

# ORGANIZATION STRUCTURE OF GENERAL CONSTRUCTION FIRMS IN KENYA : A CONTINGENCY APPROACH

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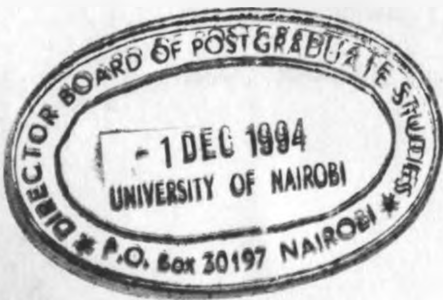
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A Thesis Submitted in Partial Fulfilment for the degree of  
Master of Arts (Building Management) in the Department of  
Building Economics and Management at the University of  
Nairobi.



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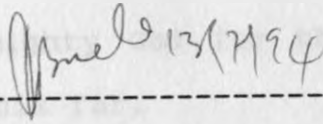
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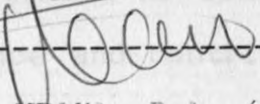
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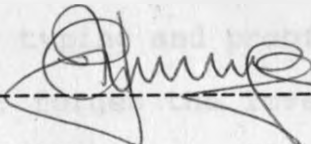
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## ABSTRACT

The construction industry is under pressure to improve productivity, reduce wastage of resources and to increase predictability of its performance. Construction projects implementing and contractors organizations should have the capability to utilize scientific and technological knowledge of integrating various group contributors in an orderly fashion. Individual efforts should be coordinated and compounded in the best possible way to accomplish the organization objectives. The clients and contractors organizations must be well designed to alleviate these management problems. Their organization structures must provide the framework in which management processes have the best chance of achieving maximum performance in the interest of organizations objectives hence performance of construction industry.

This study sets to find out how construction firms are structured for the purpose of performance. The study is divided into three parts, the first part deals with introduction, problem statement and research methodology. The second part is mainly literature review and formulation of theoretical framework while part three is mainly findings, conclusions and recommendations made in the light of the findings and the theoretical background provided.

In respect to the findings made, it is noted that the hypothesis of the study is proved valid. It is also noted that certain managerial practices are more practised in high performing construction firms than in low performing

construction firms. Among the contingency factors, size of the firm and the market under which the construction firm operates play a major role in designing of its structure.

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## CHAPTER ONE

### 1.0 INTRODUCTION

The construction industry embraces a wide range of integrated organizations that collectively construct, alter and repair a wide range of different building and civil engineering structures. The industry has certain unique characteristics, stemming mainly from the physical nature of the construction products and their demand. No two projects are identical and site characteristics also vary extensively.

The construction industry is essentially an assembly industry, assembling on site the products of other industries. The designers intentions are portrayed in drawings, Bills of quantities and specifications and skilled operatives undertake the work of construction and assembly of components on site. Construction work is subject to the vagaries of the weather and of ground conditions.

A wide range of economic factors influence the extent of activity in the construction industry. These include the general economic climate, interest rates, credit available and the extent of control of public sector spending. Housing activities tend to reflect the general position of the construction industry at a particular period<sup>1</sup>.

The construction industry can be divided into two major areas of activity namely building and civil

engineering. These compliment each other and many building contracts include some civil engineering work.

In general building work satisfies man's need for shelter and includes, residential, commercial, social and industrial buildings, while civil engineering work encompasses the essential services to make the building operational. Construction work is undertaken in both public and private sectors and relative proportions vary over time. Building construction work is carried out by either private contractors or direct labour organizations (DLOs). Direct Labour Organizations offer advantage for emergency work, particularly in the maintenance field. Private contractors can be divided into three categories based on their scale of operation:-

1. Large firms
2. Medium firms and
3. Small firms.

Large construction firm, have the capacity to undertake large construction projects in terms of individual project value and project complexity. They usually have a head office and a number of branch offices in different parts of a country. They generally show the highest output per employee and are better equipped, financed and organized but they tend to experience problems stemming from centralized supervision and management with work being undertaken on widely dispersed and changing sites.

In the late nineteen-seventies and early nineteen-

eighties in Britain, a significant proportion of the larger contractors was experiencing difficulties with regional subsidiaries particularly during depression. Faced with a deteriorating business climate, only a minority of the larger firms encouraged their subsidiaries to adopt to the changing situation and enter new markets. The majority appeared unwilling to abandon the centrally imposed policies and practices and, in consequence, have closed down to trade and many others are technically bankrupt<sup>2</sup>.

Lansley<sup>3</sup>, found out that the main reasons for failure were antipathy and mutual distrust between parent and subsidiary, lack of appreciation of the need for changes in objectives, changes in status key personnel, the over-zealous pursuit of corporate harmonization, the inappropriate location of specialist staff, poor balance of power between unit and parent and the adherence to "top down" corporate planning with little involvement from subsidiaries. The position is however changing as a new generation of managers emerges with a greater understanding of prevailing conditions and needs.

Medium construction firms undertake quite large contracts and are often prepared to undertake civil engineering as well as building works. There is evidence of some degree of polarization towards large and small firms. These firms survival requires good management, and sound management is based on effective training, knowledge, skill and hard work. They employ fewer operatives than large construction firms and are better financed and equipped

than small construction firms.

Small construction firms employ few operatives compared to large and medium construction firms and prefer to operate within a reasonable distance of their offices and travel further afield only under special circumstances.

Construction work undertaken by small firms comprises mainly of extensions to existing buildings, refurbishment, repairs and maintenance, and small new building projects of low monetary value compared to those works undertaken by large and medium construction firms.

An individual or individuals starting a construction firm must be aware of all factors which will affect the business at the start and in the future. Among these factors are the organizational structure of the firm in relation to the type of work the firm performs, and its legal and financial structure. The relevance of the alternatives available to the firms structure are equally important throughout the life of the firm. Whereas one form of structure may be appropriate for the starting of the firm, another structure may be appropriate as the firm grows in size and its operational capacity.

Among the decisions that the construction firm must relate to the starting and running of the firm is the type of work it is to perform, the size of its operations and the contract relationship it is to have with the builder-owner. The decision as to the type of work the firm is to perform is dictated by the skills of the owners, employees, financial ability, equipments and how all these are

organized. In the past many construction firms were started by individuals who worked in the crafts. Thus, a worker who was employed as an electrician typically started an electrical construction firm. Firms that specialize in excavation, plumbing etc, also were founded in the same manner.

Currently it is becoming more difficult for a single craftsman to start a successful construction firm. There is an increasing tendency for today's construction firm to be larger and have an increasing dependence on management skills. Thus, the decision as to the type of work performed has become less dependent on physical skills of the founder. In addition, whereas in the past there was a clear line between types of work a firm performed, today's contractor is often expanding his operation to include performing several types of work.

The size of the firm and the annual volume of work it undertakes are constrained by the resources available to the firm and its bonding capacity. The growth of the firm must be accompanied by growth in management skills and changes in its financial make-up<sup>4</sup>. As the firm grows it calls for organizing of resources, including people, such that the objectives and required work of the firm can be accomplished effectively. The need for organizing is created because the work to be done is too much for one person to handle. Thus it follows that as a firm grows in terms of its size and workload, the need and complexity of organizing increases.



The product of organizing is an organization structure. The organization structure determines and depicts the formal lines of interaction within the organization.

According to Barry<sup>5</sup>, many small businesses work well without formal structure or rigid rules. The enthusiasm of the owners or managers keeps these firms on course. But as organizations grow, the work and more people have to be coordinated. Special attention has to be given to how task and relationships are organized and communications maintained. The purpose of an organization structure is to ensure that work is allocated rationally, that there are effective links between roles, and that employees are properly supervised and coordinated.

Structure is the skeleton of the business. It creates enough standardization of roles and procedure to allow work to be performed economically and to keep the organization in tune with the procedures of the firms it does business with. It facilitates control by creating a communication network of instructions and feedback. Structural weaknesses in organization lead to many business problems, including too much paper work, poor or late decisions, inability to cope with change, low morale, industrial conflict, increased overhead cost and lack of competitiveness.

The design of organization is normally understood to cover the basic framework of positions and relations between them, systems for measuring what has been

accomplished by the people in those positions, systems for rewarding them and procedure of selecting and developing them. Structure is central to all these aspects and has to be given particular attention, especially from the perspective of how structural arrangements can be devised which suit the purposes given to the organization and the expectations of the people working within it. When companies and other bodies are successful, some of the credit is usually attributed to good organization. It is widely assumed that the design of organization has an effect on performance. A decline in performance or a change in the conditions affecting performance therefore provide 'prima facie' reasons for considering making changes to organization<sup>6</sup>.

There is a long history of searching for principles of 'good' management practices. The design of organization is part and parcel of the practice of management and so in this vein the endeavour to identify universal organizational prescription continues<sup>7</sup>.

Organizations do not operate under the same circumstances or within the same infrastructures. Every organization is located within a particular configuration of contingencies deriving from its own situation. The contingencies depend on the market and the technological environments in which it operates, its scale and diversity of operations, the technology applied to its work and the type of personnel it employs. An appropriate design is one which best suits the contextual and operational

contingencies that apply. Therefore, use of the contingency approach, more precisely called the task contingency approach, it refers to the organizational needs that are seen to stem from the objective of carrying out tasks effectively. The contingency perspective developed from a view of organizations as open systems, the survival of which is seen to depend upon maintaining a balance of exchange in transactions with the environment sufficient to provide resources for future activities. It is recognized that the management of organizations is undertaken in conditions of uncertainty and dependence, both of which create risks to management. Uncertainty arises from an imperfect understanding of events and from incomplete control over the actions taken by employees and parties outside the organization.

The lack of perfect control over a situation means that the context and conditions in which an organization works is carried out have to be regarded as contingencies. That is, they are relevant and variable parameters for which allowance and adjustment in management practice and organizational design have to be made. The pressure for organizational forms to be adjusted to fit or match changing environmental conditions has been expressed by the "population ecology" model<sup>7</sup>. This model posits a process of natural selection over time such that organizations which survive are those whose features have adopted their habitats be these the conditions of particular industries or societies. It is clear therefore that the contingency

approach regards organization change as regular, if not almost a continuous, necessity in the light of continually changing conditions. It seeks to identify those organizational designs which will be efficient for a given contextual situation.

## 2.0. PROBLEM STATEMENT

There has been a public outcry in Kenya about the poor performance of the implementation teams with respect to both public and private building projects. The local newspapers have carried accusations and counter accusations of who is to blame for the alleged poor performance of the building contracts. On 6th February 1985<sup>8</sup> a minister in the Office of the President suggested that government officers who delay implementation of development projects are not justified to receive their salaries and should be sacked. The following day, an editorial in the Kenya Times<sup>9</sup> discussed the same topic supporting the Minister.

The government has realized that the building and construction industry has been faced with a shortage of technical manpower, limited availability of locally manufactured materials and various impediments to untimely completion of projects. The 1983-88 Development Plan<sup>10</sup> intended to have these constraints ameliorated by improved organization of the implementing ministry, standardization of building materials and practices and increased support for training and job creation programmes.

The importance of avoiding delays and saving on

contract period cannot be overemphasized. Construction time savings are important because they mean real money savings to the building owner provided always it is not itself inherently more costly than the value of the time saving to the owner<sup>11</sup>. A shorter contract period produces savings to the building owner both in the price he pays the builder for the construction of the building and in the reduced value of carrying costs. The lower construction cost is achieved by reduced builder's overheads or preliminaries. The builder's item of major plant such as cranes and hoists and his supervisory staff such as project manager and general foremen are all on the job for a shorter period with a consequential lesser cost.

Many building projects have exceeded their original estimated costs and completion periods and some have fallen below what would be termed as acceptable performance standards. The construction industry is under pressure for improved productivity, reduced wastage of resources and increased predictability of its performance. Implementing organizations lack the capability to utilize scientific and technological knowledge by integrating various group contributions in an orderly fashion. They also lack the capability to manage successfully and efficiently in the sense that individual efforts are coordinated, integrated and compounded in the best possible way for accomplishment of known objectives. Organizations efficiency goes beyond immediate economic goals to include such matters as adequate work force, motivation, job satisfaction and

social and national awareness among others.

The client and contractor organizations must be well designed in order to alleviate these management problems. The organization structures in these organizations must provide a framework in which management processes have the best chance of achieving maximum performance in the interest of organizations objectives.

Walker<sup>12</sup> has pointed out that the effectiveness of the organization structure is fundamental to the quality both of the informative on which decisions will be taken and the decision making. Organization structure is particularly an important aspect for if properly designed it allows the other management aspects to function properly. This is not to say that if an organization is inappropriately designed it will not perform adequately, as people have the ability to construct informal organization structures often to the benefit of performance. However, a strong informal structure can work against organization co-ordination and control.

Most organizations including construction firms fail to realize their potential early because they fail to solve the reorganization problem which matches their managerial capacity to their volume of work. Structures are constituted and constitutive, this means that they are not static but rather organization structure both shapes what goes on in an organization. When designing organizational structure both internal and external (contingency) factors must be considered and re-organization of structure must be

as a result of change of any of these factors. The major issue facing the manager is which organization structure format to select for his organization and how to delegate authority while monitoring control and strategy setting.

