASE OF SOME NIGERIAN UNIVERSITIES)

By

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A thesis submitted to the Postgraduate School, Ahmadu Bello University, Zaria, Nigeria, in partial fulfilment of the requirements for the degree of Master of Science (Construction Management)

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DECLARATION

I, Abubakar Sharu Abbas, do hereby declare that this thesis is the outcome of my research work spanning a period between October, 1992 to March, 1994. It has been written by me and has never been presented in any previous application for a higher degree. All quotations and sources of informations are specifically indicated or acknowledged by means of references.

A. S. Abbas
April, 1994

DEDICATION

Dedicated to my entire Family Members

CERTIFICATION

This project report titled: In-House Professionals in Project Development and Implementation (The Case of Some Nigerian Universities)" by Abbas, S. Abubakar meets the regulations governing the award of the degree of Masters of Science (Construction Management) of Ahmadu Bello University, Zaria, Nigeria, and is approved for its contribution to knowledge and literary presentation.

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ABSTRACT

The research work concerns with the study of the impact and roles of in-house professionals in the planning and development of University physical facilities in some selected Nigerian Universities, notably; the Federal University of Technology, Yola, and the University of Maiduguri.

The National Universities Commission is the main body through which the Federal Government of Nigeria channel funds into the University system. The National Universities Commission (N.U.C) which has the statutory responsibility to advise the Government on the physical needs and financing of capital projects in the Universities, has prepared some standard procedures and guidelines to be adopted by the Universities in their development strategies. The Universities on their part established Physical Planning Units (P.P.U) under the Central Administration to be in-charged with the responsibilities for the planning and implementation of the physical developments of the Universities. This is in contrast with some of the older and fairly developed Universities (so called first

generation Universities), where the Estate Departments handle all aspects of developments and maintenance of the Universities physical facilities.

The physical development of any University consists of the developments of buildings and infrastructures adequate for academic purposes. This include the planning, designing, budgetting, construction, supervision and co-ordination of the developmental needs such as teaching spaces, social and communial facilities, roads, water, electricity supply, staff and students residential facilities, etc.

The Physical Planning Units of the Universities visited were found to have some group of professionals of varied desciplines on the permanent employment of the Universities. These group of professionals are found to be engaged in one type of work or the other depending on the Calibre of the professionals and the schedule of duties defined for them by the University Administration.

The research work thoroughly examines the roles of the professionals in the development of projects

in the Universities. The work also examines the possible roles of professionals (notably in the field of construction) employed as lecturers, researchers, etc., with a view of finding how the services of such professionals (in the academics) could be utilized in the development and implementation of physical projects in the Universities.

Impact of in-house professionals on some selected projects were also assessed with respect to efficiency of execution and project cost.

The research work not only revealed how the various Universities (selected) implement their development projects using their in-house staff, but has also highlighted the vision of the National Universities Commission (N.U.C) in the development strategies of the University system. Besides, it has also brought out in clear terms, the benefits merits and demerits associated with the engagement of consultants by the Universities.

It is suggested that, given the enormous man-power and technical resources with the University

system, the ability of the Universities to look inward and make use of the competent staff within the system (be they in the Academics or Non-academics) would no doubt proof to be advantageous and may even provide some savings to the meagre resources available to the Universities.

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CHAPTER - ONE

INTRODUCTION

1.1 BACKGROUND

Organisations, particularly those established by Government and which have high building projects requirements, have the tendency of employing professionals in the field of construction to form a unit or a department within the set up. Such group of professionals is what is referred to as the "In House Professionals". In general terms they are employed and vested with the responsibility of planning, managing/co-ordinating the development of building and infrastructural works for the organisation. In practice however, their roles and levels of involvement in the development and implementation of projects varied from organisation to organisation. This research work will focus basically at identifying the role and assessing the impact of such professionals in projects development and implementation in some selected Nigerian Universities.

When professionals are employed as in-house staff in organisation, their duties and nature of

assignment are not the same even though they may be having same professional training and qualifications. Some organisations give their professionals full responsibility in all aspects of their project developments. Some may not accord such responsibilities, instead they allow them to handle post-contract duties, while consultants are hired for the pre-contract services. Some organisations, however, maintain the in-house staff only as monitoring team. What informed all these varied policies and how they affect the actual performance of professionals employed on permanent basis are some of the questions this work would identify. There is also the question as to why some organisations such as the Universities, which are endowed with qualified professionals in the academics do not often use the services of such professionals, instead engage the services of consultants.

Marsh (1978) suggested that "the extent of client organisation involvement in it's projects can be established after assessing client design, Engineering and Management resources available and how these match up to those required to meet the

objectives within the time". Whereas, Lee (1978) was of the view that where man-power is available, the clients organisation management should be given ample opportunities and encouragement to develop the know-how especially considering the cost of maintaining those personnel. Hackney (1965) on the other hand suggested that; "it is preferable to combine the talents of direct employees with those of contracted employees for overall project performance".

The views expressed above by Marsh, Lee and Hackney might have influenced organisation to adopt different policies with regard to the nature and extend of involvement of their in-house professionals in their development strategies.

1.2 STATEMENT OF PROBLEM

The physical planning of Nigerian Universities undertake building projects among others. These building projects involves the use of in-house professionals and or consultants as designers/ monitoring team.

The problems to be identified are:

(a) Whether or not in-house professionals are in practice able to meet the demands made upon them by their Universities and if not why?

(b) What types of project would require unilaterally engagement of consultants?

(c) When shall in-house professionals be supported by consultants in their duties?

1.3 AIM AND OBJECTIVES

The basic aim of the research work is to find out and propose how construction professionals employed by Nigerian Universities could be utilized in the most effective manner.

To achieve this aim, the following are the set objectives:

i. To identify the developmental processes of a building process in an organisation.

ii. To find out the criteria adopted (if any) by University in determining the role of construction professionals with respect to their duties in their organisation.

iii. To what extent are consultants engaged by Universities having in-house professionals and to see whether such establishment(s) or organisation(s) have any foreseable benefit with respect to efficiency of execution and project cost.

iv. To find out the merit and demerit of using consultants where in-house professionals are engaged in the Universities.

1.4 SCOPE AND LIMITATIONS

The work covers in-house professionals in two Nigerian Universities. These Universities were selected due to ease of data collection and the advantages of focusing on Universities are numerous among which are:

i. The Universities have crucial positions in the community particularly with regards to providing standards, guidelines and procedures to be copied by other organisations.

ii. They are better placed to put in-place the ideals and best methods of achieving set out objectives.

iii. They are more organised and more likely to adopt organised pattern of doing things.

iv. Records and data may be more organised and could be readily available than in some organisations.

v. Limiting the scope to some Universities provides a common basis for data collection and analysis.

1.5 METHODOLOGY

In order to achieve the enumerated objectives the following methods would be adopted namely:

(a) Critical study of text-books, journals, proceedings, seminar papers and other publications relevant to the subject matter.

(b) Enquiry and questionnaire about the effectiveness of the use of the in-house professionals and consultants would be administered to management personnel in Universities, some contractors undertaking University project and the National Universities Commission.

(c) Since the research work is purely qualitative conclusion would be drawn based on the findings from items (a) and (b) above.

CHAPTER - TWO

2.1 DEVELOPMENT PROCESSES OF A BUILDING PROJECT

The commencement of any building project involves a series of events occuring in sequence (one after the other), which by and large is common to all building projects. Looking at the development processes of the building project, one notices that a project goes through major stages, with each stage beginning after the preceeding one is completed. Although, sometimes final details have to be worked out while the next stage is in progress.

A typical construction process, broadly speaking have four major components: the identification of need, the preliminary planning stage, the design stage and the construction stage. Each of these stages has a number of tasks to be satisfied, when projects are been contemplated by an organisation either for domestic consumption or for an anticipated external requirements (commercial purposes).

The magnitude of the building desired depends on the financial resources at the disposal of the client. When finance was not a problem, the size

and standard of projects would be decided by other factors such as aesthetics consideration or the life span of the building. The location of the project is fundamental to it's value particularly those building development considered for commercial purposes.

When the need is identified the next stage in the development processes of the building project is the preliminary planning stage which involves determining of funtional requirement, material selection, suitability of location, alternate structural geometry, site utilization, cost and value assessment and the evaluation of benefits. The completion of the preliminary planning stage marks the beginning of the design stage then the construction stage. How each stage leads to the next are explained further in the subsequent pages.

2.2 IDENTIFICATION OF NEED AND SOURCES OF FUNDS

The decision to put up a building project must be based on the desire to satisfy a particular need; the need could be social, political or economical. The decision must also be based on the financial resources at the disposal of the building owner.

The client cannot select an outside project team in most cases until the budget or at least the initial planning has been approved. Each organisation has its own budgetary approval process. In terms of project time table, the budgetary process is one which should be understood. According to Kavanagh et al (1978), "The budget is the formal point in time at which the project is identified and the point in time at which it is authorised in terms of ever important funding".

From the university system point of view; the National Universities Commission (N.U.C) has the statutory responsibility to advise the Federal Government on the physical needs and financing of capital projects in the Universities. The National Universities Commission (N.U.C) allocates annually Block 'Grants' from the Government for recurrent and capital expenditures.

The University's Master Plan contains the long term strategic, academic and physical objectives of the University and establishes its ultimate size. From the Universities Master Plan an 'Action Plan' is drawn to take into account the level of funding for capital developments. The

implementation of each 'Action Plan' is scheduled to synchronise with the routine of the annual financial cycle of the Government. In the words of the Executive Secretary of the National Universities Commission (N.U.C) "... the important step in the project implementation by the University is the formal approval of the National Universities Commission".

2.2.1 Brief and Conceptual Planning

Concept planning begins after the client has identified the need for a new development or for a capital improvement. It begins with the definition of the project as a possible consideration and is completed with its authorisation in form of budget backed by fund appropriation. The definition of the work is basically the responsibility of the clients in-house professionals. For the University system this is normally contain in an action plan which contains proposals related to specific time scale and also for a specific level of funding.

2.2.2 Feasibility Study and Schematic Design

As the project takes definitive form feasibility study of the project should be

conducted. According to Kavanagh, et al (1978) the feasibility study should consider and evaluate the following aspects:

i. Alternative courses of action, what are possible alternative solutions to satisfying or meeting the need?

ii. Engineering evaluation or analysis of such alternative solutions; practical design solutions, cost estimate and basic engineering analysis.

iii. Economic evaluation of such alternatives, what is the possible or probable manner of financing? What are the possible benefit revenue? What economic impact the project would have?

iv. Social analysis of project, what is the impact upon consideration?

v. Political consideration; the political factor may be considered as one of realities or practicabilities of implementation.

After the basic feasibility is established initial planning is attained. Here the various

options and methods of implementation are considered and evaluated. And the best alternative or option of implementation is selected.

The information obtained in the feasibility study is used as the base to develop the project programme. The programme converts the generic goals set in the budget into specific functional and architectural programme. It forms the natural basis for design. The building owner has substantial in-put to be made at this feasibility stage, especially when there is strong planning team, which in the case of the Universities the physical planning and the academic planning teams undertake such works.

The functional programme defines project in terms of purpose scope and functions. Kavanagh, et al (1978) stipulates that the functional programme involves the following:

It set out the needs to be realised, the specific services to be provided in the building, the organisational structure and staffing pattern, and the proposed operational policies and procedures. Anticipated utilisation factors and service leads

should be estimated to complete the functional data. It is therefore, inevitable that the functional programme has to be competently conceived, well considered and communicated to all concerned. In doing so it would be necessary to work through principles purposes and functions. The functional programme should affirm the budgetary estimates, and establish the capabilities to be built into the project. Further more, the programme incorporates policy and must be approved by the client organisation management.

The architectural programme, developed from the functional programme, is a statement of the design function the Architect is called upon to solve. The functional programme is normally worked out in advance by the client team. By so doing every functional consideration affecting the architectural programme should be resolved and clearly stated. The architectural programme should serve as a guide to the Architect and as a measure to evaluate the plans.

In preparing the architectural programme, Kavanagh, et al (1978) suggested that the following requirements should be exposed:

A list is made of all spaces, however, small or unimportant, and all equipment requiring special housing, personnel using each space are described. The relationship of rooms and areas are noted on a guide to planning. Special features or lighting, ventilating, communications, colour, architectural character, accoustics and the likes are recorded. During this preparation, frequent meetings are held and check lists reviewed to see that all essentials have been considered. Budget limitations both in terms of finance and floor areas are established and their effect on the programme studied. The final document gives enough information to establish the size of the facility and its general characteristics.

Site selection is pressumed to have been the responsibility of the client organisation. The designer man-date should only be to design and plan a facility on a pre-selected or pre-determined site. In the case of Universities, the Master Plan, the Academic Plan and the Action Plan provide complete basis for the design stage.