Most construction firms have an organization structure of the line and staff type. Line managers are responsible for production. They pass information and instruction down the hierarchy and control what happens. Staff are the functional specialists, engineers, accountants, estimators etc. who provide back-up service to the line managers<sup>13</sup>.

According to John Child<sup>14</sup>, it remains a very much open question as to just how significant an influence on organization performance the organizational design contingency match really is. Uncertainty lies in the fact that most researchers have treated contingencies virtually as God-given constraints. This ignores the possibility that some organizations may be less dependent than others upon their environments, and in a more secure position with respect to maintaining their target levels of performance.

The variable of dependence has come to be recognized as a major explanatory factor both for structure and performance variation. A construction firm, which, for instance, has achieved some degree of monopoly or has found a protected niche in the environment, might well be in a position to control or ignore environmental contingencies. In so far as it has little to fear from the threat of better performing competing firms, then it can also afford to accept a level of sub-optimal performance if it chooses

not to match its structure to suit prevailing contingencies. In the language of economic theory, whenever there are imperfections in the competitive situation or in the public accountability of organizations, the possible inefficiencies resulting from what contingency theorists would regard as a mismatch between organizational design and contingencies are likely to have limited implications for the survival of that organization and this is true for construction firms.

### 3.0. STUDY OBJECTIVES

The study objectives are twofold:-

- 1]. To find out the relationship between structures and performance of construction firms. Performance is measured through use of indicators which include goal (objectives) attainment, growth of the firm, survival in a competitive market and satisfaction of employees.
- 2] To find out if construction firms behave in a similar manner as other business enterprises in responding to contingency factors which have been found to influence the way in which effective organizations are structured. These factors are concerned with:-
  - i] size and age of the firm;
  - ii] nature of technology employed; and
  - iii] environmental factors.



#### 4.0. STUDY HYPOTHESIS

Organization structure has a significant influence on performance of a construction firm.

#### 5.0. SCOPE OF STUDY

In the past researchers in the building industry have concentrated on the buildings themselves, especially on building materials and technological development. The organization and management of construction firms has received little attention. There is little point in the construction industry developing the special skills of its members and new appropriate building materials if no one is going to amalgamate them in the best manner to meet a particular client's objectives.

J.S. Mbay<sup>15</sup>, points out that "for a long time now, it has been recognized that the constraints which inhibit's effective development and performance of the building industry in developing countries are complicated organizational systems, inappropriate tendering and contractual procedures among others".

In a construction project there is a client and contractors organization. The performance of the project depends on both these parties. Failure on the side of one party to perform his or her contractual obligation affects the performance of the overall project. The organization structures of public projects implementing organizations (being clients organizations) have been studied by Sefu<sup>16</sup> and Khangati<sup>17</sup> who have given various conclusions and

conclusions and solutions on how best client organization structure can be designed in order to improve performance of public building projects.

This study therefore concentrates on the contractors organization and tries to find out how their structures are designed for the benefit of performance. The contractors under study are general contractors undertaking public projects and therefore registered under the Ministry of Public Works. The overall performance of a building project depends on the main contractor because subcontractors and material suppliers are all under the main contractor who provides overall administration and attendance. The general contractor has a contract with the client for constructing the building project while the subcontractors have contracts with the general contractor. Thus, the client does not deal with several parties in that his contract is limited to a contract with the general contractor. This also allows the subcontractor to specialize in his craft and to somewhat leave the management task of scheduling and overall project management to the general contractor.

Performance of an organization can be measured using a number of indicators which includes:-

1. Goal/objectives attainment.
2. Growth of the firm.
3. Employee satisfaction.
4. Return to invested capital.
5. Productivity.

Structures are designed in order to achieve the organizational objectives and therefore the suitability of the structure depends on how well it has been able to achieve the goals and objectives of the firm.

Structures are not static but change depending on the contingency factors. Growth and historical characteristic of the firm affect structure at certain stages of its growth. A certain structure is favourable at the start of the firm but changes as the firm grows both in size and in increase of volume of work the firm undertakes.

Organization structure is a set of roles creating interaction among contributors while maintaining control and coordination. Employee satisfaction depends on how well the roles are defined and how they interact with each other and also motivation climate that the management offers to employees.

The other two indicators of performance which are not applied in this study are productivity and return to invested capital. This is because of difficult of getting information on these factors and also lack of specified acceptable structure make it difficult to evaluate these indicators against many structures.

## 6.0. STUDY AREA

The study analyzes the structure of large, medium and small general construction firms in Nairobi. According to a pilot survey carried out in the Ministry of Public Works there are 3062 general contractors registered under the

Ministry of public works since 1985 re-registration, out of which 720 construction firms are located in Nairobi. Out of these there are 109 large, 233 medium and 378 small construction firms. Compared to other districts in Kenya, Nairobi has the most contractors in all categories. Most contractors have head offices in Nairobi and sub-branches in other districts of the country. The study of contractors in Nairobi therefore can be generalized as a behaviour of contractors in Kenya. Organisational structure of construction firms performing similar type and size of work will be the same regardless of the firms geographical location.

#### 7.0 RESEARCH METHODOLOGY

To achieve the objectives the Ministry of Public Works categorization was used to help in classifying the contractors into large, medium and small sized contractors.

The Ministry of Public Works categorizes contractors as follows:-

CATEGORY	CONTRACT SUM (in K£)
A	15,000,000+
B	1,000,000 - 15,000,000
C	500,000 - 1,000,000
D	250,000 - 500,000
E	125,000 - 250,000
F	75,000 - 125,000
G	37,500 - 75,000
H	0 - 37,500

The above categorization is based on the work the firm has undertaken (in terms of value), qualified personnel within the firm and the construction works the firm has undertaken and completed five years before it applied to the Ministry of Public Works for inclusion of their name into the list of contractors who can undertake public projects.

Therefore the categorization serves as a base of classifying large, medium and small sized construction firms for the purpose of this study as follows:-

	<u>CATEGORY</u>	<u>CLASS OF THE FIRM</u>
(i)	A & B	LARGE CONSTRUCTION FIRMS
(ii)	C, D & E	MEDIUM CONSTRUCTION FIRMS
(iii)	F, G & H	SMALL CONSTRUCTION FIRMS

CATEGORY	NO. OF CONTRACTORS	CLASS OF THE FIRM	NO. OF CONTRACTORS IN CLASS (TOTAL)
A B	83 26	LARGE CONSTRUCTION FIRM	109
C D E	57 75 101	MEDIUM CONSTRUCTION FIRM	233
F G H	101 132 145	SMALL CONSTRUCTION FIRMS	378

TOTAL REGISTERED GENERAL CONTRACTORS IN NAIROBI 720

In general, contractors registered in Ministry of Public Works were listed and later divided into above classes. Each construction firms name was written in a piece of paper, later these papers were put together according to class of the contractor and then mixed up together. Later a paper bearing the contractors name was picked one by one and these were written in a list in order of picking and later systematic random sampling was done in which every 3rd contractors name starting from the first on the list was selected for interview. This was done to each class of contractors to avoid bias of selecting contractors.

Questionnaires were administered to 240 selected constructions firms through use of research assistants. Data collected includes the history of each firm, ownership, projects executed, their estimated and actual completion time and estimated and actual costs. Number of permanent employees in each firm and how they relate to each other, various communication and coordination channels. This data brings out the organization structure of the firm and communication effectiveness.

Performance is measured through use of indicators which include:-

- i] Goal attainment;
- ii] growth; and
- iii] employees' satisfaction.

"Organizations are effective to the degree that they achieve their objectives, satisfy the needs of their

members and grow in their ability to continue to do both these things<sup>18</sup>".

The objectives of each construction firm were established and their output analyzed to make comparison on organization effectiveness and goal attainment.

Most organizations have multiple goals, some of which are not easily measured. Example participants satisfaction, increased production or long-run viability. It is important to recognize multiple goals and evaluate organizational performance on a variety of relevant dimensions. Performance measures involve effectiveness (the degree to which goals are accomplished), efficiency (the use of resources in attaining goals), and the participant satisfaction (the motivation climate). Analysing projects carried out by the organization is only one way of throwing some light on how these organization structures affect projects execution.

Classifying construction firms into large, medium and small size firms is to help analyze how contingency factors which include age and size, market served, and technology used influence the designing of organizational structure.

The structures of the randomly selected firms in each class were analyzed and compared to the conceptual framework developed in Chapter 3. This model helps analyze which of these factors in a particular situation is exerting the greatest pull on organization and therefore influencing its character most strongly. This analysis helped to find out whether construction firms behave in

similar fashion as other business oriented organizations in responding to those situational factors which have been shown to influence organization structures and procedures, and whether the organizational configuration of construction firms relate to those of other business enterprises.

After collection of data through the use of interviews and questionnaires comparative analysis was carried out to each class of contractors focusing on contingency factors. In order to identify patterns of relationships that lead to effective performance it was important to include many construction firms in each class. This is the essence of the comparative method - "systematic comparison of a fairly large number of organizations in order to establish relationships".

Another approach in comparative analysis is to investigate the important characteristics, dimensions or attributes that are apparent in all firms in some class. The key question in this type of analysis is "what characteristics are important for comparative purpose?" Researchers have concluded that Nature of technology (routine or non-routine) is a key characteristics and have suggested that organizations with similar technologies should have similar structural designs. Other researchers have focused on environment (certain or uncertain) or goals (profit or service) as the key variables. In fact, a wide variety of characteristics which have been used in comparative studies are organization size, structure,



attributes to participants, decision making process and leadership styles. It is an increasing awareness that no single characteristic is appropriate for meaningful comparative analysis.

1992, p. 112.

1992, p. 112. *Journal of Management Studies*, 29(1), 1-12.

1992, p. 112. "Constructing Theory for National Development: Building Industry and Community," 44, 1992.

1992, p. 112. Business Practices for Construction Management. London: McGraw-Hill, 1992, p. 112.

1992, p. 112. The Practice of Management Accounting, 2nd Edition. Professional and Technical Books, 1992, p. 112.

---

1992, p. 112. *Journal of Management Studies*, 29(1), 1-12.

1992, p. 112.

The Scottish Times (Glasgow) February 6, 1992.

The Scottish Times. "Scotland" Glasgow February 7, 1992.

1992, p. 112. The Development Plan 1994-98. London: Greenwood Printer, 1994, p. 112.

1992, p. 112. "Cost Planning" The Building Economics, 1992, p. 112.

1992, p. 112. Project Management in Construction. London: Pitman, 1992, p. 112.

1992, p. 112. *Journal of Management Studies*, 29(1), 1-12.

## REFERENCES

1. P.A. Stone, Building Economy, Design Production and Organization. Oxford 3rd Ed. Pergamon Press, 1983. p242.
2. Ivor Seeley, Quantity Surveying Practice. MacMillan, London 1984. p5-6.
3. P. Lansley, "Disturbing trend for National Contractors" Building Technology and Management. May, 1983.
4. Adrain, J.J., Business Practices for Construction Management. American Elsevier Publishing Co. Inc. 1976. p15-16.
5. Barry Fryer, The Practice of Construction Management. Collins Professional and Technical Books, 1985, p30.
6. John Child, Organization: A Guide to Problems and Practice. 2nd Ed. Harper and Row 1984. p3.
7. Ibid, p212
8. The Kenya Times. (Nairobi) February 6, 1985.
9. The Kenya Times, "Editorial" Nairobi February 7, 1985.
10. Republic of Kenya: The Development Plan 1984-88. Nairobi, Government Printer, 1984 p130.
11. George W.H. "Cost Planning" The Building Economist. 12:3 1973. p148-158.
12. Anthony Walker, Project Management in Construction. Granada, London, 1984 p13.
13. Barry Fryer, op cit p41-21.

14. John Child, op cit p227.
15. Mbaya John S, "The Standard Forms of Building Contracts in Changing Times". Build Kenya, March 1981, p28.
16. Sefu K.W, "Role of Organization Structure in the Implementation of Public Building Project in Kenya" M.A. Thesis 1986.
17. Khangati A, "The Implementation of Public Building Projects : A Case Study of Ministry of Public Works, Housing and Physical Planning" M.A. Thesis 1986.
18. Aubrey C. Sanford, Gary, T. Hurt, Hyler J. Bracey, Communication Behaviour in Organization, Charles E. Merrill Publishing Company 1976. p17-18.

## CHAPTER TWO

### 2.00 LITERATURE REVIEW

#### 2.10 ORGANIZATION STRUCTURE

Organization structure has been defined differently by different authors<sup>1</sup>. It can simply be defined as a pattern of inter-relationships, authority and responsibility that is established between the contributors to achieve the firm objectives.

One implication of this definition is the division of labour, people are given different tasks or jobs within an organization. Another implication is that organizations contains ranks or a hierarchy, the positions that people fill have rules and regulations that specify in varying degrees how incumbents are to behave in these positions. An organization structure serves three basic functions:-

1. It is intended to produce organizational outputs, and to achieve organizational goals.
2. It is designed to minimize or at least regulate the influence of individual, variations on the organization. Structure is imposed to ensure that individuals conform to requirements of organization and not vice versa.
3. It is the settings in which power is exercised (structure also set or determines which positions have power in the first place), in which decisions are made (the flow of information which goes into a decision is largely determined by

structure) and in which organizations activities are carried out.