2.3 DESIGN STAGE

The design stage has three basic components, the Schematic Design Stage, the Preliminary Design Stage and the Final Design Stage. According to Claugh and Sears (1979) the design stage involves the complete architectural and engineering designs of the entire project. It culminates with the preparation of the final working drawings and specifications for the total construction. In other words, the design stage involves complete interplay between design disciplines usually under the direction of the Architect.

Each of the three basic components of the design stage must be clearly defined and followed by a review and approval process. These sequences, although, not necessarily formalised on all projects, are generally followed.

There is no rule for deciding where the design responsibility should lie. The decision is a "Question of the Balance of Advantage", says March (1978), where an organisation maintains an in-house capability, the design is bound to be based on the experience of the organisation's in-house experts. The University system has all the potentialities to

harness or develop this system by giving free hand to their in-house non-academic staff as well as exploiting the vast experiences from among their academic staff who specialises in the relevant disciplines.

When a contractor is made responsible for design, the design is bound to be based on the contractors method of construction and plants. This system is however, limited in the country with limited type of projects.

Where the consultants are hired to provide the design, they may 'play safe' on over-specification with a resultant increase in project cost. It is therefore, necessary for the employers in-house professionals to participate by commenting and criticising the design process and to make selection where the designer offers a choice.

Project cost and time controls actually begins during the design stage. The cost of a project includes its actual cost computed based on actual cost of its in-puts together with contractors over-head charges and profit and the cost of consultancy services.

The cost of a project, is affected by the requirements of design, and specifications given by the designer. The control of time during design should be directed towards minimising construction time consistent with project quality and total cost. With this background, the examination of each of the three components of the design would be necessary.

2.3.1 Schematic Stage

The schematic design stage is where concepts are defined, materials to be used are evaluated and systems and out-line specifications are established for the project. According to Kavanagh, et al (1978) the stage includes the following:

i. Analysis of functions, services, and planning data (this effort is directly related to programming).

ii. Development of diagrams of functional relationship and services flow.

iii. Block lay-outs by areas of Departments, Divisions or functional elements.

iv. Schematic arrangement of plan elements.

v. Adaptation of schematic lay-out to site plan.

vi. Schematic lay-out of traffic flow (exterior).

vii. Schematic lay-out of traffic flow (interior).

viii. Energy analysis.

ix. Evaluation of electrical energy requirements.

x. Analysis of structural systems.

2.3.2 Preliminary Design Stage

The preliminary design stage formalises the adopted scheme and concept into basic plans for all major components of the facility. The plan now include more detailed presentation of architectural, structural, mechanical and electrical components of the facility. Materials are selected and systems are established. This stage constitute 25 Percent of the total design work effort. According to Kavanagh, et al (1978) the basic steps of the preminary design are:

i. Unit studies of plan elements to determine feasibility of concept.

ii. Modular analysis of typical spaces to determine constructibility and cost practicability.

iii. Preparation of architectural plan at a scale proper for accurate lay-out of basic spatial solutions.

iv. Development of tentative scheme of mechanical and electrical systems.

v. Development of personnel and equipment lay-out for functional areas.

vi. Development of exterior design of the structure.

vii. Preparation of general out-line of materials and finishes (skeleton specifications).

viii. Preparation of preliminary cost estimate.

2.3.3 Final Design Stage

The final design stage takes the design concept of the preliminary stage and adds a level of detail which is required for the contractors to construct the facility. That is to say all components, systems and materials are selected and

defined. The basic and inherent details for not only the functional facility but for one of aesthetic value and any special requirements or needs of a specific owner are documented and translated into plans and specifications. Such plans and specifications are the basic part of the contract documents issued to implement the project. This also forms the basis for the construction contract, which will specifically instruct the contractor on what to do when given the contract.

According to Kavanagh, et al (1978) the major components of this final design include:

i. Lay-outs of partitions and interior fixtures.

ii. Engineering design and structural elements.

iii. Architectural design of construction details.

iv. Lay-out and designs of mechanical systems.

v. Location of materials and utility out-lets.

vi. Chart of materials and finishes.

vii. Specification of materials and equipments.

viii. Lay-out and designs of electrical systems.

2.4 PREPARATION OF TENDER DOCUMENTS

The tender documents comprises, the instruction to tenderers, form of tender, the conditions of contract, bills of quantities, drawings (architectural, structural and services), site lay-out plan, specification and other special instructions. There are normally compiled by the quantity surveyor for issurance to the contractors selected for bidding.

2.5 LETTING OUT OF CONTRACT

The initial tasks the building owner would have to tackle are the selection of the best contractual arrangements for the particular project and the contractor to execute the project. With the selection of contractor and the signing of a contract the emphasis shifts to getting a true and optimum value for the owner investment.

Where the building owner finds that a general policy for contracting has already been established in a piece meal fashion, Hackney J.W. (1965) suggested that, "it is desirable to review what is been done, to suite the requirements of the particular project practices which were reasonable under former

conditions may need to be updated. Advise can then be givev for best contract form for the particular project". The selection of the proper contract appropriate to the situation is therefore, an important decision of the owner and is more deserving of careful consideration and consultation. In arriving at any decision the owner should therefore, remember that each project has its own best pattern of contracts depending upon the work to be accomplished and the availability of personnel within the owner organisation. Which ever form of contract is used, the owner must take precaution against getting wrong contractors for the job. This calls for prequalification of potential contractors and the evaluation of their bid so as to recommend to management of owner organisation the most suitable bidder.

For the pre-qualification exercise to succeed three points needs stressing. Firstly, prospective bidders should not only be experienced in the type of work to be performed, but the size of the project should be of the order of magnitude to which they are geared. Secondly, the prospective bidder should be interviewed to assess their interest and

suitability for the particular job. It is therefore, necessary to check the supervisory personnel the contractor plans to put on the project. The prospective bidder should also provide information list of financial statement, bank references, and client and architectural references. Lastly, the list of prospective bidders should be short (between 5 to 6) because long lists are a menace and appraisal of the bids would be ardous.

Once the list has been selected, Marks, et al (1978) suggested that the instructions to tenders must be accurate and that sufficient time should be given to enable the contractors provide good estimates for the work.

To evaluate the bid submissions, it is important to systematise the approach so as to establish uniform basis for consideration and also to eliminate any bias for or against any tenderer. Marks, et al (1978) suggested the following:

i. Check arithmetic accuracy of tenders.

ii. Correct any arithmetic errors found and obtain confirmation from tenderers that they agree with the corrections or otherwise.

iii. Make a technical examination of the priced bills in search of obvious errors.

iv. Unrealistic uniterates should always be questioned whether they are low or high.

v. Call in two most favoured bidders, raise a pre-selected list of questions and obtain confirmation of doubts.

vi. On the basis of the interview make a final selection.

At this point in-time all querries to the tender should have been answered and set down by the tenderer in writting, so that there is no subsequent dispute and the contract can be placed as soon as financial authorisation is given. The tasks before the building owner is to enforce this proceedure. However, such an exercise would be useless where subterranean influence exist as the case with most public projects in the country.

2.6 CONSTRUCTION STAGE, COMPLETION AND HANDOVER

Clough and Sears (1979) defines construction as the "process of physically erecting the project and putting the materials and equipment into place.

This involves man-power, construction, equipment, materials supplies and supervision necessary to accomplish the work".

The task of the building owner is therefore, to select the best and most suitable contractor to put in place his building project in accordance with the design specification and best value for his money. It therefore, follows that immediately a suitable contractor is selected, the next area of concern for the building owner is the supervision of the contractors. Almost every contract no matter what are its terms, will require some degree of inspection and supervision. Hackney (1965) observes that even on lump-sum turnkey project, the owner is interested in seeing that hidden parts of the works are correctly performed and that the finished work meets design specifications.

In organisations with qualified in-house staff the inspection and supervision is in most cases handled by them, even if the design stage and production of the contract documents were let-out to consultants. This is generally believed will lead to better quality finish product as the in-house staff would try to protect their image and employment

against bad finished work which would be traced to their performance.

2.6.1 Progress and Valuation of Works

The contract conditions made it mandatory for the Architect or whoever is incharged to issue interim certificates based on the quantity surveyors interim valuations for interim payment to contractor during the progress of the work. The manner and period of interim certificates should be agreed upon during the signing of the contract and inserted in the appendix thereof . The failure of the Architect to make interim certificate for payment to contractor for the work executed may affect the progress and the performance of the contractor. And infact is a strong reason contractor may use to determine the contract.

The issue of interim valuation, valuation of variations and regular payments for works executed has been a common problem in the delay in the execution of many projects. Fortunately, the Universities are known to have been one of the best clients that honours regular payments on its projects as such have less problems on abandoned projects.

i. Variations

In accordance with the general contract conditions adopted in the country, the term variation mean:

> Alteration or modification of the design, quality or quantity of the works as shown upon the contract drawings and described by or referred to in the Contract Bills, and includes the addition, omission or substitution of any work, the alteration of the kind or standard of any of the materials or goods to be used in the works, and the removal from the site of any work materials or goods executed or brought there on by the contractor for the purpose of the works other than materials or goods which are not in accordance with this contract.

Such instructions to the contractor by the owner's representative should describe the varied work, state any items to be omitted, and should record any new or amended drawings which are to be worked to.

It could reasonably be said that no project is free of variation. However, the trouble starts when there are a number of variations, one after the other, when the programme is affected and when the time spent by contractors head-office staff starts to be not proportional with the value of the contract. Under these circumstances the contractor would seek to

recover additionally for abortive time spent by head-office staff not otherwise directly charged with the contract; prolongation of the contract period (e.g., hire of huts, supervisor's salaries); and loss of productivity and overtime working due to changes in the programme.

It follows from these that in quantity, variations can operate to destroy the best of contract, hence, the habit of ordering them is a menace that should be curtailed. What causes this menace are many but principal ones are genuinely unforseable circumstances, e.g., underground pipe to be diverted; inadequacy of contract documents, e.g., insufficient specifications; and lack of discipline on the part of owner's supervisory representative, e.g., ordering unnecessary work. However, what has to be appreciated but often not should be the effect which even a simple change in specification can have on a contractor. March (1978) identifies the following effects:

i. additional design work including studying the consequential effect of the variation on a number of drawings;

ii. cancellation of or modification to orders already placed on his works or on outside suppliers;

iii. The placing of new orders.

iv. Delay in delivery of materials to site due to (ii) above;

v. Rephasing of site works or concentration of work into a shorter period with consequent additional over-time costs and loss of productivity, and;

vi. extending the period of the contract.

It infers from these that unless the variation is ordered very early in the contract indeed, the assessment of the effect of the variation either in terms of cost or time is not easy.

ii. <u>Variations Not Related to Physical Content of Work</u>

Not all variations relate to the physical content of the works. Any action of the client to speed up completion of works or to slow it down or possibly to put the contract into suspense would have a serious effect on the contract price.

To speed up completion time, time may be bought up by working additional overtime or weekends, by putting and additional shift and offering suppliers or subcontractors a bonus to deliver or finish earlier.

To slow down work involves the contractor being engaged for a longer time on the contract and will therefore, tie up his resources for a longer period, so reducing his potential earning capacity over that period.

By such an action argues, March (1978) the contractor may be forced to make claims on charges for plant retained on site for the extended period, salaries and overheads of supervisory staff so retained, additional costs for any work which is now to be carried out under different and more difficult conditions; and additional interest charges due to retention moneys being outstanding for a longer period.

Where the contract is put into suspense, the client should give consideration to the following points. Whether the contractor's

site organisation be removed from site or not. Taking into account the likely period of suspension. If the contractor organisation is removed from site, the safe custody of partially completed work and storage of loose items not yet built into the works will vest on the client.

2.7 FINAL ACCOUNTS

The progress of work in any project should be supported by interim valuation and payments, until the practical completion of the works is achieved.

At the practical completion of the work the Architect must satisfy himself that;

(a) the work has been carried out in accordance with the contract documents and Architect instructions;

(b) the building is in a suitable state to be taken over by the employer for its full and proper use.

If this conditions are satisfied then a certificate of practical completion can be issued out. The issuing of the certificate of practical completion marks the following:

i. Beginning of defects liability period.

ii. Period of final measurement begins.

iii. Contractor becomes entitle to release of one moiety of retention.

iv. Contractor becomes relieved of his obligations to ensure the works.

v. Matters of arbitration dependent upon the issue of the certificate of practical completion can be pursued.

At the end of the defects liability period and making good defects, the quantity surveyor prepares the final account on the project. The final account should take into consideration all issues affecting the final cost of the project. Principal among them are:

(a) Variations

(b) Remeasurement of provisional quantities in the Bill of Quantity.

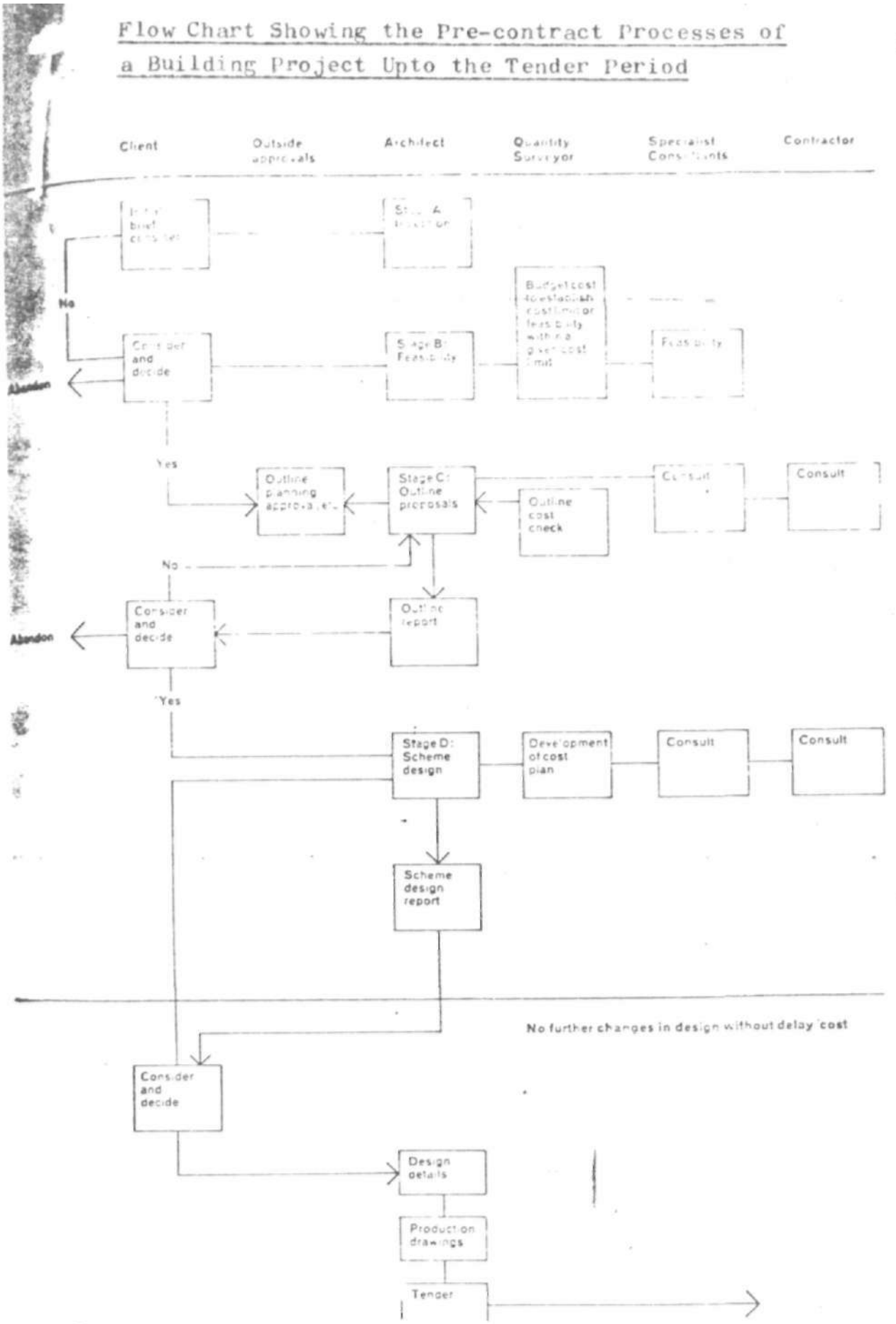
(c) Adjustment of prime costs sums and provisional sums.

(d) Loss and expense caused by disturbance of regular progress of work.

(e) Fluctuations in labour rates and basic prices of materials if applicable.

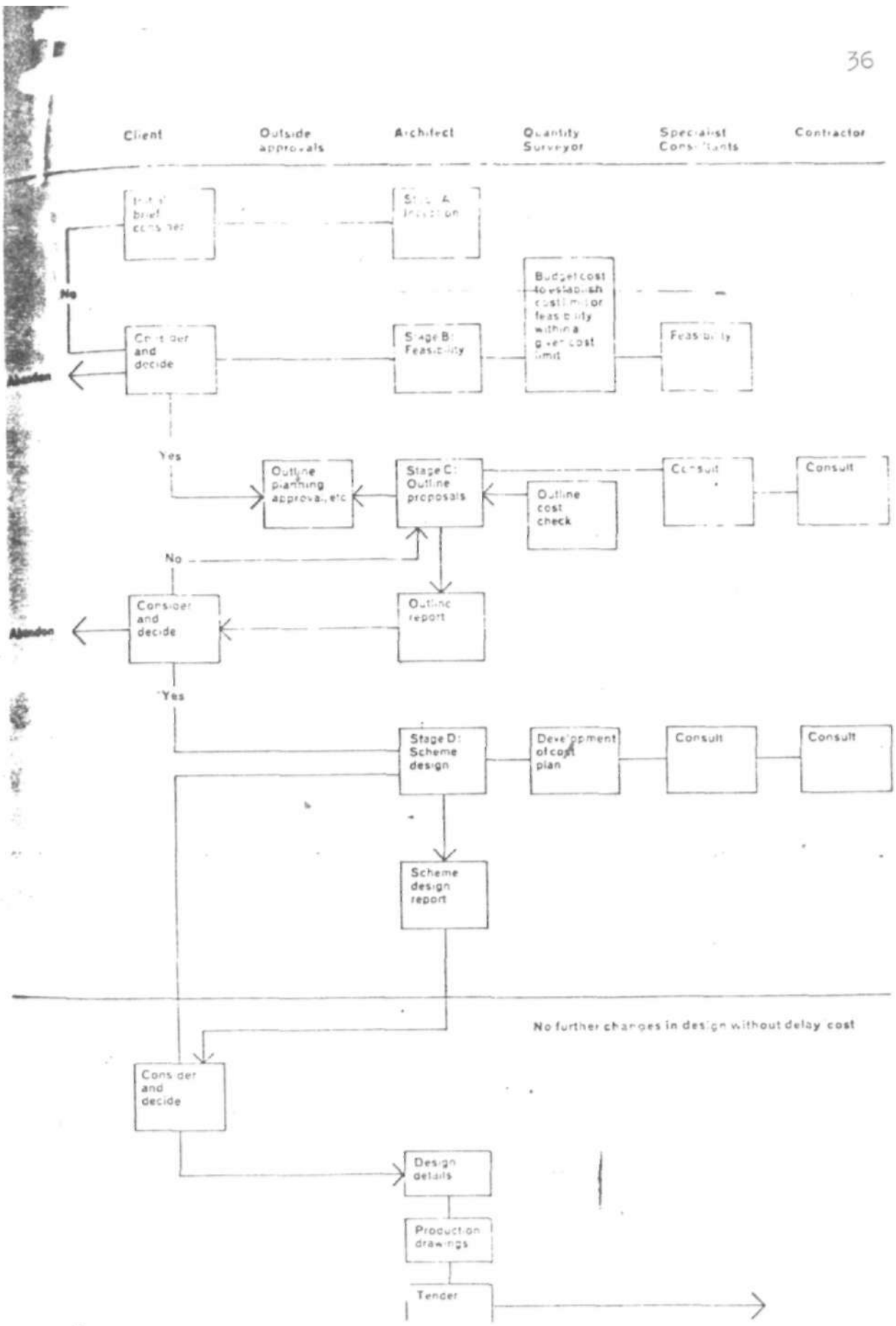
With the completion of the final account preparation by the Quantity Surveyor and agreeing same with the contractor, the Architect issues out the final certificate which marks the end of the contract.

Flow Chart Showing the Pre-contract Processes of a Building Project Upto the Tender Period



Source: NJCC - Clients guide - The role of the client in the design of buildings.

R.I.B.A. Publication Ltd London (1978)



Source: NJCC - Clients guide - The role of the client in the design of buildings.

R.I.B.A. Publication Ltd London (1978)

I would be very glad to see something from the NJCC about its functions

CHAPTER - THREE

PROCESS OF IMPLEMENTING DEVELOPMENT PROJECTS IN THE UNIVERSITIES

3.1 THE NATIONAL UNIVERSITIES COMMISSION (N.U.C) AND PROJECT DEVELOPMENTS IN UNIVERSITIES

This chapter contains some information extracted from the National Universities Commission documents at the time of visit to the Commission. The National Universities Commission (N.U.C) was reconstituted in 1974 as a statutory body with the responsibility of advising the Government on the physical needs and financing of capital projects in the Universities. Before then, the Commission functioned as a department of the Cabinet Office since it was funded in 1962.

The primary objectives of the National Universities Commission (N.U.C) is to ensure orderly development of University Education in the country, to maintain its standard and ensure its adequate funding. Broadly speaking, the functions of the National Universities Commission (N.U.C) are related to those of co-ordination, development and financing of Nigerian Universities.

For the National Universities Commission (N.U.C) to perform these functions effectively, the Commission came up with some standards and guidelines to be adopted by all Universities to ensure equitable and effective method of disbursing the funds meant for the institutions. The standard and guidelines to be adopted by the institution are in the form of "Bounded Books" or "documents" known as; "The Standard Guides, the Procedures Guide: Planning, and the Implementation Guides".

The standard guide, gives guidelines and mandatory standards for space, cost, environment, design and construction, services, furniture and equipments. The procedures guide: Planning on the other hand describes the required stages in the preparation of Master Plan for a University. The implementation guide is however, a document that describes concisely the procedures that will be adopted in the Nigerian University System from the conception of a physical development project to its commissioning and rendering of final accounts. These three documents are together referred to as; "the Pillars upon which the Physical Development of the University System rests".

3.2 FUNDING DEVELOPMENT PROJECTS IN NIGERIAN UNIVERSITIES

The University System in the country are either Federally funded through the National Universities Commission (N.U.C) or State Government owned. The National Universities Commission (N.U.C) allocates block grants from the Federal Government to the Federal Universities for both recurrent and capital expenditures.

3.2.1 Capital Allocation

The following categories of capital expenditure are eligible for capital grants:

i. Acquisition of land or building.

ii. Design and construction of new buildings.

iii. Major restoration of buildings.

iv. Alterations, change of use and commissioning of new acquired existing buildings.

v. Design and implementation of site development projects.

vi. Design and construction relating to approved works outside the boundary of the permanent University Campus.

vii. Planning and special surveys.

viii. Supply of furniture and equipment not part of building contract.

ix. Fees and expenses.

A University may not commit capital expenditure on any of the above categories before approval for the project and notification of the annual allocation has been recieved from the National Universities Commission (N.U.C). However, professional fees may be incurred in connection with sketch designs for accepted projects.

The Universities are required to submit on a standard approved forms every year, details covering all projects which require to be started during the coming fiscal year. An annual submission must contain the following four parts:

(a) Project and Cost Programme Chart

(b) Space Allocation

(c) Growth Record

(d) Project Details

3.2.2 Project and Cost Programme Chart

A University "Action Plan" which is normally an extraction from the University Master Plan is a

production of the Physical Planning Unit of the University (i.e., the University in-house professionals). The "Action Plan" relates proposed building and site development projects to anticipated available funds and to a programme for implementation. The proposals in the "Action Plan" are summerised in the "Project and Cost Programme Chart" (see Diagram 2 at the end of the chapter).

This sheet is set out in the form of a Bar Chart and shows all the construction projects both on-going and new with the expenditure set against the anticipated capital allocations. This chart form part of the submission and can be up-dated annually. When up-dating the project and cost programme chart, universities are expected to:

i. Take into account likely changes in allocations in the light of latest forecasts by the National Universities Commission (N.U.C) regarding growth.

ii. Revised the programme in relation to progress achieved on individual projects.

iii. Revised the capital expenditure in the light of progress on individual projects.

iv. Extend the programme to cover a further year.

3.2.3 Space Allocation

For the second part of the submission, the proposed accommodation for the next fiscal year is determined from the space allocation form which are prepared by the University Physical Planning Unit (P.P.U) and catalogue the space requirement. These are in turn based upon the Full Time Equivalent (F.T.E) student numbers in departments, enrolments and accommodation population within the University.

3.2.4 Growth Record

Using the information catalogue on the space allocation forms, the Universities will also complete growth record forms which form the third part of the submission. The purpose of these forms is to record visually and interms of student numbers, the distribution of student within departments and the actual physical growth of each accommodation type measured against the ultimate size of the University.