Organisational structure has impact on an individual above and beyond the determination of the amount of discretion exercised. For example, the position of an individual in an organization, such as clerk, supervisor and middle manager shapes that individual's reactions to the organization<sup>2</sup>. Although such demographic factors such as age or sex are also determinant, the positions of an individual appears to be more important. Similarly the satisfaction of the individual with work is related to organizational structure<sup>3</sup>. Some workers are more satisfied in one type of an organization structure while others prefer a different type.

Structural characteristics and individual characteristics interact, indeed things that might appear to be a consequence of individual actions can turn out to have important structural linkages. For example the capacity for innovation, generally thought to be crucial for organizational survival, would be based on the capabilities of the individuals in the organization. This may not be the case, however, (Baldrige and Burnhom)<sup>4</sup>, found out that structural factors such as organizational size and complexity, together with environmental characteristics, were more related to organizational innovation than were individual factors, such as age, attitude and education. The point is not that individuals are unimportant, but rather that individual characteristics interact with

organizational structural characteristics to produce the events within organizations.

Majority of studies on organizational structures make the assumption that there is a structure in an organization; but there is ample evidence that this is not the case, (Litwaki)<sup>5</sup>. There are structural differences among work units, departments and divisions. There are also structural differences according to the positions on the hierarchy. There is inter-organizational variation, both across organization units and up and down the hierarchy.

The purpose of organization structure is to achieve desired objectives - objectives that express the common purposes of positions and of the organizations components. This is frequently overlooked or submerged in the fascination of documenting the structure with precision, elegance, and in attempts at completeness. An organization structure should be sufficiently well expressed in writing so that<sup>6</sup>:-

1. Work is anticipated, positions are designed and related and staffing can be completed in time to meet the future work opportunities without surprise.
2. Oral discussion and agreement about work relationships can be confirmed in writing, especially as a permanent referent increasing the likelihood of continued shared understanding about each individual's work.

3. Accurate information on any change in responsibilities can be communicated quickly, accurately and almost simultaneously to all those affected by the change.

Organization structure needs to be sufficiently dynamic so that individuals responsible for its work will respond quickly and constructively by taking business risk in an environment of accelerating change only part of this change - whether technological, political, social or economical - can be anticipated with any accuracy. Responsibilities thus need to be defined in such a way that individuals are encouraged to seek and capitalize on the emerging opportunities presented by this unfolding, largely unpredictable future.

The design of individual position, also needs to be sufficiently flexible to allow for and utilize the rich variety of individual differences.

Organization structure needs a certain stability or continuity. If for no other reason than to permit individuals to learn enough about their assigned work and to make significant contributions. Work relations among those staffing the structure take time to develop; maximum benefits from these relationships are achieved after being sustained for some time. Most individuals also want to be able to plan their personal careers for reasonable periods even though there are differences in what each considers reasonable.

Planning this organization structure, designing it,

altering and changing it to meet new opportunities and needs is an essential and continuing part of every manager's job. And yet all too frequently, this kind of planning is viewed as an unwarranted interruption, rather than as a basic element of managerial work.

Organization structure should reflect the nature of work and communication flows. Most structures reflect real organizational needs or at least those of the recent past, it must reflect its environment and must be designed to work, to permit contributions by its members and to help people gain objectives efficiently in a changing future. In this sense, a workable organization structure can never be static. There may be no single best organization structure that will work in all kinds of situations. An effective organization structure depends on the situation and must be designed to enable individuals to contribute to organizational objectives<sup>7</sup>.

The basic need of organization structure is the limitation of the span of management. If there were no such limitation, we might have an unorganized enterprise with only one manager. Authority is the means by which groups of activities can be placed under a manager and coordination of organizational units be promoted. It is the tool by which a manager is able to exercise discretion and create an environment for individual performance<sup>8</sup>. Organizations can be distinguished into formal and informal organizations.



## 1. FORMAL ORGANIZATIONS

Organizations are social units (or human groupings) deliberately constructed and reconstructed to seek specific goals. Organizations are characterized by:-

1. Division of labour, power and communications responsibilities, divisions which are not randomly or traditionally patterned, but deliberately planned to enhance the realization of specific goals.
2. The presence of one or more power centres which control the concerted efforts of the organization and direct them towards its goals. These power centres also continually review the organization's performance and re-pattern its structure, where necessary, to increase its efficiency.
3. Substitution of personnel, that is unsatisfactory persons can be removed and others assigned their tasks. Organization can also re-structure its personnel through transfer and promotion.

Formal organization has been termed as a planned structure and represents the deliberate relationships among components that will meet the objectives effectively. Formal structure is typically the result of explicit decision making and is prescriptive in nature, a "blueprint" of the way activities should be related. Typically it is represented by a printed chart and is set

forth in organization manuals, position description, and other formalized documents. Although the formal structure does not comprise the total organizational system, it is of major importance. It sets a general framework and delineates certain prescribed functions, responsibilities and the relationships among them<sup>10</sup>.

Formal organizations must be flexible. There should be room for discretion, for taking advantage of creative talent and for recognition of individual talent. Individual effort in a group situation must be channelled toward group and organization goals.

Although the attainment of goals must be the reason for any cooperative activity, we must look further for principles to guide the establishment of effective formal organization. These principles are<sup>11</sup>:-

1. Principle of unity of objective - an organization structure is effective if it enables individuals to contribute to organization objectives.
2. Principle of organizational efficiency - an organization is efficient if it is structured to aid the accomplishment of organization objectives with a minimum on cost.

## 2. INFORMAL ORGANIZATION

Informal organization refers to those aspects of the system that are not planned explicitly but arise out of activities and interactions of the participants.

Chester Bernard<sup>12</sup>, regards informal organization as any joint personal activity without conscious joint purpose, even though contributing to joint results.

Keith Davis<sup>13</sup>, defines informal organization as "a network of personal and social relations not established or required by the formal organization but arising spontaneously as people associate with one another". These dynamic interpersonal relationships are influenced by the number of people in the group, the actual personnel involved, what the group is concerned with, its changing leadership, and the continuing process of change. Managers must be aware of the informal organization and avoid antagonizing it.

Both formal and informal organization exist in every organization including construction firm. Formal groupings results from the fact that a human being is a social being needing a sense of belonging and has to be accepted by other. This in itself is a motivating factor. Informal groupings can be observed in construction sites during break hours especially during lunch break and after work. There are some job related groups within work group for example masonry, carpenters or estimators, planners etc. Cohesive informal work groups are powerful instruments that can work for a against the formal organizations. For instance, a highly cohesive group whose goals are in agreement with organization objectives can use this strength to assist the firm in increasing productivity while a cohesive group not in agreement with organizations

objectives can have extremely negative effect on the accomplishment of the organizational objectives. Some managers attempt to reduce cohesion in order to maintain coordination and control.

According to Walker<sup>14</sup>, the ideal is when the organization is sufficiently well designed that it does not generate an informal structure. Such an outcome would mean that the organization is designed to meet its specific objectives and that the participating members would have confirmed that, in their view this is in fact the case.

Structure should be well designed in order to divide its labour into distinct tasks and then achieve coordination among them<sup>15</sup>. To understand organization structures themselves, we should first know how they function, we need to know the component parts, what functions each perform and how these functions interrelate, specifically we need to know how work, authority, information and decision flow in an organizations.

## 2.20 BASIC PARTS OF AN ORGANIZATION

There are five basic part of the organization<sup>16</sup>.

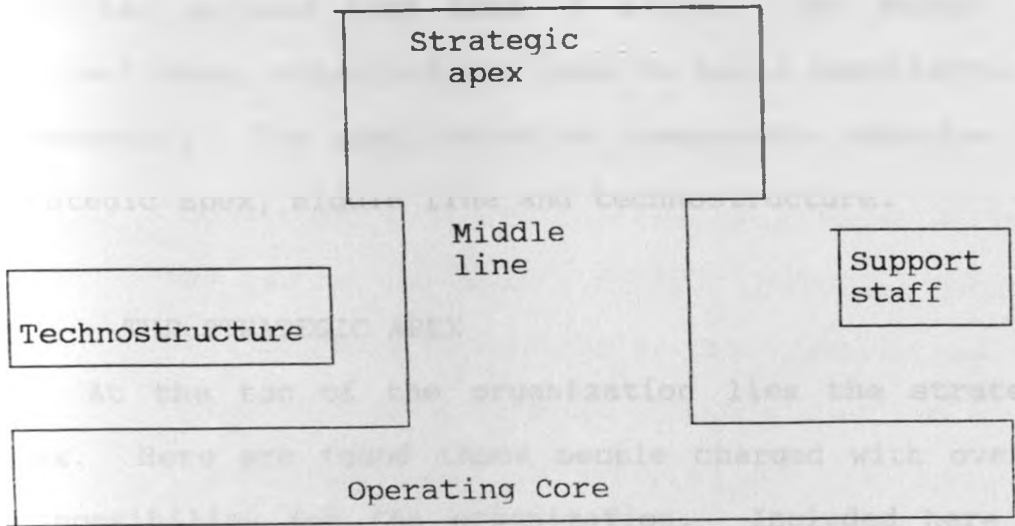


Fig: 1 The five basic part of organization  
Mitzerberg P.20.

#### 1 THE OPERATING CORE

The operating core of the organization encompasses those members - the operators - who perform the basic work directly to the production of products and services. The operators perform four main functions:-

- 1]. They secure the inputs for production;
- 2] They transform the inputs into outputs;
- 3] They distribute the outputs;
- 4] They provide direct support to the input, transformation and output functions.

Since it is the operating core that the other parts of the organization seek to protect, standardization is generally carried furthest here. How far, of course, depends on the work being done. The operating core is the

heart of every organization, the part that produces the essential outputs that keep it alive. But except for smallest ones, organizations need to build administrative components. The administrative components comprise the strategic apex, middle line and technostructure.

## 2 THE STRATEGIC APEX

At the top of the organization lies the strategic apex. Here are found those people charged with overall responsibility for the organization. Included here are those who provide direct support to the top managers. The strategic apex is charged with ensuring that the organization serves its mission in an effective way, and also that it serves the needs of those people who control or otherwise have power over the organization. This comprises three sets of duties:-

- 1] Direct supervision to the extent that the organization relies on this mechanism of coordination, it is the managers of the strategic apex and middle line who effect it to ensure that the whole organization functions as a single integrated unit.
- 2]. The management of the organization's boundary conditions - its relationship with the environment.
- 3] The third set of duties relate to the development of the organization's strategy. Strategy may be

viewed as a mediating force between the organizations and its environment. Strategy formulation therefore involves the interpretation of the environment and the development of consistent patterns in streams of organizational decisions to deal with it. Thus, in managing the boundary conditions of the organization, the strategic apex develops an understanding of its environment, and in carrying out the duties of direct supervision, they seek to tailor a strategy to its strengths and its needs, trying to maintain a pace of change that is responsive to the environment without being disruptive to the organization, specifically, in the entrepreneur role, the top managers search for affective ways to carry out the organization's "mission" (ie its production of basic product and service), and sometimes even seek to change that mission.

In general, the strategic apex takes the widest and as a result the most abstract perspective of the organization. work at this level is generally characterized by a minimum of repetition and standardization, considerable discretion and relatively long decision making cycles, mutual adjustment is the favoured mechanism for coordination among the managers of the strategic apex.

The strategic apex is joined to the operating core by the chain of middle - line managers with formal authority. This chain runs from the senior managers just below the strategic apex to the first line supervisors, who have direct authority over the operators and embodies the coordinating mechanism that has been called direct supervision. Direct supervision requires close personal contact between managers and operators with the result that there is some limit to the number of operators any one manager can supervise -the so called "span of control" small organizations can get along with one manager (at the strategic apex), bigger ones require more (in middle line). As Moses was told in the desert:-

Thou provide out of all the people able men, such as fear God, men of truth, hating covetousness, and place such over them, to be rulers of thousands, and rulers of fifties, and rulers of tens; and let them judge the people at all season and it shall be, that every great matter they shall bring unto thee, but every small matter they shall judge; so shall it be easier for thyself, and they shall bear the burden with thee. If thou shall do this thing and God command thee so, then thou shalt be able to endure, and all, this people shall also go to their place in peace (Exodus 18: 21 - 24).



Thus, an organization hierarchy is built as a first - line supervisor is put in charge of a number of operators to form a basic organizational unit, and so on until all the remaining units can come under a single manager at the strategic apex designated the "chief executive officer" to form the whole organization.

In this hierarchy, the middle - line manager performs a number of tasks in the flow of direct supervision above and below him. He collects "feedback" information on the performance of his unit and passes some of this to the managers above him, often aggregating it in the process. He is required to do more than simply engage in direct supervision. He too has boundary conditions to manage, horizontal ones related to the environment of his own unit. That environment may include other units within the large organization as well as groups outside the organization.

#### 4 THE TECHNOSTRUCTURE

In the technostructure we find the analysts (and their supporting clerical staff) who serve the organization by affecting the work of others. These analysts are removed from the operating work flow - they may design it, plan it, change it, or train people who do it, but they do not do it themselves. Thus, the technostructure is effective only when it can use its analytical techniques to make the work of others more effective. These analysts are concerned with adaptation, with changing the organization to meet the environmental change and those concerned with control, with

stabilizing and standardizing patterns of activity, in the organization<sup>17</sup>. There are three types of analysts who correspond to three form of standardization. Work study analysts, who standardize work processes; planning and control analysts, (such as long range planners, budget analysts and accountants), who standardize output and personnel analysts (including trainers and recruiters) who standardize skills.