The forms will show at a glance accommodation proposed in the submission for the next fiscal year together with that approved from previous years submission.

3.2.5 Project Details

The space entered on the space allocation forms can now be assigned to various projects and entered on project forms. It is at this stage that costs can be set against individual projects using the information set out in the "Standard Guides".

The National Universities Commission (N.U.C) has devised project forms for differing categories of capital projects; notable among the project forms are:

i. Form S1: for on going projects
ii. Form S2 and S2: for new building projects
iii. Form S3/1 and S3: for existing buildings
iv. Form S4/1 and S4: for New Site Development Projects
v. Form SO: for summary of total capital submission

i. First and foremost is the formulation of the submission which is the responsibility of the University in-house professionals (Physical Planning Unit - P.P.U).

ii. Then the complete submission is forwarded to the National Universities Commission for consideration.

iii. The National Universities Commission (N.U.C) will then scrutinize the submission to find out if it is in accordance with strategic development set out in the Master Plan, the short term policy and capital programme contained in the Action Plan and with the space and cost requirements in the standard guides for the Universities.

If the National Universities Commission (N.U.C) is of the opinion that all these requirements have been met, then it will grant "Acceptance" for various projects and their cost limits. The Universities will then be confirmed to proceed to prepare comprehensive "Brief" (this, also is done by the

The project forms will enable total cost limit to be evolved for each proposal.

The in-house professionals (in the Physical Planning Unit - P.P.U) of the various Universities normally handle these aspects of the submission for the University. The professionals are infact responsible for preparing and making these submission on behalf of the University to the National Universities Commission (N.U.C).

The proceedures for compiling each annual submission will normally follow a set out pattern:

The starting point for any submission will be the "Master Plan". This contains the long term strategic and physical objectives of the University and established its ultimate size. The Master Plan, however, may require review in the light of changing circumstances and priorities both Nationally and within the University. The short term implementation willbe dealt with by means of an "Action Plan" which will contain proposals related to a specific time, scale and also for a specific level of funding.

The procedure for awarding the annual capital allocations to the Universities are as follows:

the Annual Budget. These approved projects are then given the "National Universities Commission Project Registration Numbers" and the University notified.

Once approval has been granted no project may be omitted or modified in any way without prior notification to the National Universities Commission (N.U.C). At this time, the National Universities Commission will also issue growth guidelines to cover the remaining "Action Plan" period. The approved capital programme can now be implemented once the notification has been done by the National Universities Commission (N.U.C) designers can be given the go-ahead to proceed with the production of necessary documents for the implementation processes. The National Universities Commission (N.U.C) will then financially support the individual approved project through the various stages of implementation and funds will be provided at regular intervals through out the year.

3.3 IMPLEMENTATION OF DEVELOPMENT PROJECTS IN NIGERIAN UNIVERSITY

Once projects have been submitted to the National Universities Commission (N.U.C) and became "Accepted Projects", the University can then prepare "Brief".

University in-house professionals in the Physical Planning Unit (P.P.U) with the collaboration of the Academic Planning Division).

An important aspect of the capital allocation is the budget hearing. The National Universities Commission holds budget hearings with the Universities at which "Accepted Projects" are discussed and development priorities agreed in order to assist the National Universities Commission (N.U.C) in ultimately approving projects when finally annual capital allocation is announced.

The National Universities Commission on its part submits its recommendation for capital grants to the Federal Ministry of Finance on behalf of all the Universities and attends budget hearings.

When the National Universities Commission (N.U.C) receives notification of the total Block annual allocation from the Finance Ministry, and after considering priorities and programmes discussed at its own budget hearings with the Universities, allocations are made to individual institutions. At the same time "Approval" will be granted to selected "Accepted Projects" that can be commenced within

The preparation of the brief may include contributions from the user clients, Academic Planning Unit, the Physical Planning Unit, the Works Departments, and for specialist projects contributions can be obtained from the appropriate specialist. The informations normally covered by the brief are as follows:

(a) Site Plan - Location of the project and its relation to the entire University.

(b) Infrastructure - Location of nearest electricity and water supply, access, etc.

(c) Master Plan, Action Plan - List of main recommendations in the two documents, e.g., architectural character, etc.

(d) Annual Submission Data - List of usable floor area and cost limits.

(e) Programme of Work - Time requirements, etc.

(f) Projects Criteria - Growth and change, e.g., degree of flexibility and anticipated expansion. Maximum number of storeys, special services requirements and description of building users.

(g) Room Schedules - Teaching, methods and requirements, room frequency and occupancy. Area hight, maximum or minimum spans loading, etc. Lighting, ventilation, acoustic and any after environmental considerations.

(h) Ancillary Accommodation - Storage, toilets, refuse areas cleaners, rooms, plant rooms, etc.

(i) Relationship of Spaces - Circulation requirements any special routings. Access loading. Relationship to other buildings, and the use of external space landscaped.

Once the brief is prepared, the processes of preparing the sketch design should commenced. Executive Consultants can be appointed if the University Management opted for outside handling.

For the sketch design stage, scheme drawings will be prepared to adequately translate the brief into physical terms. This will be accompanied by a short report and estimate of costs. The designers are expected to also provide information on soil conditions at this stage, particularly when abnormal costs are anticipated due to abnormal foundations which may be required.

To enable the preparation of the sketch design the designer should be handed over with the following documents in additon to the brief.

i. Standard Guides for Universities
ii. Master Plan, Action Plan
iii. Implementation Guide
iv. List of Contact and Addresser, e.g., National Electric Power Authority (N.E.P.A)

A programme of interim meetings between the Consultants and the University Representative ((Physical Planning Unit) should be worked out for the

the purposes of consultation and checking of proposals.

The sketch design will comprise a Site Plan including landscaping proposals and external services, floor plans, key sections, elevation, perspectives drawing and/or model together with a design report, cost estimates and programme of work.

It is during sketch design stage, the National Universities Commission (N.U.C) approval for the project is granted. If for any reason the National Universities Commission (N.U.C) is unable to support the project, the project will have to be deferred and resubmitted at later date.

The Physical Planning Unit is expected to check the proposal against "Master Plan and Action Plan". Check space and cost against the "Accepted Submission" and technical aspects against the "Standard Guides for Universities" provisions.

The approval of the sketch design by the Universities marks the beginning of the next phase of the project, implementation. The Consultants would be asked to go ahead with the production of the working drawings and other contract documents.

The scope of the work of the Consultants is to be in accordance with the conditions set down in their respective codes of conduct and professional practice.

3.4 MONITORING SYSTEM OF THE NATIONAL UNIVERSITIES COMMISSION ON UNIVERSITIES DEVELOPMENT PROJECT

From the appointment of "Master Planners" to the implementation and successful completion of University projects, the National Universities Commission (N.U.C) has devised systematic methods for monitoring the activities of the University in the persuance of their development strategies. The Department of Physical Planning and Development of the National Universities Commission is responsible for the co-ordination and monitoring of the physical development of Universities funded by the Federal Government.

The Physical Planning and Development Department has four Divisions, namely; Architecture, Engineering, Surveying and Urban and Regional Planning, and operates out of four project groups. Each group has the complement of the Four professions mentioned above, and is responsible for a group of Universities.

ii. Form Im2: for Furniture/Equipment Tender Summary

iii. Form Im3: for Building/Site Development Tender Report

iv. Form Im4: for Building Tender Analysis

v. Form Im5: for On-Going Projects Quarterly, Summary

vi. Form Im6: for On-Going Projects Annual Summary

vii. Form Im6: for Statement of Final Cost of Project.

Through all these reports and submissions together with the occasional inspection visits by the National Universities Commission (N.U.C) staff the development projects of the various Universities are monitored by the National Universities Commission (N.U.C). Samples of the National Universities Commission monitoring form are also attached at the end of this chapter.

3.5 THE UNIVERSITY IN-HOUSE PROFESSIONALS

In most of the Universities visited, professionals in various fields related to physical and infrastructural development are found to be in

Routine quarterly projects inspections were being undertaken to the assigned Universities by each group to assess performance of on going projects. The National Universities Commission (N.U.C) is also being represented in the Universities Tenders Board and Physical Development Committee meetings.

The annual estimate hearing organised by the National Universities Commission (N.U.C) serves as a forum for continous appraisal of the general performances of Universities. The exercise has helped the National Universities Commission (N.U.C) in identifying deficiencies and/or merits on the Universities.

During the course of the implementation of capital projects, the National Universities Commission (N.U.C) requires that occasional submission be made to it on all important matters affecting the projects. The submissions are made on a specially designed forms provided to the Universities by the National Universities Commission (N.U.C). Some of such forms are listed below:

i. Form Im2 - for Abnormals Extra Costs Savings

the services of the Universities as permanently employed staff. The professionals are in the fields of Architecture, Quantity Surveying, Civil/ Mechanical Engineering, Planning, Building and Draghtsmanship. The group of professionals constitute a Unit known as the Physical Planning Unit. The Head of the Physical Planning Unit is designated as Director and is normally a Planner, an Architect or the most Senior in the Civil Service hiarachy among the professionals.

In general term, duties and responsibilities of these professionals fall within the tasks undertaken by each discipline as shown below:

3.5.1 Architect

The Architect prepares working drawings and specifications, arrange meetings of all Consultants and collect information from them on all matters affecting the project. The Architect also prepares schedules of furniture and equipment and seek competitive quotations.

3.5.2 Quantity Surveyor

The Quantity Surveyor collect information and drawings from all Consultants and prepare Bills of

Quantities and Tender Documents. Make periodic cost checks against cost limit advise on contractors and Sub-contractors and obtain prime cost sum estimates.

3.5.3 Structural Engineer

Prepare all necessary drawings and calculations and liaise with the other Consultants.

3.5.4 Service Engineers

Prepare all necessary drawing and calculations schedules and specifications and obtain speciality suppliers estimates. Liaise with all other Consultants.

In specific terms however, the professionals work as a team (Physical Planning Unit) under the direction of the team leader (Director) to discharge the following responsibilities:

(a) Planning and Budget

i. Interprete the National Universities Commission standards, ensure their application to the development of the University.

ii. Make recommendations to the National Universities Commission and obtain approval for standards which arise out of aspects of planning which are unique to the University.

iii. Assist the University to prepare and develop capital projects and budget on regular basis for submission to the National Universities Commission.

iv. Periodically review the Master Plan and make recommendation to the University in response to changes on the Education policy of the Government which affects the University.

v. Produce revised University programme based on available funds from the National Universities Commission (N.U.C) for consideration and approval by the University administration.

vi. Produce and monitor schedules for execution of the yearly development programme.

vii. Formulation of "Action Plan" which consists of project packages divided into smaller groups for implementation over shorter periods spanning three to four years. The "Action Plans" help in the re-ordering of priorities to reflect current education needs and level of funds available.

(b) Design

i. Prepare necessary designs and documents for projects as may be required by the University.

ii. Assist the University in the processes of engaging professional Consultants whenever the need arises.

iii. Monitor and co-ordinate the activities of all Consultants hired by the University to ensure compliance with the "Master Plan" guidelines regarding; Architectural, Engineering and Landscaping needs.

iv. Processing of fees due to Consultants engaged by the University based on the agreed scale of services negotiated with

the University. And making recommendations for the settlement of such fees when due by the University.

(c) Construction

i. Monitoring and co-ordinating the activities of all projects undertaken by the University. This include; supervision where Consultants are not engaged, attending regular Site meetings to monitor progress of work and preparation and recommendation of interim payment to Contractors.

ii. Co-ordinating advance ordering of materials and equipment that may expedite project execution and or result in economic benefit to the University.

iii. Prepares order or approve variations which became necessary for the smooth execution of its works.

iv. Where Consultants are engaged in the Post-contract Services, monitors their work to ensure safeguard of University interest. In case of dispute between the

Consultants and Contractors on issues relating to the smooth execution of the work, acts as an abitrator to resolve the dispute in the interest of the projects of the work.

iv. Prepare reports on on-going projects to the National Universities Commission (N.U.C) notify the commission on abnormalities requiring additional funds.

3.6 PROCEDURE WITH REGARD TO PROJECT HANDLING

When a project is being conceived, the proposals are presented before the University Physical Development Committee (P.D.C) for discussion, consideration and approval, by the University Director of Physical Planning Unit. The Physical Development Committee (P.D.C) was an internal University Committee recognised by the University Council as a Tenders Board Sub-Committee. The University Vice Chancellor or his appointed representative normally Chairs the Physical Development Committee (P.D.C) meetings. The University Registrar or a Senior person from the Registry with the responsibility on Council matters acts as the Committee's Secretary. Other members of

the Physical Development Committee (P.D.C) are the Bursar, Directors of Works and Physical Planning Unit and some other University principal officers who may be co-opted by the Vice Chancellor.

The approval on the procedures for executing a particular project (in-house handling or consultancy services approach) is the prerogative of the Physical Development Committee (P.D.C) after satisfying itself that it is acting in the best interest of the University and in particular the projects.

If the Physical Development Committee (P.D.C) approves a project for in-house handling, the Physical Planning Unit will be directed to produce the necessary documents. The Architectural Division of the Physical Planning Unit will be charged with the responsibility of preparing the necessary sketches and scheme options for in-house discussion within the Physical Planning Unit (P.P.U) with the Director Chairing. After discussing and agreeing with the scheme, the presentation is then extended to the Physical Development Committee (P.D.C) with some preliminary cost estimates (ofcourse all based on the National Universities Commission (N.U.C)

guidelines and standards) for its considerations and necessary approval. The Physical Planning Unit Director normally makes such presentation to the Physical Development Committee (P.D.C), with the assistance of any of his staff whom he considers relevant.

In addition, to discussing the scheme and approving it together with the cost limit, the Physical Development Committee (P.D.C) will also approve the list of prospective Tenderers. The Registrar would be directed to liaise with the Director of Physical Planning Unit to obtain some sets of complete tender documents and invite tenders for the particular project.

Tender Bids are normally submitted to the office of the Registrar of the University in sealed envelopes marked at the top right hand corner "Confidential".

As was earlier been pointed out, projects must be approved by the National Universities Commission (N.U.C) especially if the funding of such project is expected to come from the National Universities Commission (N.U.C). It has also been stated that

all the National Universities Commission approved projects will have a National Universities Commission (N.U.C) representative in the Tenders Board meeting when the project was being considered for award.

When Tenders are received by the Registrar's Office, the Registrar Chairs a small Ad-hoc meeting known as the Tender Opening Meeting where some few Physical Development Committee (P.D.C) members will be present including the Physical Planning Unit Director to open the Bids received from the contractors. The Bids are recorded signed by the Registrar and handled over to the Physical Planning Unit Director for analysis and report by the University Quantity Surveyor.

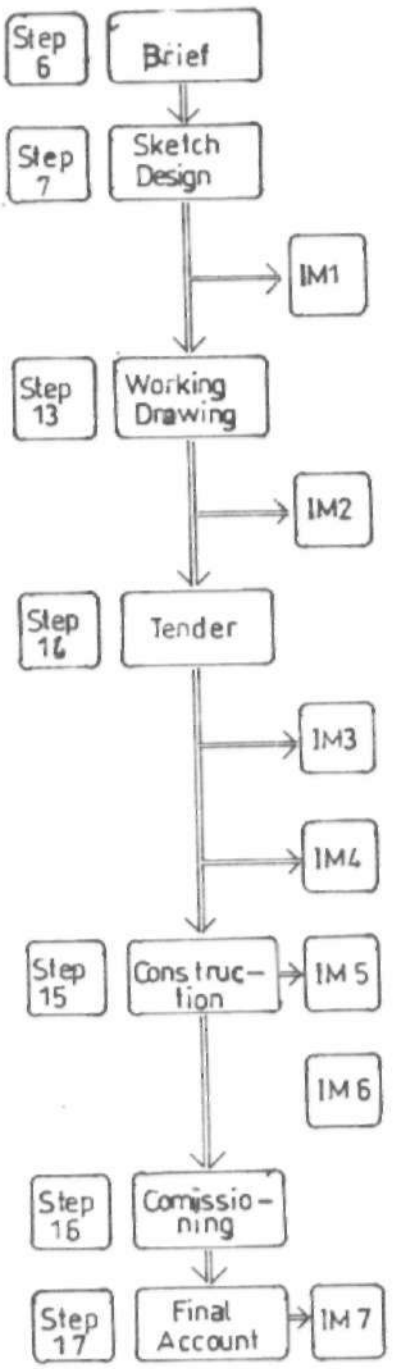
The Tender report and the Physical Planning Unit recommendation would then be presented to another Physical Development Committee meeting in preparatory to Tenders Board meeting - this meeting would consider the Physical Planning Unit (P.P.U) recommendation and takes its final decision on the final recommendation to be made to Tender's Board. Based on the out-come of the Physical Development Committee meeting, the Director, Physical Planning Unit prepares a Tender's Board paper on the projects

for the Board's consideration and approval when it meets.

The Universities Tender's Board is normally Chaired by the University Governing Council Chairman with the Vice Chancellor, Registrar, two other Council members nominated by the Council, the Directors of Works and Physical Planning Unit (P.P.U) the Bursar of the University, the National Universities Commission (N.U.C) representative and any other member, the Board may wish to invite when it considered it necessary.

The approval of the award of the project by the Tender's Board and the subsequent sanctionning by the main Council marks the beginning of the Construction stage, where the Registry, the Physical Planning Unit and the Bursary Department, all together have fundamental roles for the successful implementation of the project. The Registry handles the legal aspect of the contract, the Physical Planning Unit (P.P.U) handles the supervision, co-ordination of the contractors activities and preparation of interim payments for onward forwarding to Bursary for payment.

The procedure highlighted above was the same procedure followed for the award of University projects, whether it is in-house based or consultancy services approach. The only difference was that when the consultants were involved, they were allowed to participate in both the Physical Development Committee (P.D.C) and the Tender's Board meetings as part of the Physical Planning Unit Director's team. Their need to attend the two meetings would be to respond to querries and make clarifications on issues requiring their special in-put.



STAGES OF PROJECT IMPLEMENTATION
OBTAINED FROM NUC IMPLENTATION GUIDE

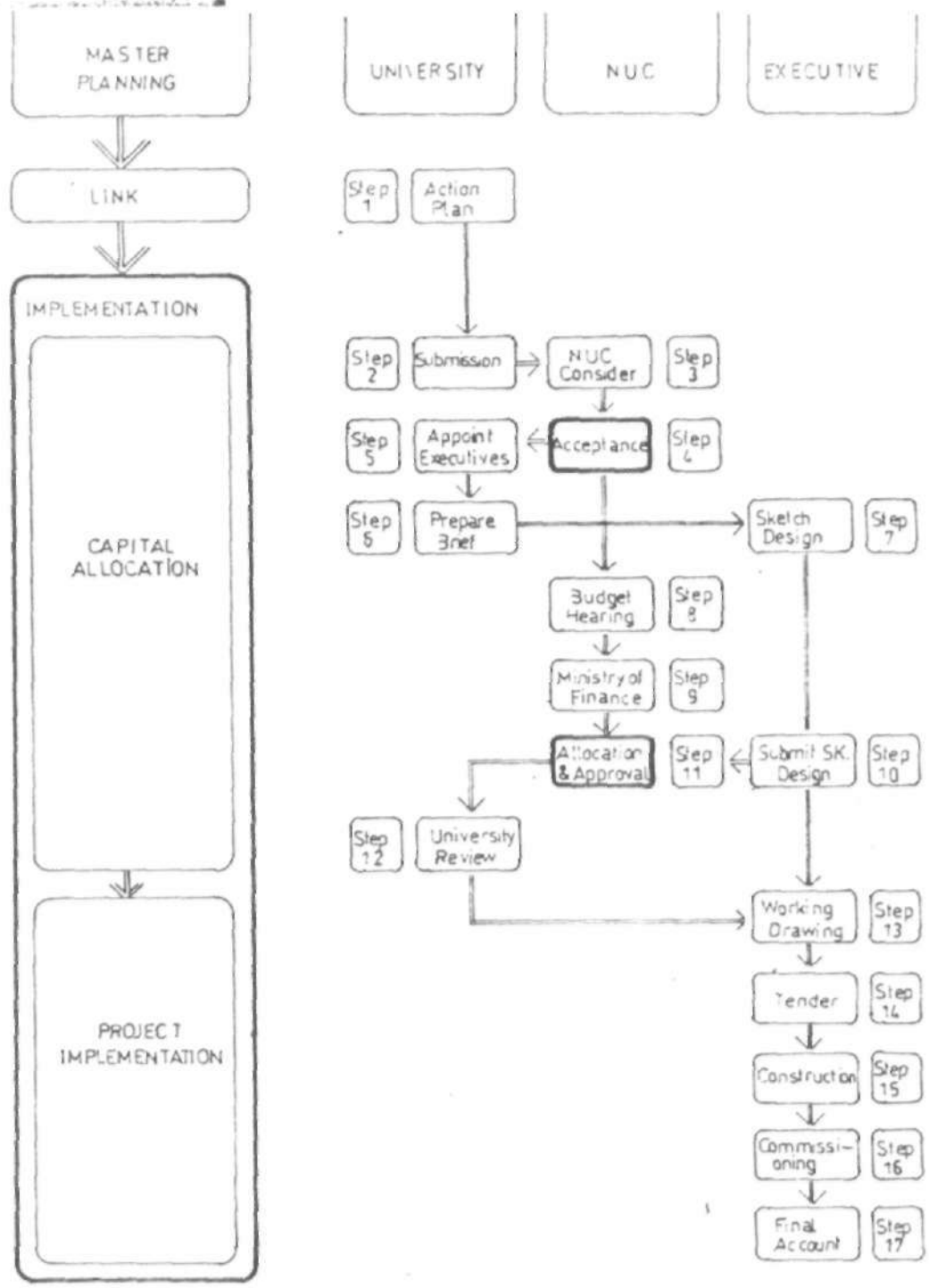


DIAGRAM 1 CAPITAL ALLOCATION AND PROJECT IMPLEMENTATION SEQUENCE

OBTAINED FROM NUC IMPLEMENTATION GUIDE

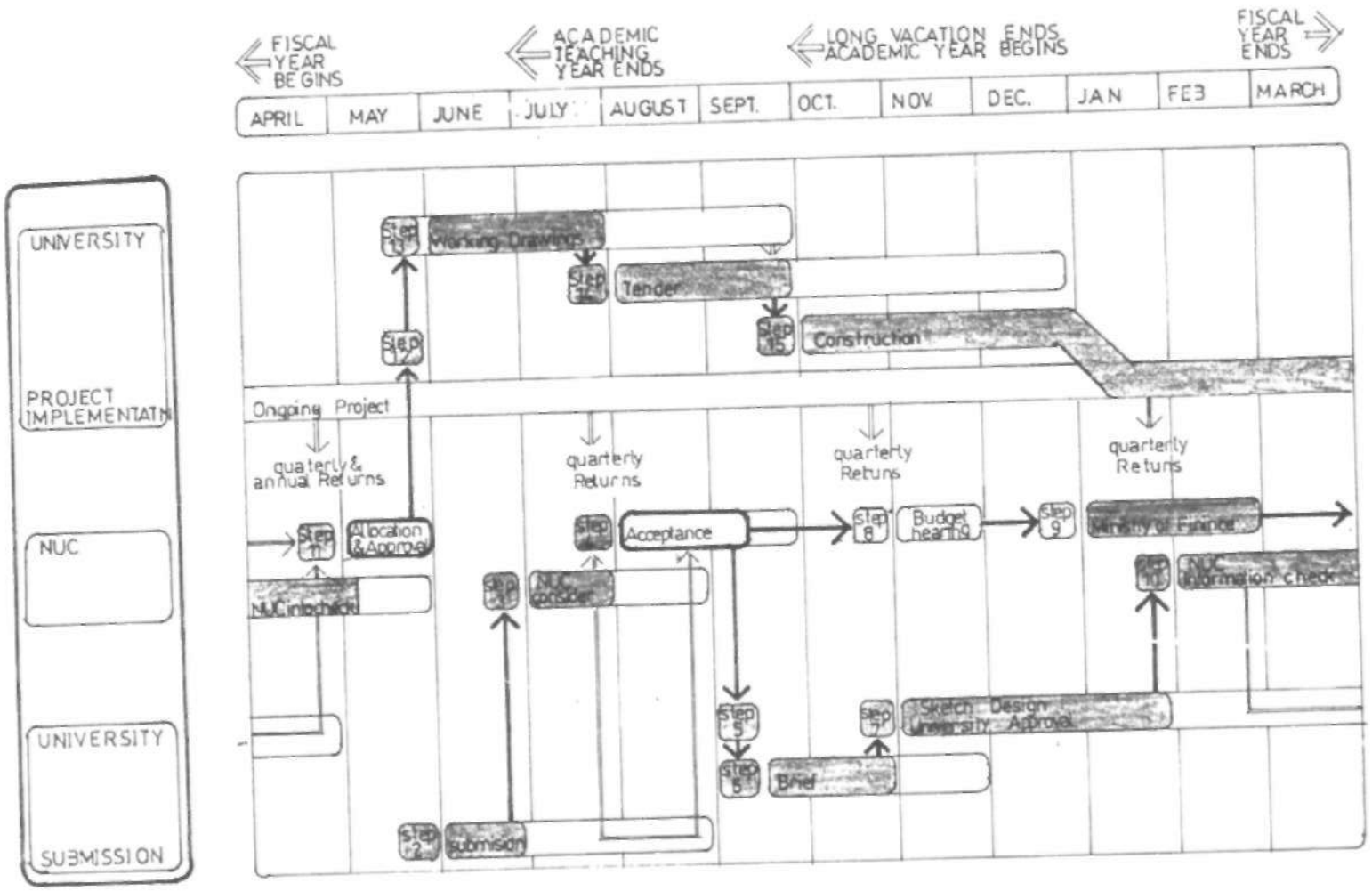


DIAGRAM 2 CAPITAL PROJECTS ANNUAL TASKS

OBTAINED FROM NUC IMPLEMENTATION GUIDE

UNIVERSITY :