In a fully developed organization, the technostructure may perform at all levels of the hierarchy.

## 5 SUPPORT STAFF

Almost any large organization has a great number of units, all specialized, that exist to provide support to the organization outside the operating work flow. The existence of the support staff reflects the organizations attempt to encompass more and more boundary activities in order to reduce uncertainty, to control its own affairs most support units are self-contained; they are mini-organizations, mainly with their own equivalent of an operating core. These units take resources from the larger organizations and in turn provide specific services to it. But they function independently of the main operating core, that is, they are coupled only in a pooled way. Other support units, however, do exist in sequential or reciprocal relationships with units above the operating core. Support units can be found at various levels of the hierarchy, depending on the receivers of their service.

Designing of an organisation structure takes into consideration certain principles of management to achieve co-ordination among its contributors. Each organisation is divided into various parts, each part performing a specific role with an aim of achieving overall organisation objectives. Construction firms are not different from this, therefore these basic parts or components of organisation should also exist in construction firms (refer pages 85-88).

Given the five parts of an organization we may ask how they all function together. We cannot describe one way they function, for research suggests that the linkages are varied and complex. The parts of the organization are joined together by different flows of authority, of work material, of information and of decision processes (themselves informational). Therefore the organization should design a workable co-ordination mechanism to link the five parts at an organization.

### 2.30 ORGANIZATION COORDINATION MECHANISM

Coordination involves various means. These can be referred to as coordination mechanisms, although it should be noted that they are as much concerned with control and communication as with coordination.

Five coordinating mechanisms explain the fundamental ways in which organizations coordinate their work. These should be considered the most basic elements of the structure, the glue that holds organizations together.

These are:-

1 MUTUAL ADJUSTMENT

Mutual adjustment achieves the coordination of work by the simple process of informal communication, control of the work rests in the hands of the doers. Because it is such a simple coordinating mechanism, mutual adjustment is naturally used in the simplest of organizations. Paradoxically, it is also used in the most complicated organizations because it is the only one that works under extremely difficult circumstances.

2 DIRECT SUPERVISION

As an organization outgrows its simplest state - it turns to a second coordinating mechanism. Direct supervision achieves the coordination by having one individual take responsibility for the work of others, issuing instructions to them and monitoring their actions.

3 STANDARDIZATION OF WORK PROCESS

Work processes are standardized when the contents of the work are specified, or programmed. The coordination of parts is incorporated in the programme (for the work) when it is established and then use of continuing communication is correspondingly reduced.

#### 4 STANDARDIZATION OF OUTPUTS

Outputs are standardized when the results of the work, for example, the dimensions of the product or the performance are specified.

#### 5 STANDARDIZATION OF SKILLS

Sometimes neither the work nor its outputs can be standardized, skills (and knowledge) are standardized when the kind of training required to perform the work is specified.

The five coordinating mechanisms fall into a rough order. As organizational work becomes more complicated the favoured means of coordination shift, as shown in figure 2.

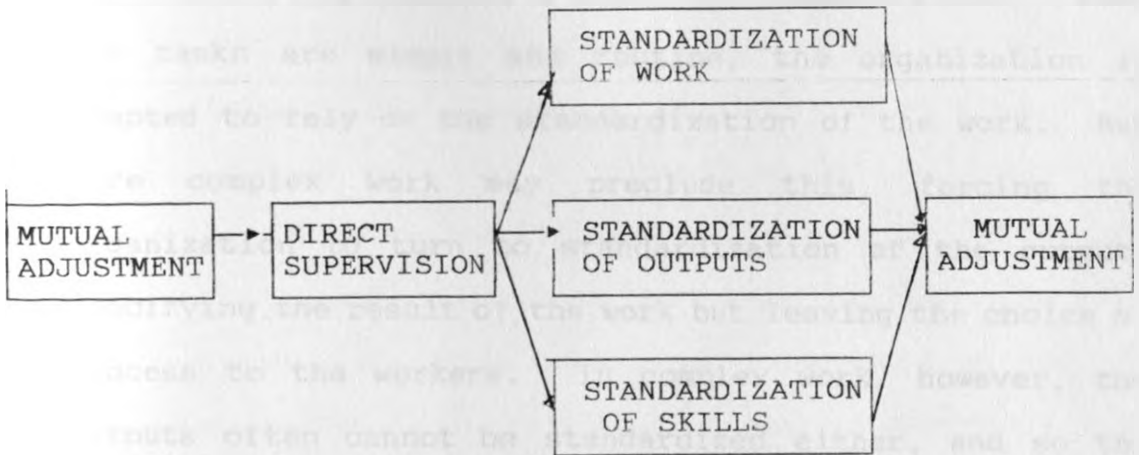


Figure 2: The coordinating mechanism: A rough continuum of complexity. Mitzerberg page 7.

An individual working alone has no great need for any of the mechanisms. Coordination takes place simply in one

brain. Add a second person however, and the situation changes significantly. Now coordination must be achieved across brains. Generally, people working side by side in small groups adapt to each other informally. Mutual adjustment becomes the favoured means of coordination.

As the group gets larger, it becomes less able to coordinate informally and supervision becomes a necessity. Thus, there is a need for leadership, control of the work of the group passes to an individual. In effect back to a single brain that now regulates others. Direct supervision becomes the favoured coordinating mechanism.

As the work becomes more involved, another major transition tends to occur. Whereas in the last one, some control of the work shifted from the worker to a supervisor, now there is a shift to standardization. When the tasks are simple and routine, the organization is tempted to rely on the standardization of the work. But more complex work may preclude this, forcing the organization to turn to standardization of the outputs specifying the result of the work but leaving the choice of process to the workers. In complex work, however, the outputs often cannot be standardized either, and so the organization must settle for standardizing skills of the worker if possible. But should the divided task of the organization prove impossible to standardize, it may be forced to return full cycle, to favour the simplest, yet most adaptable coordinating mechanism - mutual adjustment, sophisticated problem solvers facing extremely complicated

situations must communicate informally if they are to accomplish their work.

The foregoing describes organizations in terms of their use to the coordinating mechanisms as noted, simplest organization rely on mutual adjustment to coordinate its basic work of producing a product or service. Its operators - those who do this basic work are largely self-sufficient.

As the organization grows, it adopts a more complex division of labour among its operators hence the need for introduction of administrative division of labour in the structure. And as an organization further elaborates itself, more managers are added not only managers of operators but also managers of managers. An administrative hierarchy of authority is built. As the process of elaboration continues, the organization turns increasingly to standardization as a means of coordinating the work of its operators. The responsibility for the much of this standardization falls on a group composed of analysts. This brings another administrative division of labour to the organization between those who do and who supervise the work and those who standardize it. Therefore we end up with an organization consisting of a core of operators who do the basic work of producing the product and services, and an administrative component of managers and analysts, who take some of responsibility for coordinating their work. If construction firms apply same principle in designing of their structure the five basic co-ordination mechanism should be evident as the firm grows from small

construction firm to medium and the large construction firm (refer to page 85-88). After developing the basic parts of an organization and coordination mechanism there is more need for communication system between these parts.

## 2:40 ORGANIZATION COMMUNICATION SYSTEM

Communication is the transfer of information from the sender to the receiver, with the information being understood by the receiver<sup>18</sup>.

Chester Bernard<sup>19</sup>, viewed communication as the means by which people are linked together in an organization to achieve a common purpose, indeed group activity is impossible without communication because coordination and change cannot be effected. The purpose of communication in organization includes:-

- 1]. Establishing and disseminating goals of an enterprise;
2. Developing plans for their achievement;
- 3]. Organizing human and other resources in the most effective and efficient way;
- 4] Selecting, developing and appraising members of the organization;
- 5]. Leading, directing, motivating and creating a climate in which people want to contribute;
- 6]. Controlling performance.

In an effective organization, communication flows in various directions: downwards, upwards and crosswise. Communication also flows horizontally, that is between



people on the same or similar organization levels and diagonally, involving persons from different levels who are not in direct reporting relationships with one another.

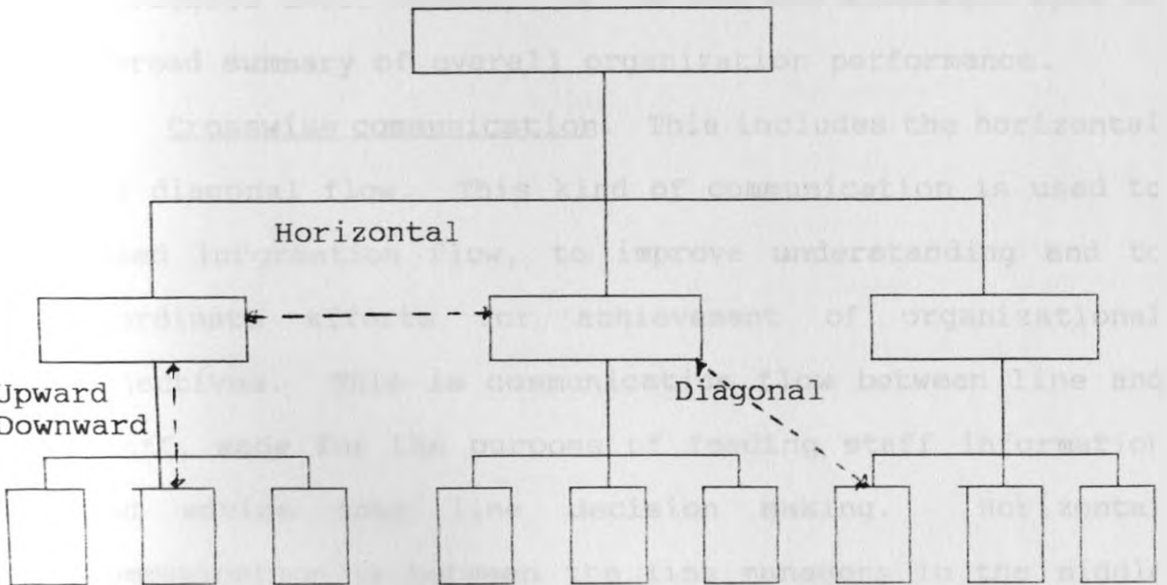


Fig: 3 Information flow in an organization

Knortnz pp 466.

Downward communication flows from people at higher levels to those at lower levels in the organizational hierarchy. Both oral and written communication are used. These include commands and work instructions, fed down the chain of authority emanating from the strategic apex or a middle-line position, and elaborated as they flow downwards.

Upward communication travels from subordinate to supervisors and continues up the organizational hierarchy. Upper management needs to know specifically about production performance, market information and functional

data. Upward control system exists as a "management information system" or MIS, that collects and codes data on performance, starting in the operating core. As this information passes each level in the hierarchy, it is aggregated until finally, it reaches the strategic apex as a broad summary of overall organization performance.

Crosswise communication. This includes the horizontal and diagonal flow. This kind of communication is used to speed information flow, to improve understanding and to coordinate efforts for achievement of organizational objectives. This is communication flow between line and staff, made for the purpose of feeding staff information and advice into line decision making. Horizontal communication is between the line managers in the middle and the technocratic and support staff on the other side.

Typically, the technostructure design and operate the management information system for the line managers. In addition, certain staff groups are specialised in the collection of intelligence information for the line managers, that is information external to the organization. An economic analysis group may collect information on the state of the an economy for the managers of the strategic apex, while a research group may feed data on consumer buying habits to the marketing managers.

The very existence of the organization depends upon the coordination of activities through communication. Coordination and integration can only be achieved through effective communication.

A communication model focusing upon the environment in which communication takes place was developed by Lesikar<sup>20</sup> and simplified as shown in figure 4.

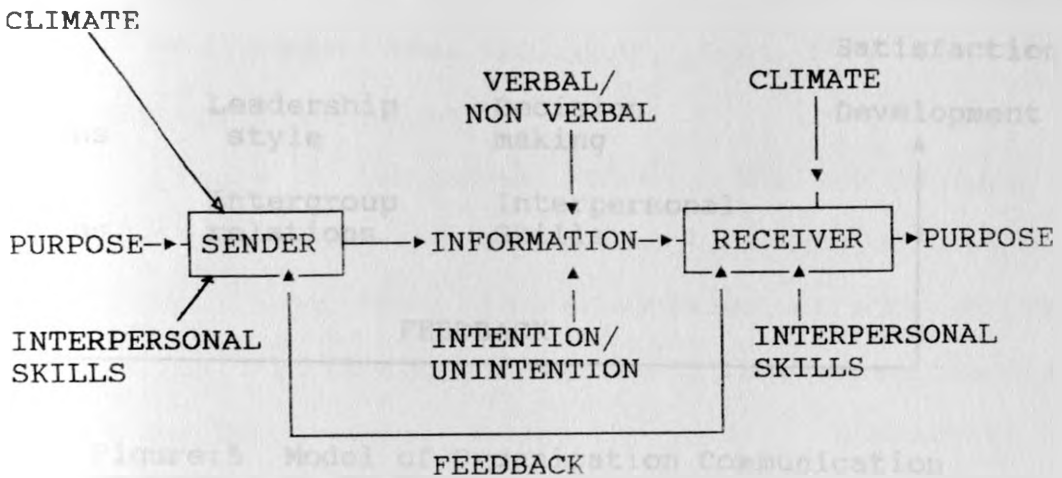


Figure: 4 Simplified communication model.