BUILDING TENDERS ANALYSIS

Implementation Form IM 4

PROJECT NAME AND UNIVERSITY REFERENCE :

FINANCIAL YEAR :

DATE OF ORIGINAL SUBMISSION :

DATE OF TENDER :

ANALYSIS OF ACCEPTED TENDER FOR MAIN CONTRACT AFTER SUBSTITUTION OF LOWEST SUB-CONTRACT TENDERS

ELEMENT	₦
1 SUBSTRUCTURE (including Abnormals if any at ₦_____)	
2 SUPERSTRUCTURE	
2 A FRAME / STAIRS	
2 B UPPER FLOORS	
2 C ROOF AND ROOFING	
2 D EXTERNAL WALLS	
2 E INTERNAL WALLS	
2 F EXTERNAL WINDOWS AND DOORS	
2 G INTERNAL DOORS	
2 H WALL FINISHES , EXTERNAL AND INTERNAL	
2 I FLOOR FINISHES	
2 J CEILING FINISHES	
2 K FITTINGS / FIXED FURNITURE AND EQUIPMENT (included in Building Cost Limit)	
2 L FITTINGS / FIXED FURNITURE AND EQUIPMENT (excluded from Building Cost Limit)	
SUB TOTAL	
3 SERVICES (including Builders Work in connection)	
3 A PLUMBING	
3 B HOT AND COLD WATER	
3 C MECHANICAL VENTILATION	
3 D AIR CONDITIONING	
3 E GAS INSTALLATION	
3 F ELECTRICAL INSTALLATION	
3 G LIFTS	
3 H DRAINAGE	
3 I OTHER SERVICES specify here :	
SUB TOTAL	
4 ALTERATIONS AND REPAIRS	
5 BUILDING SITE DEVELOPMENT COSTS (including Abnormals if any at ₦_____)	
6 PRELIMINARIES	
7 CONTINGENCIES	
8 LOOSE FURNITURE AND EQUIPMENT	
TOTAL COST	

GROSS FLOOR AREA	M^2	COST / M^2 GROSS FLOOR AREA	₦
NET USABLE FLOOR AREA	M^2	COST / M^2 NET USABLE FLOOR AREA	₦

N U C PROJET REGISTRATION :

SOURCE: The National Universities Commission - Implementation Guide

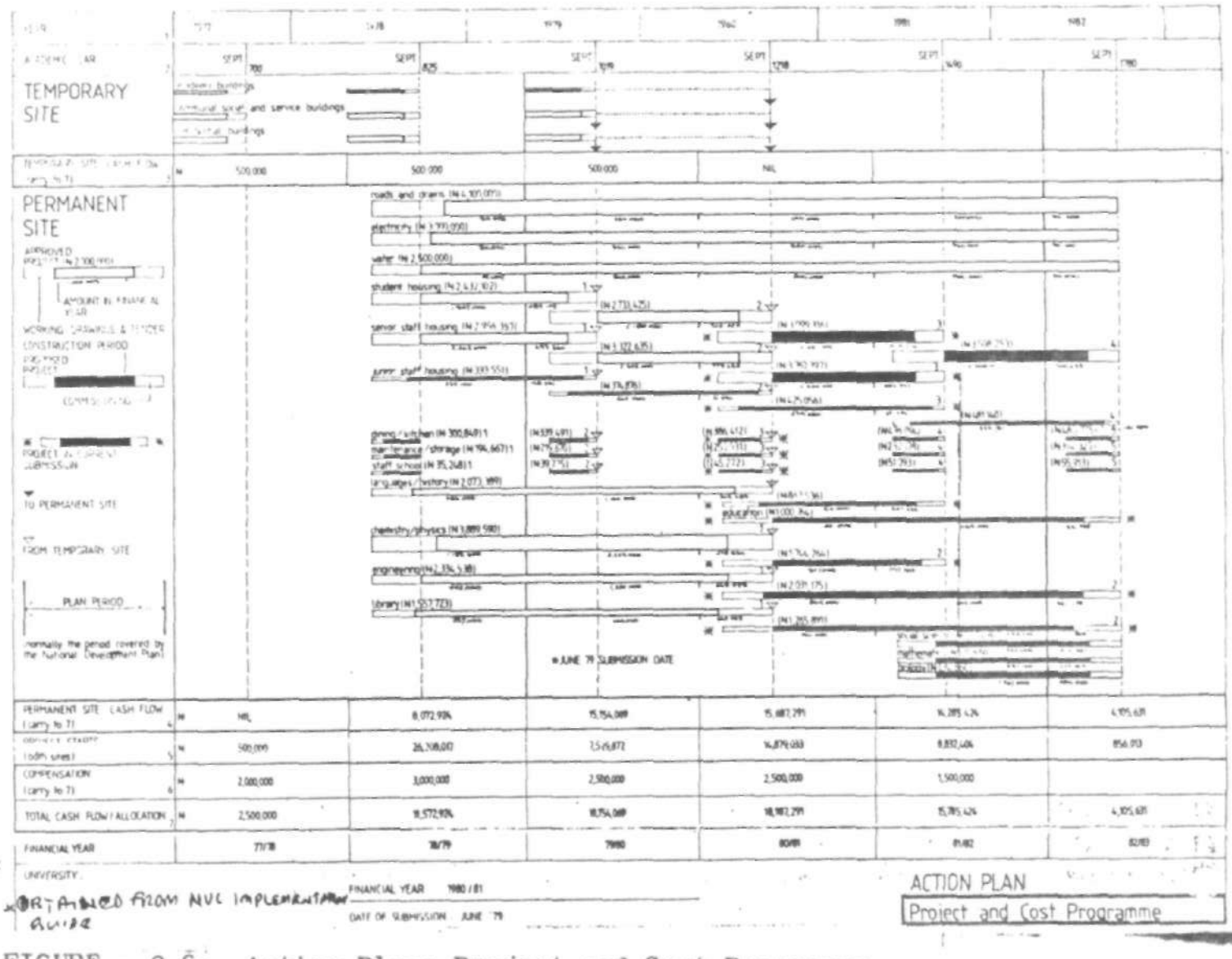


FIGURE - 2.6: Action Plan: Project and Cost Programme

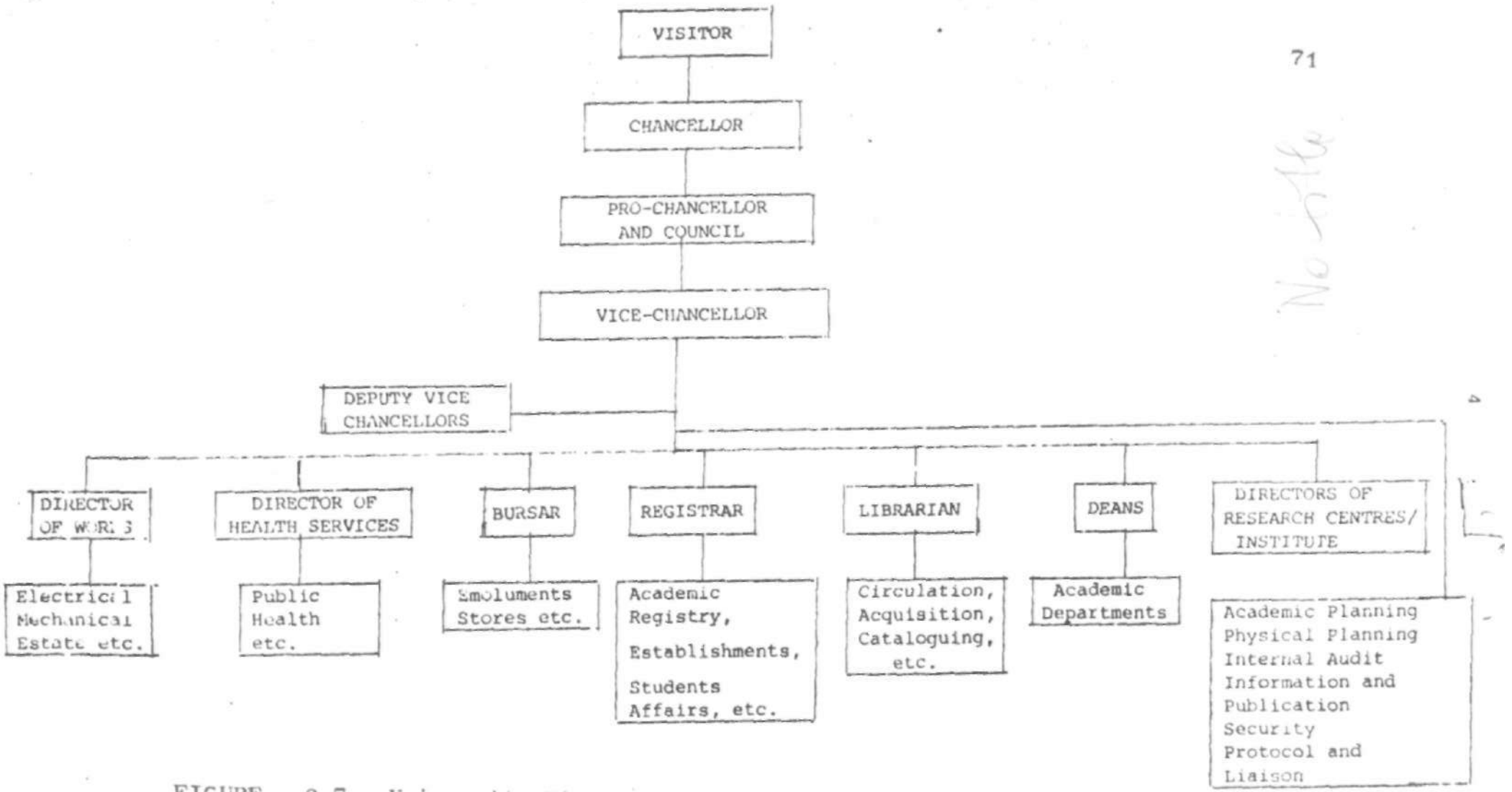


FIGURE - 2.7: University Hierarchy Structure

CHAPTER - FOUR

CASE STUDY AND ANALYSIS OF SOME SELECTED PROJECTS FROM UNIVERSITY OF MAIDUGURI AND FEDERAL UNIVERSITY OF TECHNOLOGY, YOLA

4.1 INTRODUCTION

The two Universities which were taken as sample for study are:

i. University of Maiduguri

ii. Federal University of Technology, Yola

Twelve projects were selected in order to examine the roles and impact of the services rendered by the Universities in-house professionals and hired consultants on projects implementation. Out of these twelve projects critical analysis of four projects was undertaken to illustrate the method of analysis while information on the other eight projects were obtained from the Physical Planning Unit of the Universities. Projects handled by consultants and some by domestic professionals were selected from each of the Universities for analysis. The four projects used for analysis are as follows:

i. Large Lecture/Examination Halls and Offices for Faculty of Arts, University of Maiduguri (in-house professionals).

ii. Multi-purpose Student Centre, University of Maiduguri (Consultants).

iii. Technology Education Block (in-house professionals).

iv. Academic Science Complex/Library Block (Consultants).

4.2 PROJECT NUMBER-1: LARGE LECTURE/EXAMINATION HALLS AND OFFICES FOR FACULTY OF ARTS, UNIVERSITY OF MAIDUGURI

The original concept was Social and Management Sciences, Arts Complex. The urgent need to provide certain urgently needed facilities necessitated the review of the original package to provide accommodation for examination/lecture theatre halls, classrooms and offices.

It was not known precisely at what stage the original package was shelved, but most likely at the schematic design stage. It was equally not known, whether the original concept was been handled by consultants or the Physical Planning Unit (P.P.U)

itself. What was clear however, was that the revised plan done by the Physical Planning Unit (P.P.U) of the University.

The project covered a land area of 3,850 metre square providing the following facilities:

i. 6 Number Classrooms
ii. 27 Number Offices
iii. Twin Halls
iv. Ancilliary Facilities

4.2.1 Project Description

The building complex is a simple concrete framed structure consisting of two floors, the ground and the upper floors. The upper floor was supported on reinforced concrete columns and beams with blockwork infill. The roof was a single pitched roof comprising long span Aluminium roofing on timber structure, with concrete roof gutters at the lower side of the roof. The building was rendered and painted with texcote paint externally and emulsion paint internally. The ceiling finishes was asbestors cement ceiling on timber noggings. The doors were timber flush doors on metal frames for offices and steel doors for classrooms and lecture/examination

halls. The windows were projected steel windows glazed with clear sheet glass.

The total contract sum for the project was ₦5.50 million and the contract period was for 9 months. The project was completed on schedule and handed over in October, 1991.

The Physical Planning Unit (P.P.U) of the University handled the project from the conceptual design stage to its successful completion.

The contract conditions used were the Joint Contract Tribunal (J.C.T) standard conditions 1981 revised edition but adopted for the purposes of the University of Maiduguri. The adoption include the change of nomenclature, e.g., where the name of the professionals such as Architect, Quantity Surveyor, etc., appeared, it was substituted with "Director, Physical Planning Unit", indicating that all instructions and actions by the professionals in the Physical Planning Unit (P.P.U) must be sanctioned by the Director,of the Physical Planning Unit. No professional was allowed to act at his descretion in relation to any project without the formal notification of the Director. The provision was not

meant to delay actions by the professionals as they affect projects, but as a means to help the Director to co-ordinate all the activities of the staff within the unit.

4.2.2 Project Status

The project was a priority project meant to solve the urgent need of facilities for the Faculty of Arts, University of Maiduguri. Due to this urgent need, the project was carefully monitored with all sense of dedication by the supervising staff and the contractor. It was completed on schedule and the quality of workmanship was excellent.

From the records available in the Works and Maintenance Department, of the University there was no serious maintenance work undertaken on the buildings except some minor carpentry work and plumbing repairs in the toilets, in the last three years of its completion.

4.2.3 Final Cost of Project

The final cost of the project was ₦5,85 million representing an increase of 6 Percent over the original contract sum. The 6 Percent rise in the final contract sum was to settle some fluctuation

claims on the contract which were made by the contractor on some materials affected by upsurge of prices during the construction period.

4.3 PROJECTS NUMBER - 2: TECHNOLOGY EDUCATION BLOCK - II (FEDERAL UNIVERSITY OF TECHNOLOGY, YOLA)

This was also an example of a project handled by the domestic staff. The design, documentations and supervision were all handled by the Physical Planning Unit staff of the Federal University of Technology, Yola.

4.3.1 Project Description

The Federal University of Technology, Yola Technology Education Block-II was fairly small project costing just above Half a million Naira. It comprised Four Blocks arranged in a rectangular pattern providing a large court-yard in the centre. The Four Blocks consists of two blocks of classroom with each block having two classrooms and located at the opposite sides each over-looking the court-yard. The other two blocks comprised the offices, twelve in number with each block containing six offices. The enterance to the building were

narrow passage, between the office blocks and the classroom blocks. Thus, providing a total of Four entry points.

The building had a total floor area of 994 metre square designed as a simple framed structure of columns and beams supporting the roof gutter and roof, with sandcrete hollow block in-fill. The roof itself was a single pitched roof of long span currugated alluminium roofing sheets on timber structures with parapet wall, all round. The walls were rendered and painted externally with texcote and internally with emulsion. The ceiling was asbestos cement ceiling on timber noggings. The floor was finished with granolithic pavement. The windows were louvre windows, while the doors were roller shutter doors for the classrooms and flush doors on metal frames for the offices.

The project was awarded at the cost of ₦538,027:00 at 24 weeks completion period.

4.3.2 Status of Project

Project was a priority project meant to provide temporary space for the take-off of the School of Environmental, Urban and Regional Planning

for the 1988/1989 Academic Session. Project was completed 4 weeks behind schedule which the management considered a tolerable limit. The contract sum however, rose by about 8 Percent representing an increase of almost ₦35,000:00. With this increase, the final contract sum became ₦582,260:00. The increase in the contract sum was due to fluctuation paid on some materials which were considered essential for the contractor to be able to finish and hand-over the project.

Though, there was a standing provision in the University that contract below one year contraction period would not attract fluctuation. This was however, found to be unrealistic if strictly applied.

4.3.3 Projects Handled by Consultants

The National Universities Commission (N.U.C) has recognised the role of Consultants (Executive Designers) in the development of the University system. From the preparation of the "Master Plan" to the production of contract documents and supervision of the construction of the projects, the Universities were free to hire Consultants without any restriction to undertake those services for them. The National Universities Commission (N.U.C) makes

financial allocations for such consultancy services in their annual subventions to the Universities.

4.4 PROJECT NUMBER - 3: MULTI-PURPOSE STUDENT CENTRE, UNIVERSITY OF MAIDUGURI

In the special presidential grant of ₦25 million made to each University in the country in 1991/1992 by the then President Ibrahim Gbadamasi Babangida, ₦5.0 million was specifically meant for construction or provision of student centre in each and every Federal University in the country. The Universities were therefore, specifically directed to provide facilities for the purpose.

Based on this directive, the University of Maiduguri came up with a project scheme of multi purpose complex comprising the following:

i. Twelve Lettable Shops
ii. Two Number Restaurants
iii. Two Number In-Door Sports Halls
iv. A Banking Hall
v. A Multi-purpose Hall of 500 Seating capacity
vi. A Post Office
vii. An Open Air Theatre with Toilet, Suya Spots and a Big Cour-yard.

The project was conceived, planned, designed and supervised by Consultants hired by the University. Contract for the project was awarded in July, 1991 at a total contract price of ₦3.94 million. The completion period for the project was 24 weeks. Execution of this project experienced a delay of 8 weeks. The contract sum also experienced an increase of ₦340,000:00. The amount represents up to 9 Percent of the initial contract sum. The 9 Percent increase in the contract sum consists of 4 Percent increase due to variation orders and 3 Percent increase due to fluctuation grant. Thus, making the final contract sum to ₦4.28 million.

The delay of 8 weeks in completing the project was considered very high, about 30 Percent over the original contract period. The 4 Percent variations which represented ₦168,000:00. This amount alone has exceeded the ₦150,000:00 allowed as contigencies sum in the project.

Fluctuation claims are normally made to off-set price increases on the basic cost of materials over the quoted prices. Price rise in costs of materials is a factor of time. The delay of 8 weeks in the

completion of the project would therefore, have some effect on the fluctuation claim.

By delaying the completion of the project, the client experienced three types of losses:

i. Lose in completion time. For priority project of this nature, the damage caused by the delay would be beyond quantification.

ii. Lose due to extra fluctuations paid on period outside the contract period.

iii. Lose due to extra fees paid on time related consultancy services for the period of the delay.

Certainly when projects are delayed there are remedial measures within the contract provisions to compensate the client, particularly when the client was not responsible. The application of such remedies was however, limited to the contractor alone and might not even be possible to enforce.

As earlier indicated, the project was completely a consultants affair. However, the services of the consultants were limited to normal services, which means they only made periodic

inspection of the work without having some resident staff on the site. The University on the other hand maintained a Site Engineer to oversee the day-to-day affairs of the site. The University Site Engineer however, had no powers to issue instruction which interfears with the duties of the Architect. The Site Engineer could draw the attention of the Con Consultants when any abnormality was noticed at the site.

The fees paid to the Consultants in connection with this project were as follows:

(a) Pre-contract Services

i.	Architectural Services	140,600:00
ii.	Quantity Surveying Services	40,560:00
iii.	Structural Engineering Services	61,660:00
iv.	Electrical/Mechanical Engineering Services	65,470:00
		₦308,290:00

(b) Post-contract Services

i.	Architectural Services	50,100:00
ii.	Quantity Surveying Services	20,020:00
iii.	Structural Engineering Services	19,615:00
iv.	Electrical/Mechanical Engineering Services	8,700:00
		₦98,435:00

(c) Total Fees

Pre-contract Plus Post-contract = ₦406,725:00

This amount represented the total additional cost over the actual construction cost of the project the University had to incure by engaging Consultants to handle the project.

4.5 PROJECT NUMBER - 4: ACADEMIC SCIENCE COMPLEX/ LIBRARY BLOCK, FEDERAL UNIVERSITY OF TECHNOLOGY, YOLA

The project was to provide for complete facilities for the school of Science and Technology Education and a Library Complex. Twelve laboratories were to be provided for the Six Science Courses, together with some classrooms, staff offices and other support facilities such as stores and toilets. The building

was a multi-storey complex of several blocks having varying storeys. Adjoining the School of Science Complex was the main University Library block. The whole project was awarded as a single contract in November, 1986.

The cost at which the project was awarded was ₦4.1 million. The completion time for the project was stated 68 weeks.

4.5.1 Method Implementation

Project was an all consultant affair. Four different Consultancy Services agreements were entered into by the University for the execution of the project. The Consultants engage included; Architects, Quantity Surveyors, Structural Engineers and Electrical/Mechanical Engineers. All the Consultants but one were not based in Yola, indicating that cost of reimbursibles such Air tickets, Hotel bills, Car hire costs and Mailing charges, would be high.

All the Consultants were engaged for all the stages of the project. In addition to providing normal services in the Post-contract stage, they were also engaged to provide residency services due

to the size and complexity of the project, except the Services Engineer whose work was agreed not to require residency duties.

In this project, the responsibility of the in-house professionals in the Physical Planning Unit (P.P.U) was only to monitor the activities of the Consultants and the Contractors without any direct involvement in the project.

4.5.2 Construction Process

The actual construction of the project started in January, 1987, between the time of award in November, 1986 to that January, the contractor used the period to mobilise materials and equipment and also to provide security fencing around the site. When the project started in January, 1987 work progressed smoothly, until such time when there was some problems between the Consultants and the Contractors which led to the suspension of work and closure of site by the Contractor. The contractor suspended the work due to what the contractor complaint as the under-measurement of Quantities, in the contract bills. To sort out the crisis atripartite exercise was conducted to determine the contractors claim. The outcome of

of the exercise which was jointly undertaken by the representatives of all parties to the contract confirmed the contractors claims. The Bill of Quantities was found to have been grossly under-measured by up to half a million Naira representing up to 14 Percent of the contractors total work. At the time of suspension of the works, the project was less than 50 Percent completion.

The contractors on seeing that they had a case, insisted that, they no longer have confidence working with the Consultants. They demanded that for them to resume work, the Consultants must be changed. The University after reviewing the matter decided that it was in the best interest of the project to ask the Consultants to go in the given circumstances and directed that the in-house staff take over the supervision of the work.

4.5.3 Project Completion

The project was completed at the cost of ₦6,630,227:00 in September, 1989. The over 50 Percent increase on the original contract sum were due to the following:

i.	Under-measurement of Quantities in the Bill of Quantity	502,873:35
ii.	Fluctuations in Labour and Materials	2,406,043:26
iii.	Increase in Sub-structure after Remeasurements	58,244:80
iv.	Increase in External Works	49,158:00
	T o t a l =	₦2,766,727:40

A project which started at the initial cost of ₦4.10 million and completed at ₦6,630,227:00; one and a half years (1½ Years) after its scheduled completion was no doubt messed up. Under normal circumstances the project would have been considered improperly planned/managed. Obviously a 50 Percent increase in the total contract sum and over a 100 Percent increase in the completion time was not in the best interest of the client.

The client lost in the time required for the completion of the project and also incurred financial loss for paying up to ₦2.40 million on fluctuations on labour and materials which could not have been possible if the contract was completed as planned.

Given the experiences of the client on this project as it affects performance of the consultants, it would be difficult to convince such a client to engage the services of consultants when there was an alternative capability to rely upon. As a matter of fact the Authorities in the Federal University of Technology, Yola had not engaged the services of Consultants since 1989, inspite of the fact that volumes of projects were implemented since then.