By Lesikar, R.V.

The model shows basic transmission of information from a sender to a receiver and a number of other important variables which may influence transmission.

Aubrey Sanford<sup>21</sup>, developed a model which provides a systematic way of thinking about organization communication. The model provides a framework for organizing knowledge and also as a tool to help managers understand and analyze communication problems in an organization.

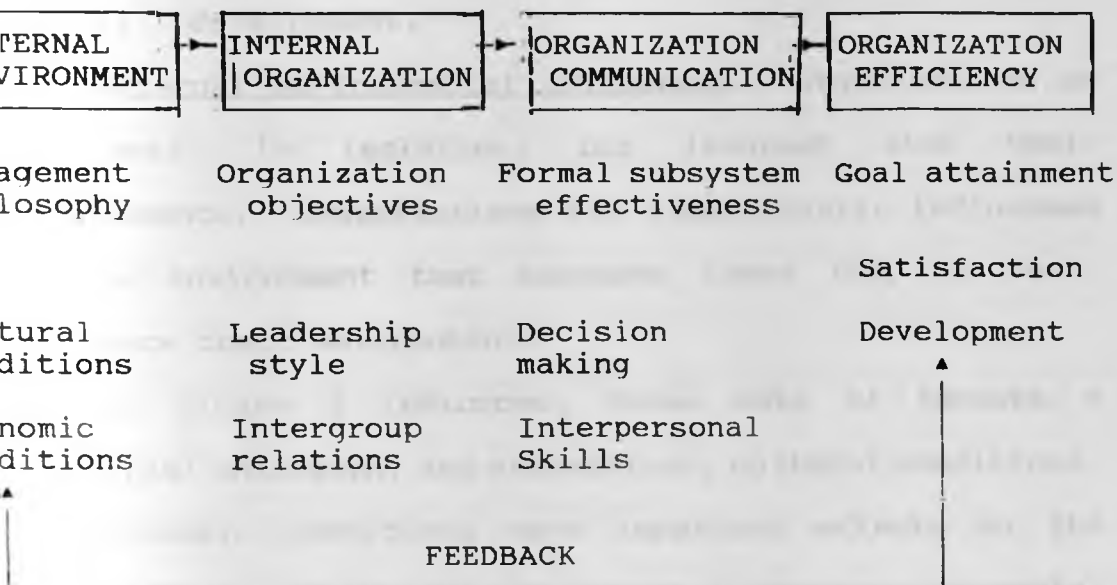


Figure:5 Model of Organization Communication  
By Aubrey C. Sanford.

The model in figure 5 has the following four major parts:-

- 1]. external environmental influences
- 2] internal organizational communication system
- 3] the organizational communication system
- 4] organizational effectiveness

Organizational effectiveness.

Organizations are effective to the degree that they achieve their objectives with minimum use of resources, satisfy the needs of their members, and grow in their ability to continue to do both these things. Thus, as figure 5 shows, organizational effectiveness is measured by:-

- 1]. goal attainment

2] satisfaction

3] development.

External environmental influences. Organizations do not exist in isolation, but interact with their environments. Organizations are significantly influenced by the environment that surround them; they in turn, influence their environment.

As figure 5 indicates, three sets of factors - managerial philosophy and assumptions, cultural conditions, and economic conditions have important effects on the organization. It is with the nature of these environmental factors and how they help shape the internal characters of the organization that this part of the model is concerned.

Internal organizational elements. The internal nature and characteristics of the organization are determined primarily by external environmental factors. In turn the internal characteristics have significant influences on the organizational communication system and its effectiveness. Different managerial assumptions, cultures and economic conditions are likely to result in organization being developed and operated differently. These are indicated in the model.

The organizational communication system.

The organizational communication system is a result of the seven internal elements shown in a model, and its effectiveness is a major determinant of overall organizational effectiveness. All organization communication systems are made up of three major parts or

elements:-

- 1]. formally designed subsystem
- 2]. people's attitude (climate) toward using the system
- 3]. people's interpersonal communication abilities

These three elements interact to determine the effectiveness of organizational communication. In turn, the effectiveness of communication in the organization influences two important process:-

- 1]. Decision making and production; and
- 2]. Overall organization effectiveness.

#### Design of the formal subsystem

All organizations have formal systems of communication to serve their information needs. Simply stated, the formal communication subsystem refers to who is supposed to send what information to who; who is supposed to receive what information from whom; and when such information is to be sent or received. This formal subsystem may or may not be written or official, but it is the way things are "supposed" to be done.

The beginning and basis of all formal subsystems is the organizational structure. The chain of command and all authority relationships make up a major part of the formal communication subsystem.

#### Communication climate.

Communication climate refers to an overall atmosphere

in which communication takes place and to people's attitudes towards communicating. Climate is generally a result of the level of trust, support, and respect that exists between people in the organization. Favourable attitudes towards communication are normally found where there is a high level of trust and respect and relatively little fear.

### Interpersonal skills

The third component of an organizational communication system is the communication skills of the people in the system. Ultimately, all communication takes place between people and depends upon the skills of the people communicating. Skills mean people's abilities to express themselves, to respond to others, and to actively listen for understanding. Thus, the communication skills of the people in the organization are a major element of the organization communication system.

### Communication system effectiveness.

The effectiveness of any organizational communication system depends on the quality of each of the three elements or subsystems and their interaction. The adequacy of the design of the formal subsystem influences the effectiveness of organizational communication, to the degree that the subsystem is well designed to provide people with information that they need when they need it, the greater is its potential for effective communication. A well-designed subsystems promote, but does not ensure effective communication, because the climate and skill of people are

unknown factors. However, poorly designed subsystems tend to preclude effective communication.

The effectiveness of organizational communication will also be affected by communication climate and people's personal communication skills.

## 2:50 ORGANIZATION DESIGN PARAMETERS

Design assumes discretion, an ability to alter a system in the case of organization, structure design means turning those knobs that influence the division of labour and the coordinating mechanism thereby affecting how the organization functions - how materials, authority, information and decision process flow through it.

Structure represents the established forces of habit and tradition and of power as well. To tamper with these forces is often to invite strong resistance. There are times when the formal structure is so out of accord with the natural flow of work and communication or with the social needs of the employees that structural change is accepted readily. Structure reflects natural work and communication flows. Most structures represent real organizational needs or at least those of the recent past, few structures are imposed artificially on the organisation. As conditions change organizational needs change, but changing the structure inevitably means interfering with established patterns of behaviour. The design parameters are:-



## 2:51 DESIGNING OF POSITIONS

### 1 JOB SPECIALIZATION

We consider three parameters in design of individual positions in the organization:- the specification of the job, the formulation of behaviour in carrying it out, and the training and the indoctrination it requires. The job can be specialized in two dimensions. The first dimension may be called horizontal job specialization (in that it deals with parallel activities) and the second dimension is called vertical job specialization.

#### Horizontal job specialization,

Job specialization in the horizontal dimension - the predominant form of division of labour - is an inherent part of every organization, indeed every human activity. Organizations specialize their job to increase productivity due to improved dexterity of the workman from specializing in one task, the saving in time lost in switching tasks, and the development of new methods and machines that come from specialization. Horizontal specialization increases the repetition in the work, thereby facilitating its standardization. It also focuses the attention of the worker which facilitates learning.

#### Vertical specialization

Job specialization separates the performance of the work from the administration of it. Littered<sup>22</sup>, provides a useful way to describe this issue in figure 6.

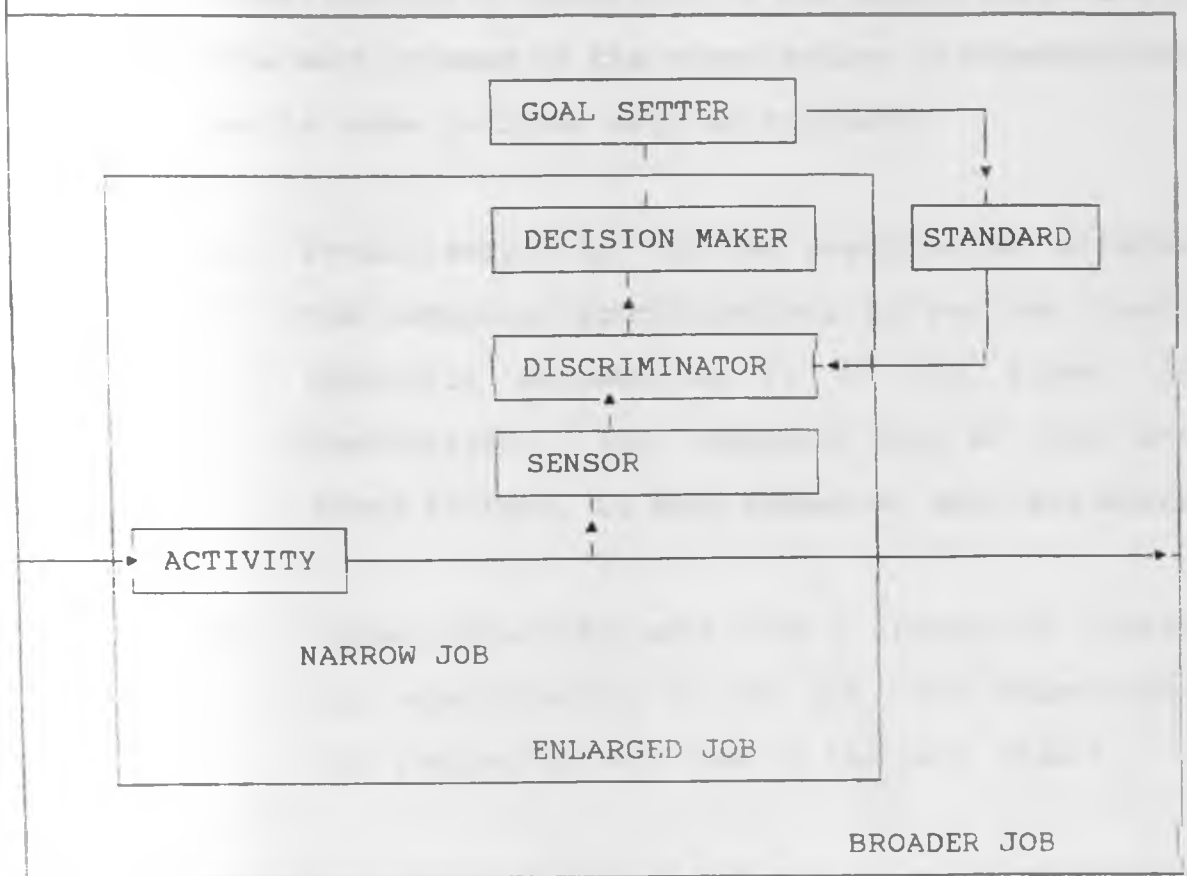


Fig: 6 Basic work control cycle (adopted from Litterer, 1965 p237)

The figure shows the basic work control cycle, with actual performance of an activity at the bottom left and the administration of it - the feedback and the control system - above and to the right of it. In the vertical specialized job, the worker only performs the activity, as the job gets vertically enlarged, the worker gains more and more control over the activity - over the decisions involved and then over the goals and standard guiding these decisions.

## 2 BEHAVIOUR FORMALIZATION

Formalization of behaviour is the design parameter by which the work process of the organization is standardized. This can be done in three ways as follows:-

- 1]. Formalization by job, the organization attaches the behaviour specifications to the job itself, typically documenting it in the formal job description. The incumbent may be told what steps to take, in what sequence, when and where.
- 2] Formalization by work flow - instead of linking the specification to the job, the organization can instead attach them to the work itself.
- 3] - Formalization of rules - the organization institutes rules for all situations - all jobs, all work flows, all workers. These may specify who can or cannot do what, when, where, to whom and with whose permission.

Organization formalize behaviour to reduce its variability, ultimately to predict and control it. One prime motive for doing so is to coordinate activities. As noted earlier, standardization of work content is a very tight coordinating mechanism, its corresponding design parameter, behaviour formalization, is used therefore when tasks require precise, carefully predetermined

coordination. Bureaucracies are organization that rely primarily on the formalization of behaviour to achieve coordination.

### 3 TRAINING AND INDOCTRINATION

This entails the specification of the requirement for holding a position. The organization can specify what knowledge and skills the job holder must have and what norms he exhibits. Training refers to the process by which job related skills and knowledge are taught, while indoctrination is the process by which organizational norms are required. Both amount to the "internalization" of accepted (ie standardized) pattern of behaviour to the workers. Indoctrination is the label used for the design parameter by which the organization formally socializes its members for its own benefits.

Training is important where jobs are complex, involving difficult, yet specified skills and sophisticated recorded bodies of knowledge - jobs essentially professional in nature. And indoctrination is important where jobs are sensitive or remote, and, where the culture and ideology of the organization demand a strong loyalty to it.

## 2:52 DESIGN OF SUPERSTRUCTURE

### 1 UNIT GROUPING

Given a set of positions, designed in terms of specialization, formalization, training and indoctrination,

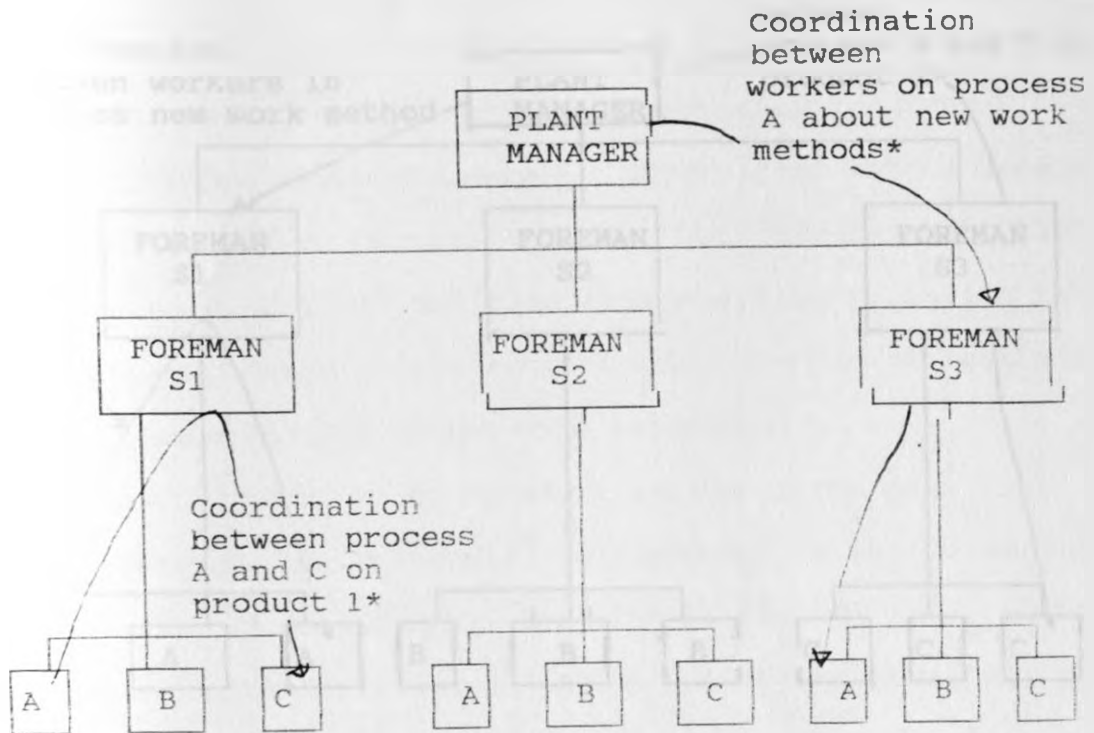
these questions face the designer of organization structure. How should these positions be grouped into units? and how large should each unit be? Both questions pertain to the design of the superstructure of the organization.

It is through the process of grouping into units that the system of formal authority is established and hierarchy of the organization built.

Grouping is a fundamental means to coordinate work in the organization. Grouping has four important effects:-

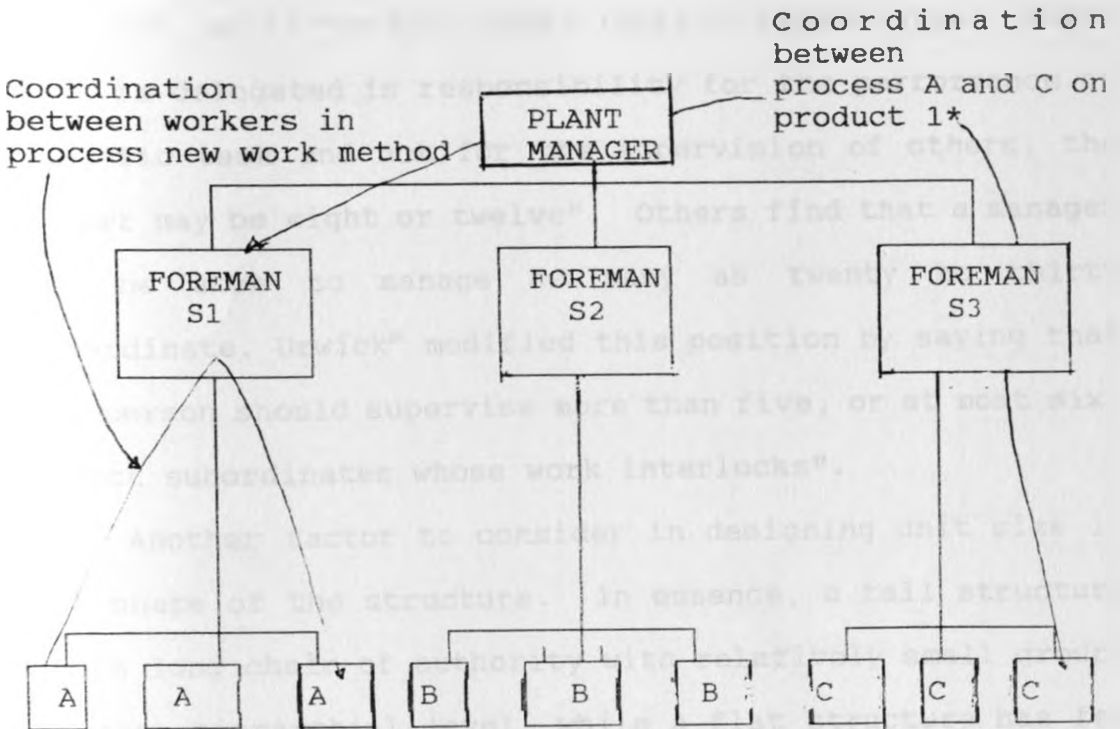
- 1]. It establishes a system of common supervision among positions and units. A manager is named for each unit, a single individual responsible for all its actions. Unit grouping is the design parameter by which the coordinating mechanism of direct supervision is built into the structure.
- 2] Grouping typically requires positions and units to share common resources.
- 3]. Grouping creates a common measure of performance to the extent that sub-units of a unit contribute to the production of the same product or service, their output can be measured jointly. Joint performance measures further encourage them to coordinate their activities.
- 4]. Grouping encourages mutual adjustment.

Grouping could be based on knowledge and skill, work process and function, output, type of client and place.



Product 1 flow

(A) Grouping by product (i.e Market)



(b) Grouping by function.

Fig: 7 Grouping to contain work flow or specialization interdependencies (from Littered, 1965, p328).

## 2 UNIT SIZE

The second basic issue in the design of the superstructure concerns how large each unit or work groups should be. Two basic questions here are: How many individuals should report to each manager: that is what should be his span of control? And what shape should the superstructure be: tall, with small units and narrow spans of control, or wide with large units and a wide span of control?

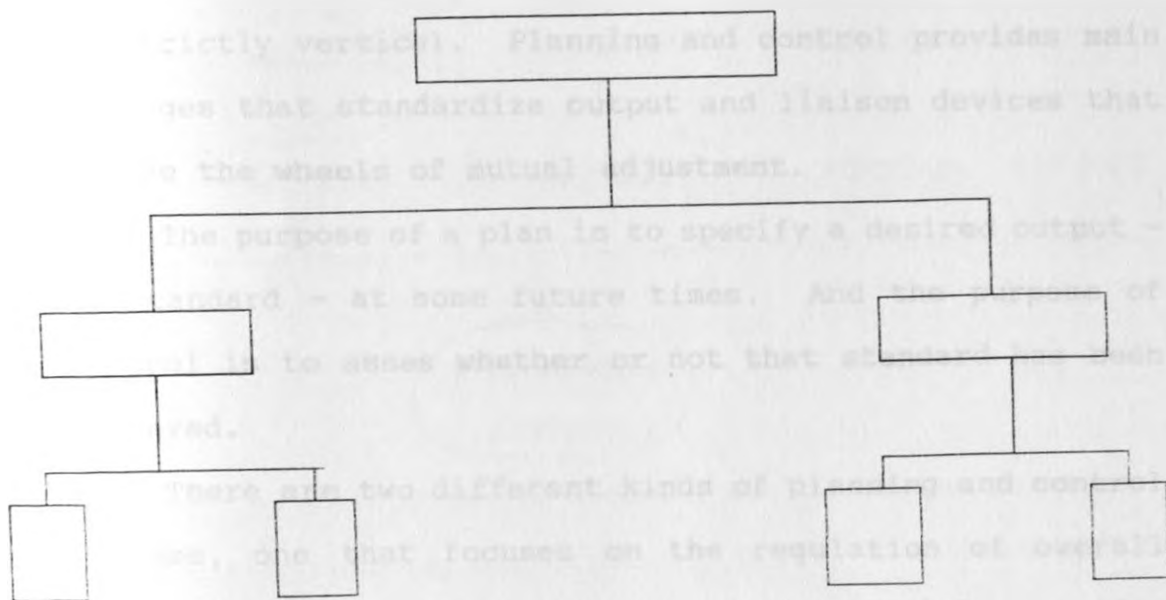
In every organization, it must be decided how many subordinates a superior can manage. Lyndol Urwick<sup>23</sup>, found "the number of subordinates for all superior authorities to be four", while "at the lowest level of organization, where what is delegated is responsibility for the performance of specific task and not for the supervision of others, the number may be eight or twelve". Others find that a manager may be able to manage as many as twenty to thirty subordinate. Urwick<sup>24</sup> modified this position by saying that "no person should supervise more than five, or at most six, direct subordinates whose work interlocks".

Another factor to consider in designing unit size is the shape of the structure. In essence, a tall structure has a long chain of authority with relatively small groups at each hierarchial level, while a flat structure has few levels with relatively large work group at each.

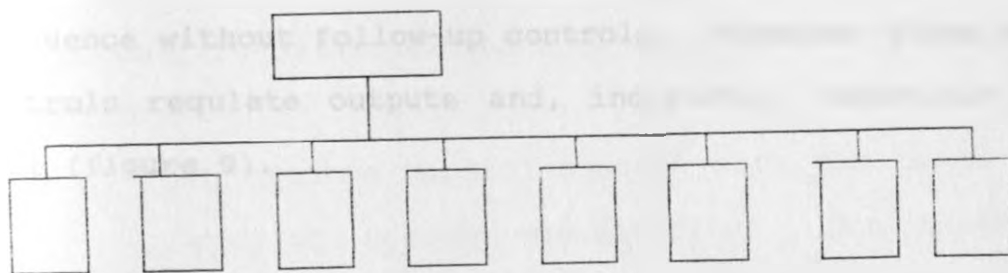
Carzo and Yanouzas<sup>25</sup>, found out that a tall structure had superior performance compared to flat structures due to the fact that intermediate supervisory levels in tall structures provided the means for repeated evaluation of decisions, in addition, the narrow span of supervision in the tall structure permitted a much more orderly decision and communication process. Freed from the burdens that arise from having many subordinates, decision makers appeared to be able to develop a better understanding of the problem. Blau and Schoenherr<sup>26</sup>, found the same thing in their study of employment security agencies, that the managers in the taller structures had more time for



decision making and external work.



(i). Tall organizational structure



(ii) Flat organizational structure

Fig 8: Tall vs flat organizational structures (grouping in the Carzo and Yanouza'a experiment, 1969).

## 2:53 DESIGN OF LATERAL LINKAGES:

### PLANNING AND CONTROL SYSTEMS

There is a need to flesh out the bones of the superstructure with linkages that are lateral, as opposed to strictly vertical. Planning and control provides main linkages that standardize output and liaison devices that grease the wheels of mutual adjustment.

The purpose of a plan is to specify a desired output - a standard - at some future times. And the purpose of control is to assess whether or not that standard has been achieved.

There are two different kinds of planning and control systems, one that focuses on the regulation of overall performance and the other that seeks to regulate specific action.

Planning and control go together, there can be no control without prior planning, and plans lose their influence without follow-up controls. Together plans and controls regulate outputs and, indirectly, behaviour as well (figure 9).

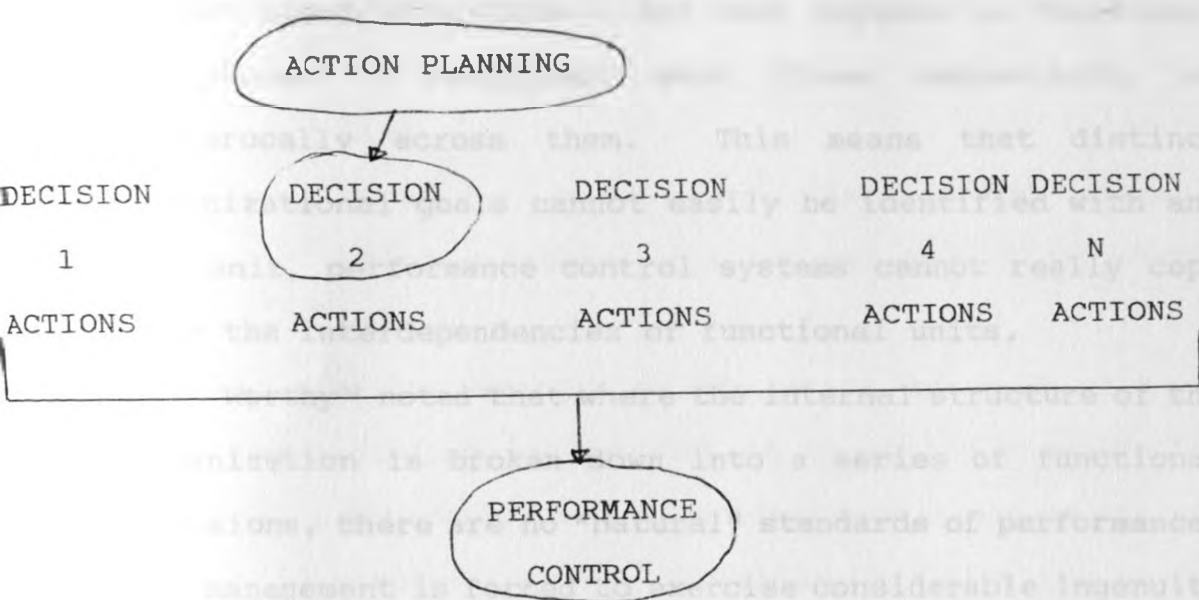


Fig: 9 The relationships between decisions and actions planning and performance control, Mintzberg pp149.