The total amount of fees paid to the Consultants as at the time of their disengagement on the project including reimbursible expenses are as follows:

(a) Pre-contract Fees

i.	Architectural Services	148,800:00
ii.	Quantity Surveying	43,085:00
iii.	Structural Engineering	48,472:00
iv.	Services Engineering	141,625:00
		₦381,982:00

(b) Post-contract Fees

i.	Architectural Services	107,330:00
ii.	Quantity Surveying	86,056:00
iii.	Structural Services	103,200:00
iv.	Services Engineering	12,500:00
		₦309,086:00

(c) Total Fees

Pre-contract Plus Post-contract = ₦691,069:00

The high cost of post-contract services for the three Consultants; the Architects, the Quantity Surveyors and the Structural Engineers was due to the engagement of these Consultants on residency basis in addition to normal services which they claimed as well. The terms of the residency services for the Consultants were as follows:

(a) Architectural

i. Salary ₦2,250:00 Per Month

ii. Transportation ₦600:00 Per Month

iii. Housing ₦7,500:00 Per Annum

(b) Structural

i. Salary ₦3,000:00 Per Month

ii. Transportation ₦600:00 Per Month

iii. Housing ₦7,500:00 Per Annum

(c) Quantity Surveying

i. Salary ₦2,100:00 Per Month

ii. Transportation ₦600:00 Per Month

iii. Housing ₦7,500:00 Per Annum

These amounts were agreed and paid for the period of 21 months when the services of the Consultants were terminated. For the housing, the rents paid for each Consultant was for two years period. Inspite of all the huge investment on the Consultancy Services, the value of work done as at termination of services including certified fluctuation claims were ₦2,998,260:00. The percentage of the Consultancy Services paid on the value of work executed was 23 Percent. This figure was certainly very high enough to make consultancy services approach of executing building projects very unattractive.

From the few projects analysed above, the choice of which method to adopt by clients was obvious. The in-house approach not only save a lot of money paid as fees to Consultants, but could most likely turn out to be less problematic in its implementation processes, variation orders would likely to be less and completion time would likely

be achieved faster than Consultancy Service approach. The consultants are normally not in a hurry to leave. In fact where their services were based on time charges, the longer they stay on a project the more they earn.

When the other eight projects are considered together with the critically studied four projects and analysing them in relation to completion time, variation on final cost of the projects and their maintenance costs would give us the picture in Table 4.1.

The Table 4.1 indicated a list of project executed at different times in the Universities of Maiduguri and Yola. The initial costs and final costs of the projects were indicated. The initial and final completion periods were also shown. The table also indicated the percentage increases in the contract sums of the various projects and the method each project was handled. There is also the column which indicated the amount of fees paid on those projects handled by Consultants.

From the analysis contained in the table, it is clearly seen that projects handled by the Consultants has higher cost differential percentages than

those handled by the in-house staff. Construction period tend to be lower in projects handled by in-house staff than those handled by the Consultants.

The idea of collecting data on the amount of money payed as Consultancy Services fees on some of the projects was meant to indicate to a reasonable extent the amount the client would have saved, if the projects were handled by the domestic staff.

In order to make further assessment of the performances of the in-house professionals viz-a-viz the Consultants, some interviews were conducted with some Contractors and University Administrators to know their views on the two methods of project handling.

Seven Contractors were interviewed, out of the seven interviewed only four had the experience of been supervised by both the in-house staff and the Consultants. All the four who had the experience prefer the in-house method of project administration than the Consultant approach.

Some of the reasons they gave for their preferences are summarized as follows:

i. Things work faster when the in-house staff are in-charged directly. Valuations are not delayed, delayed, payments are also received quickly, instructions are given promptly and problems are attended to on daily basis.

ii. Where certain services are to be provided by the University, such as electricity and water supply to the project site, the processes are hastened with in-house staff.

iii. In-house staff are much regular at the site and they are much more particular about quality of workmanship which makes them spent more time guiding the workers on the best way of achieving qualitative work. Consultants however, discuss only with the Site Agent. On seeing bad job, where the Site Agent was not available, the Consultants issue stopage order note, rather than guiding the workers on how to rectify the defects. This attitude normally did not help in the overall progress of the work.

iv. Consultants were said to be Contractors, like the Construction Contractors, as such were

more concerned with protecting themselves rather than guiding the Contractors for a common goal.

Further interview was conducted among the Management of Organisations to determine their views on the same issue of in-house performance in projects administration. The following are the summary of points made:

i. All Management interviewed said that no limit were set on the type and magnitude of project the in-house staff can handle. The choice of approach was purely the pre-rogative of the Management.

ii. Consultants were engaged purely on need when they feel a project was beyond the scope their in-house can handle based on her staff disposition or their work-load at a particular time, Consultants were engaged.

iii. The performance of in-house staff were rated high.

iv. Management were reluctant to involve professionals among the Academic community

because the Academicians look at things critically rather than objectively which might turn out to be not in the best interest of the University.

Survey of completed and occupied buildings were conducted to make an on-the-spot assessment of the level of deterioration of structures. Records of maintenance costs were also checked against each of the buildings inspected from the works and maintenance departments. The following are the details and analysis of the findings (see Table 4.2).

Since the projects were completed at different times and the costs of implementing them also differ. The only basis for comparing the level of deterioration of the buildings was to reduce the total cost of maintenance incurred in each of the building to the percentage of annual average cost of maintenance over the initial cost of building.

The various percentages got were then added for the individual method used in the implementation of the project. It could be seen from the addition of the various percentages that projects handled by the in-house staff have less maintenance than those handled by Consultants.

The likely explanation for this phenomenon was that the Consultants were more concern in getting project executed to earn their fees and go while the in-house staff knew that they remained within the organisation and any problem with the building could easily be directed against them.

TABLE - 4.1: Assessment and Analysis of Projects

Serial Number	Project	Year	Initial Construction Sum (₦)	Final Construction Sum (₦)	Percentage Increase in Contract Sum	Initial Complete Time	Final Complete Time	Method Handled	Fees Paid (₦)
1.	A	1984	2,326,000	2,635,000	11 Percent	45 Weeks	69 Weeks	Consultants	379,820
2.	B	1984	280,000	320,000	14 Percent	8 Weeks	12 Weeks	Consultants	29,400
3.	C	1984	583,000	658,000	13 Percent	26 Weeks	30 Weeks	Consultants	62,000
4.	D	1986	4,100,000	6,630,227	62 Percent	68 Weeks	146 Weeks	Consultants	691,068
5.	E	1987	538,027	582,260	8 Percent	24 Weeks	28 Weeks	In-House	---
6.	F	1989	1,322,000	1,438,100	9 Percent	32 Weeks	34 Weeks	In-House	---
7.	G	1989	280,000	268,000	-4 Percent (Savings)	8 Weeks	9 Weeks	In-House	---
8.	H	1989	1,320,000	1,375,000	4 Percent	48 Weeks	52 Weeks	In-House	---
9.	J	1989	1,275,000	1,320,000	---	48 Weeks	50 Weeks	In-House	---
10.	K	1991	695,000	750,000	8 Percent	8 Weeks	8 Weeks	In-House	---
11.	L	1991	5,500,000	5,850,000	6 Percent	36 Weeks	38 Weeks	In-House	---
12.	M	1992	3,940,000	4,280,000	9 Percent	24 Weeks	32 Weeks	Consultants	406,725

TABLE - 4.2: Maintenance Cost on Projects by Consultant and In-House Professional

Serial Number	Project	Year Built	Method Handled	Initial Cost of Construction	Maintenance Cost to Date	Average Yearly Maintenance Cost	Percentage of Yearly Maintenance Cost Over Project Cost
1.	A	1994	Consultants	₦2,326,000:00	₦564,000:00	₦56,000:00	2.5 Percent
2.	B	1984	Consultants	280,000:00	82,500:00	8,250:00	2.9 Percent
3.	C	1984	Consultants	583,000:00	97,300:00	9,730:00	1.7 Percent
4.	D	1985	In-House	258,000:00	68,000:00	7,555:00	2.9 Percent
5.	E	1987	In-House	538,027:00	47,600:00	6,800:00	1.20 Percent
6.	F	1989	In-House	1,320,000:00	27,850:00	5,569:00	0.4 Percent
7.	G	1989	In-House	1,275,000:00	67,000:00	13,400:00	1.10 Percent
8.	H	1989	Consultants	4,100,000:00	147,240:00	29,448:00	0.7 Percent

TOTAL PERCENTAGE MAINTENANCE COST ON PROJECTS HANDLED BY CONSULTANTS = 7.8 Percent

TOTAL PERCENTAGE MAINTENANCE COST ON PROJECTS HANDLED BY IN-HOUSE = 5.6 Percent

TABLE - 4.3: Summary of Contractors Responses to the Interview Conducted with Them

Contractor	Number of Project Executed for University	Mode of Supervision	Contractor Preference	Reasons for Choice
A	5	3 Consultants 2 Physical Planning Unit Staff	Physical Planning Unit Staff	Shorter payment time. Early site instruction and quick resolution of site problems.
B	3	1 Consultant 2 Physical Planning Unit Staff	Physical Planning Unit Staff	Less protocol closer participation.
C	1	Consultant	No basis of Comparison	Contractor did not express any problem.
D	4	1 Consultant 3 Physical Planning Unit Staff	Physical Planning Unit Staff	Less problems in getting payments better working relationship.
E	2	1 Consultant 1 Physical Planning Unit Staff	Physical Planning Unit Staff	Project had crisis with consultants, Physical Planning Unit had to take over to completion.
F	1	Physical Planning Unit Staff	No basis of Comparison	Contractor express satisfaction.
G	1	Physical Planning Unit Staff	No basis of Comparison	Contractor express Satisfaction.

CHAPTER - FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

From the research carried out, the following conclusions could be drawn:

i. Qualified and competent in-house staff with the necessary facilities and support could effectively handle the design and implementation of any type of construction work that may be required by an organisation employing them, e.g., Faculty of Arts, University of Maiduguri.

ii. In project management/administration, the in-house staff proved to be more effective and efficient than consultants. This fact was attested to, by the results of the analysis of some selected projects handled by the two approaches (in-house handling and Consultancy Services approach) in University of Maiduguri and Federal University of Technology, Yola.

iii. Contractor confidence tended to be higher when supervised by the in-house staff whom they saw as part of the client, than the Consultants whom they saw as hired Contractors like them.

iv. In-house staff had the tendency of paying more attention to construction quality than Consultants. As indicated by the assessment made on the cost of maintenance of some selected projects over a given period of time. Those projects handled by the Consultants had higher percentage maintenance costs than those handled by the in-house staff.

v. Majority of organisations were found to have preferred the in-house handling over the consultancy services approach where the required capabilities could be found within.

vi. Retention of full in-house professionals by organisations which have less construction protect requirement might not be cost effective and might not also be in the interest of the professionals too, because less projects means more redundancy which may affect their capabilities.

5.2 RECOMMENDATIONS

As a result of the findings of the research work the following recommendations are hereby made:

i. Organisations with high construction projects requirements, need to have a developed and well organised in-house team to handle development projects. The in-house team should be given all the encouragement and necessary support to be able to perform their required duties in the best interest of the protect. This should include the employment of qualified and relevant professionals for such services, and providing them with the necessary facilities to work, such as transportation, working materials, etc. They should also be given some incentives such as special allowances to encourage them to put in their best.

ii. When organisations employ the requisite professionals as in-house staff, there is no need to maintain them only as monitoring team, while consultants carry out all necessary services required on project development. The in-house staff has proven to be as effective or even more effective in administration of projects than the consultants.

iii. Where consultants would be engaged, the terms and conditions of their engagement should be

based on the client organisation's terms and conditions of engagement not a wholesale approval of the consultancy services conditions drafted by the various professional bodies. However, the client organisations terms and conditions could be an adaptation of the condition of services provided by the professional bodies. This recommendation became necessary when viewed in the light of non-provision for penalty against erring Consultants or compensation to client on losses incured on project due to Consultants oversight. In the present practice, errors in the contract documents are remedied by the consultants issuance of variation order, to cover such errors. This protects the consultant at the same time settles the contractors problems. But the client has no remedy for such errors against the consultants.

v. There is need for Universities to look inward by complimenting the work of their in-house staff with those professionals working in the academics, rather than engaging consultants from outside. The Consultancy Services

approach adopted by some Universities involving their academic staff might have provided a good method of inward looking. But a less formal approach providing better interaction between non-academic professionals and those from the academic is most recommended. This will help in cross fertilization of ideas between the two which in a way is helpful to the non-academic professionals in updating themselves.

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APPENDIX

SAMPLE QUESTIONS

Questionnaire: Type - I

i. How many times have you execute projects for the University?

ii. How many times were you supervised by the Consultants?

iii. How many times were you supervised by the Physical Planning Unit

iv. Whom do you prefer to supervise your work?

(a) Consultants ( )

(b) Physical Planning Unit ( )

v. Why do you prefer that choice.....
.....
.....

Questionnaire: Type - II (Directed to the University Administration

The questionnaire type-II is to the University Administration and they are as follows:

i. What projects do you normally allow your in-house staff to handle and what are the deciding factors?.....
.....
.....

ii. Why do you engage Consultants for your projects?.....
.....

iii. Are the professionals among the Academic staff involve in your project? If not why and if so to what extent? If they are involved what method is used in compensating them for rendering such service?.....
.....
.....

iv. What are your assessments of projects handled by your in-house staff?.....
.....
.....
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