The purpose of performance control is to regulate the overall results of a given unit. Objective budgets, and operating plans are established for the unit and its performance is later measured in terms of the following standards:-

- 1] Performance control systems sets the bases for grouping in the organization. The planning system establishes output standards for each unit and the control system assesses whether or not these have been met.
- 2] Performance control is concerned with overall results for a given period of time, not with specific decisions or actions at a specific point in time.

Performance control is a key design parameter in market based structures. But what happens in functional structures? Functional work flows sequentially or reciprocally across them. This means that distinct organizational goals cannot easily be identified with any one unit, performance control systems cannot really cope with the interdependencies of functional units.

Worthy<sup>30</sup> noted that where the internal structure of the organization is broken down into a series of functional divisions, there are no "natural" standards of performance, and management is forced to exercise considerable ingenuity in inventing control which it can use for administrative purpose. Unfortunately, contrived control such as this, so far from facilitating inter-divisional cooperation (which is one of their chief purposes) often become themselves a source of conflict.

Therefore functional structures utilize action planning in order to standardize output. Action plans specify decisions that call for specific action. Some of the proposed actions may be taken within single units, but others can cut across unit boundaries. By imposition of specific decisions, action planning turns out to be a less than pure form of standardizing outputs; more exactly, it falls between that and standardizing work processes. This point can be expressed in terms of a continuum of increasingly tight regulation, as follows:-

- Performance control imposes general performance standards over a period of time, with no

reference to specific actions.

- Action planning imposes specific decisions and actions to be carried out at a specific point in time.
- Behaviour formalization imposes the means by which decisions and actions are to be carried out.

Action planning emerges as the means by which the non-routine decisions and actions of an entire organization, typically structured on a functional basis, can be designed as an integrated system. Behaviour formalization designs the organization as an integrated system, too, but only for its routine activities.

## 2:54 DESIGN OF DECISION MAKING SYSTEM : VERTICAL AND HORIZONTAL DECENTRALIZATION

In centralized structure the power for decision making rests at a single point in the organization - ultimately in the hands of a single individual. In decentralized structure the power for decision making is dispersed among many individuals in the organization.

Centralization is the tightest means of coordinating decision making in the organization. All decisions are made by one individual and then implemented through direct supervision. Organizations should decentralize because all the decisions cannot be understood at one centre in one brain. Decentralization allows the organization to respond quickly to its local conditions. The transmission of

information to the centre and back takes time, which may be crucial. Decentralization acts as a stimulus for motivation, creative and intelligent people require considerable room to manoeuvre. The organization can attract and retain such people and utilize their initiative, only if it gives them considerable power to make decisions.

#### Vertical decentralization:

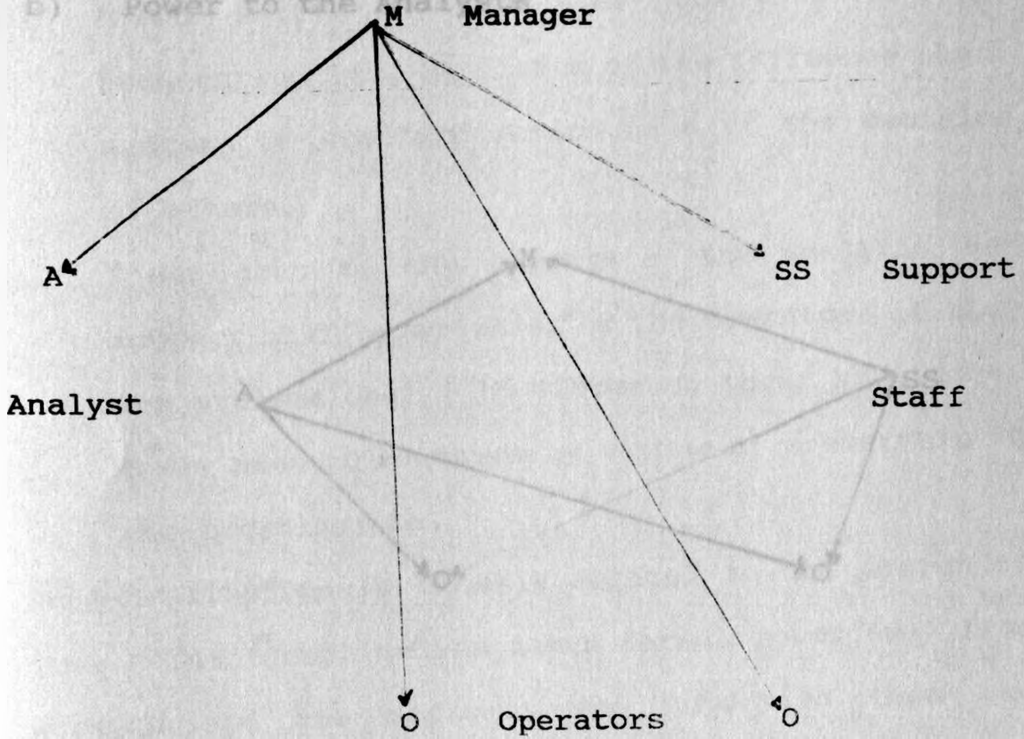
Vertical decentralization is concerned with the delegation of decision making down the chain of authority from the strategic apex into the middle line. The organization that is selectively decentralized in the vertical dimension will coordinate its decision making largely by mutual adjustment.

#### Horizontal Decentralization

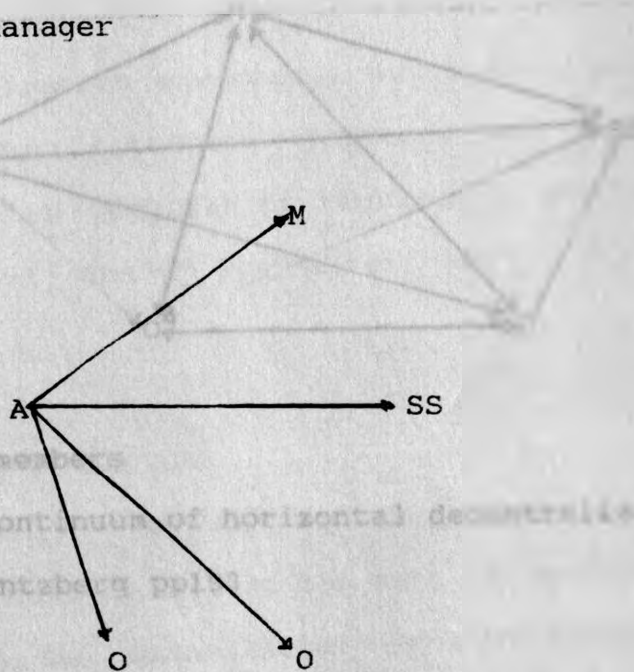
Horizontal decentralization entails a shift of power from managers to non-managers (or more exactly, from line managers to staff managers, analysts, support specialists and operators).

Assuming a two-tier hierarchy with a full compliment of staff personnel, a continuum of four stages of horizontal decentralization will be as shown in figure 10.

b) Power to the Analyst



a) Power to manager



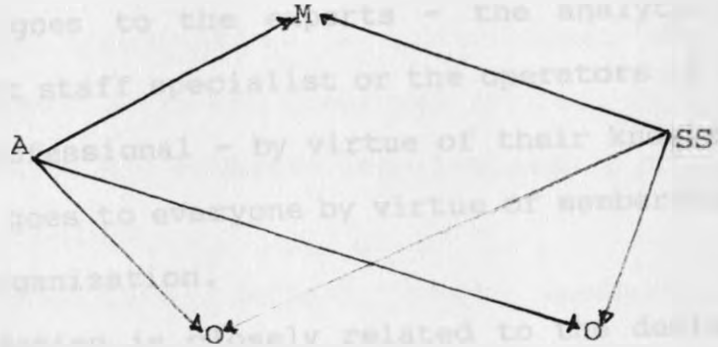
d) Power to members

Fig. 10. A continuum of horizontal decentralization

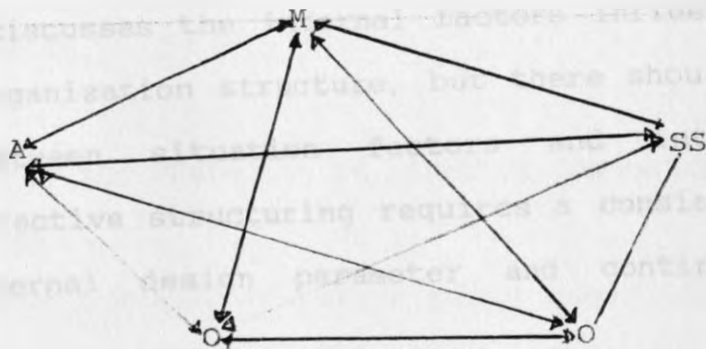
Mintzberg pp. 13

a) Power rests with a single individual, generally by virtue of the office he occupies.

b) Power to the Analysts



c) Power to the experts (in this case staff)



d) Power to members

Fig: 10 A continuum of horizontal decentralization

Mintzberg pp193

- a). Power rests with a single individual, generally by virtue of the office he occupies.



- b). Power shifts to the few analysts of the technostructure, by virtue of the influence their systems of standardization have on the decision of others.
- c). Power goes to the experts - the analytic and support staff specialist or the operators if they are professional - by virtue of their knowledge.
- D. Power goes to everyone by virtue of membership in the organization.

Decentralization is closely related to the design of positions. The formalization takes formal power away from the workers and the managers who supervise them and concentrates in near the top of the line hierarchy and in the technostructure, thus, centralizing the organization in both dimensions.

The foregoing discusses the internal factors influencing designing of organization structure, but there should be consistency between situation factors and internal structure. Effective structuring requires a consistency among the internal design parameter and contingency factors.

## 2:55 CONTINGENCY FACTORS

The contingency approach is concerned with the organization as a unit in interaction with its environment. In this approach the organization is considered as a complex set of interdependent parts interacting with one another and dependent in whole on some large environment<sup>28</sup>.

External environment is important in defining the nature of the organization. Cooptation is an adjustment process which facilitates the probabilities of survival of the organization. Cooptation is a mechanism used when the structure of the organization is inconsistent with the external environment imposing pressures on it. It is the process of absorbing new elements into leadership or policy - determining structure.

Organizations have certain needs generated by organizations themselves which command the attention and the decision of those in power. In order to satisfy these needs, the organization must be adaptive to the environment in which it operates. These needs are:-

1. The security of the organization in the social environment - this requires some continuity of policy and leadership.
2. Maintenance of the stability of lines of communication and authority.
3. A homogeneous outlook of participants regarding the meaning and role of the organization.
4. The achievement of continuous support and participation on the part of the members.
5. The stability of formal relations within the organization.

The formal and informal structure of activities within

the organization develop in response to these needs. The organization can continue to exist only when it satisfies these needs and comes to terms with the environment. An informal structure develops within the formal structure of the organization. This informal structure reflects attempts of individuals and subgroups to control the conditions of their existence,. It contains an informal control and communications mechanisms or system. This informal structure may be useful to the formal leadership as a communication device, but it extracts a cost for its existence, some power is taken from the formal system.

According to John Child<sup>20</sup>, many authorities take the view that the design of an organization most conducive to high level of performance can only be formulated when account is taken of contingency circumstances. Contingency approach posits that there are no general principles or best practices of organization. Managers and others who are involved in organizations design have to work and weigh up the situational implication of the contingencies surrounding their organizations.

The contingency perspective view an organization as an open system, the survival of which is seen to depend upon maintaining a balance of exchange in transactions with the environment sufficient to provide resource for future activities. It is recognized that the management of organizations is undertaken in condition of uncertainty and dependence, both of which create risk for management. Uncertainty arises from imperfect understanding of events

and from incomplete control over the actions taken both by employees and parties outside the organization. The dependence of management upon the goodwill and support of other groups carries with it an element of threat to the success of its policies, and possibly to the organization's survival in its present form.

Contingencies are relevant and variable parameters for which allowance and adjustment in management practices and organizational design have to be made.

The contingency view, recognized within the literature on organization, can be more correctly labelled the "tasks contingency" approach. It focuses on the task to be performed within an organization and develops the thesis that for these to be carried out effectively the organization of the work and the people contributing to it must be designed with existing contingencies in mind. Environment, diversity, size, technology and type of personnel are the categories of contingency more often identified. The task contingency approach seeks to identify those organizational designs which will be sufficient for a given contextual situations.

Contingency factors tend to pull an enterprise or firm to one or other of the poles in the pentagon (figure 14) and these are shown by annotated arrows. These factors are:-

## 1 SIZE OF ORGANIZATION

Size appears to be a simple variable - the number of people in an organization. The size issue is much more complicated than that, however. In the discussion of organization boundaries, Kimberly<sup>30</sup>, demonstrated that size has four components:-

1. Size is the physical capacity of the organization.
2. Size is the personnel available to the organization.
3. Size is organizational inputs or outputs. This involves such factors as the number of clients served.
4. Size is the discretionary resource available to an organization. In the form of net assets.

Kimberly suggests that these aspects of size may be highly interrelated in some instances and indeed they are, but that the conceptual distinctions among them are so great that they should be treated separately.

Biau's<sup>31</sup> studies concerned with the importance of size and differentiation in an organization. Differentiation is measured by the number of levels, departments and job titles within an organization. He found that size is related to increasing differentiation.

The "Aston"<sup>32</sup> group in their studies found size to be major determinate of organization structure and concluded that size is related to increased structuring of organizational activities and decreased concentration of

authority.

Mohonery et at<sup>33</sup>, report that managerial practices are related to the size of the unit being supervised. Flexibility in the personnel assignments, the extent of delegation of authority, and an emphasis on results rather than procedure, are related to large unit sizes.

## 2 TECHNOLOGY FACTOR

Woodward (1958)<sup>34</sup> findings show that the nature of the technology vitally affected the management structures. The number of levels in the management hierarchy, the span of control of first-line supervisors and ratio of managers and supervisors to other personnel are affected by the technology employed. An effectiveness of the organization is related to the "fit between technology and structure. Successful firms are those which have an appropriate structured technical system.

## 3 ENVIRONMENTAL FACTOR

The primary interest is the social environment and physical environment such as climate and geographical location can be important, particularly for organization that utilize or affect that physical environment.

Ranson, Hining and Greenwood<sup>35</sup>, have suggested that environmental characteristics are constraints on organization in affecting their scale of operations and their mode of technical production.

Pfeiffer and Lebrebiel<sup>36</sup>, analyzed the effects of

competition on structure. They found out that in more competitive situations there is greater demand for control and coordination.

According to task contingency theory, different approaches to organization design are conducive to high performance, depending on whether or not the environment in which the organization is operating is variable and complex in nature, or stable and simple. Variability in the environment refers to the presence of changes that are difficult to predict therefore generate considerable uncertainty. There is evidence that the degree of environmental variability is a more important contributor to uncertainty among managerial decision makers than is complexity<sup>37</sup>.

In conditions of environmental variability, successful organizations employ the following structural characteristics:-

1] Arrangement to reduce uncertainty.

These include staff support for sophisticated search and information processing activities, and attempts to gain greater control over which inputs are acquired and outputs disposed of, even to the extent of vertical integration.

2] A relatively high level of internal differentiation. The critical nature of a variable environment means that an organization

is under pressure to employ specialists staff in boundary or interface roles - in positions where they form a link with the outside world, securing and evaluating relevant information. This may involve the establishment of a more specialist departments, which increase the internal differentiation of the organization's structure.

- 3] A relatively intense level of integration, achieved through flexible and participative, rather than formalized process. If there are many significant external changes to which an organization has to adapt, and if it becomes internally differentiated through setting up specialized roles to cope with such areas of change, then it will also need to give particular attention to the maintenance of integration among its personnel. These personnel are now organizationally more differentiated from one another and require greater coordination, while the context of change itself places a greater burden upon integration mechanisms because it means that the coordinated response to new developments has to be made without undue delay. In a variable environment, contingency theorists conclude flexible rather than highly formalized or hierarchical methods of coordination and information sharing are appropriate. These



generally comprise a high level of face-to-face participation in discussion and decision-making, with an emphasis on close lateral relations among members of different departments instead of formal links up and down hierarchies or via periodic formal meetings.

These contingency factors may be regarded as independent variables while the organizations configuration is a dependent variables<sup>30</sup>.

Linking these two sets of variables is an additional set of factors which act as intervening variables. These factors are concerned with:-

- 1 Comprehensibility of the work, that is the ease with which the work can be understood.
- 2 Predictability of the work, the extent of prior knowledge about the task to be accomplished and the means involved.
- 3 Diversity of the work, that is the amount of variety involved.
- 4 Responsiveness, which deals with the reaction time available to carry out the work.

It is important to see how contingency factors affects or influences designing of construction firms in Kenya, of major concern is which contingency factors influence design of structures in construction firms and besides environment, size and technology, are there other contingency factors influencing design of construction firms in Kenya?

## 2.60 CONCEPTUAL FRAMEWORK

### 2:61 ORGANIZATIONAL STRUCTURE OF CONSTRUCTION FIRMS

The basic task of organizing is performed to a mass and arrange all required resources, including people, such that the objectives and required work of the firm can be accomplished effectively. The need for organizing is created because work to be done is too much for one person to handle. Thus it follows that as a firm grows in regard to its workload, the need and complexity of organizing increases.

The product of organizing is an organizational structure. The organization structure determines the flow of interaction within the organization. It determines who decides what, who tells whom, who responds and who performs what work. If the organization structure is effective it should accomplish the following<sup>44</sup>:-

- 1]. Aid coordination
- 2] Expedite control
- 3] Emphasize human relations
- 4] Provide benefit of specialization
- 5] pinpoint responsibility.

Coordination is a fundamental requirement of an effective organization it enhances communication. Unless procedures, orders, and objectives can be communicated through coordination, individuals will perform their various functions in a less than optimal manner. The running of any firm, including a construction related firm,

is a team effort, very few teams can operate successfully without the coordination of the team members. An estimator cannot accurately price a work item unless he has the aid of past project data from a project manager. A construction planner needs the aid of an expeditor in determining feasible schedule for a project. Viewing each function of the firm isolated from others defeats effective coordination.

Whenever planning provides the potential for a profitable operation, control is the mechanism by which priorities are released. As such, ignorance of the control functions in the organization structure eliminates the potential for an effective organization structure.

An organization structure should focus on the long term as well as the immediate future. An organization structure that fails to recognize and promote human relations is normally short lived in regard to its effectiveness. Failure to recognize "peoples problem" results in worker resentment, poor morale, low worker productivity, embezzlement and theft, and high worker turnover. A people oriented organization structure can facilitate personnel management effectiveness.

While assignment of work functions to specific individuals is aimed at overall coordination, a secondary benefit should be higher productivity through specialization. One of the distinct advantages that the large construction firm has over its smaller competitors is that individuals within large firms can specialize in their

work functions. Whereas the single owner - employee of a construction firm may have to keep the books, find work, and manage the work a single individual or group of individuals may be assigned a single function within the large firms, one individual may be responsible for estimating, another for accounting, another for finance, another material procurement and another for project management.

An organization structure can provide for two extreme types of decision making. Centralized decision making focuses on decision making by an individual or small group of individuals. Other organizational structures are aimed at decentralized decision-making that focus on decision-making by groups with each member of the group having somewhat equal contribution in the process. Centralized decision making is characteristic of small firms that are individually owned. On the other hand, the large amount and varying types of expertise that are part of a large firm are best utilized through a decentralized decision making process.

Whether a centralized or decentralized process is emphasized in the organization structure, the structure should enable the pinpointing of responsibility for operation, planning and control. The pinpointing of responsibility is necessary if good performance is to be awarded, poor performance corrected, and management objectives evaluated.

## The Construction Hierarchical Organization Structure

The organization structure of the construction firm appears as a chain structure (ie hierarchy). While the structure increases in complexity as the firm grows in size, the chain structure remains characteristic of the firm.

According to Berry Fryer<sup>41</sup>, most construction firms have an organization structures of line and staff type.

### Line organization

Line organizations are those organizations that have only direct, vertical relationships, between different levels within the firm. They include only line departments. Line departments are those departments directly involved in accomplishing the primary purpose of the organization. The "line" managers are responsible for production and marketing. They pass instructions and information down the hierarchy and controls what happens. In line organization, authority follows the chain of command. The advantages offered by pure line organization structures include<sup>42</sup>.

1. A line structure tends to simplify and clarify responsibility, authority and accountability relationships within the organization. The levels of responsibility and authority of personnel operating within a line organization are likely to be precise and understandable.
2. A line structure promotes fast decision making and allows the organization to change direction

more rapidly because there are few people to consult when problems arise.

3. Because pure line organizations are small, there are the advantages of greater feelings of closeness of management to the employees, and all personnel usually have an opportunity to know what is going on in the firm.

The major disadvantage to the line structure is the increasing lack of effectiveness as the firm grows larger, that is, line structure may force managers to be experts in too many fields and thereby possibly reduce their effectiveness. If the organization is to remain purely line, one solution is for management to seek help by creating additional levels to share the managerial load. This, however, will result in a lengthening of the chain of command and a consequent loss of some of the values of speed, flexibility and central control. Therefore, there are few pure line organizations of any substantial size.

#### Line and staff organizations.

Line and staff organizations are those organization that have direct vertical relationships between different levels and also specialists responsible for advising and assisting other managers. Such organizations have both line and staff departments. Staff departments provide line people with advice and assistance in specialized areas .

In its basic form, line and staff structure is split into functions. When a firm widens its scope, it may split into product division, each specializing in a type of work

or market, such as housing, refurbishment or road construction, a firm which expands geographically is more likely to become area based. Here it makes sense to decentralize some of the administrative functions, in both cases, divisions are usually fairly autonomous and are responsible for their own profitability. The parent firm retains a headquarters, mainly for strategic planning, policy - making and overall financial control. the divisions have their own estimators, prospect planners, buyers etc.

In both area and product based organizations, the problem of how best to group activities remains. Each division may be split into functional specialists, so that it appears to be a microcosm of its parent firm. However, the division can respond more quickly and flexibly to the demand of its product or area, than can its parent. Complication arise when a firm both expands and diversifies, it may need some of the features of product and area organization and must operate a blend of functional, area and product organization.

#### Functional organization

The functional organization is a modification of the line and staff organization whereby staff departments are given authority over line personnel in narrow areas of specialization. In a pure line organization, there is limited use of specialists by management. In the line and staff organization, specialization of particular functions characterizes the structure, but the specialists only

advice and assist. In the functional structure, however, specialists are given functional authority. This is the right of staff specialists to issue orders in their own names in designed areas. The principle of unity of command (having one boss) is violated when functional authority exists.

The smallest of construction firms is made up of a single individual. The individual assumes all the management duties of the firm. He is responsible for sales or marketing, finance and accounting, and productions. The organization chart of such a firm is extremely simple and shown in figure 12.



Figure 11 organization chart small sized firm, Adrian, J.J. pp.43.

This tries to explain the structure of the smallest construction firm, it may not be exact case within our context. We may have the manager as the owner of the firm who engages an accountant or a site manager responsible for work in all sites, however, basically this is a perfect illustration of a simple relationship expected within a small construction firm. The method of coordination expected is fairly simple due to number of people to be coordinated and mutual adjustment would be favourable method of coordination. In small firm the parts of the organization are not well developed though one may classify



the owner as strategic apex because of his responsibility.

As a firm grows in terms of its size and work performed it becomes necessary to employ more personnel to carry out management functions of the firm. The owner of the firm is primarily responsible for the sales and marketing function. The amount of financial paperwork of the firm necessitates the employment of an individual to handle the financial concern of the firm. At this level of organization size, the finance function is typically characterized by a high degree of bookkeeping with little time spent on financial analysis. Another individual will be responsible for project estimating with perhaps additional responsibilities of material procurement and cost analysis. Yet another individual may be a project superintendent. As is true of the estimator, he is likely to be responsible for on-going projects.

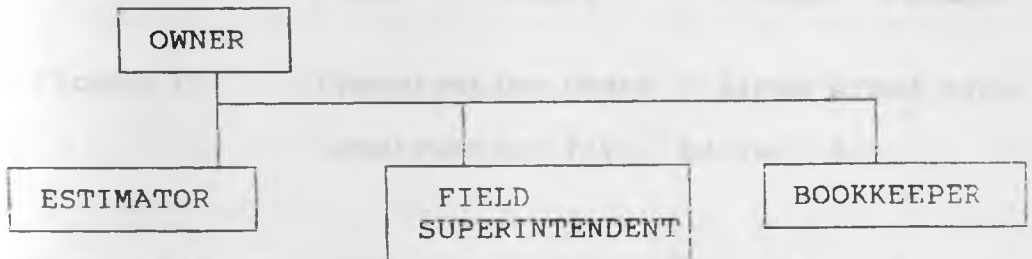


Figure 12: organization chart - medium sized firm.  
By Adrain, J.J. pp43.

The organization structure shown in figure 12 shows horizontal growth. This is evidenced by the addition of horizontal dimension to the structure. The establishment of new functional assignments results in horizontal

organizational growth.

Due to this growth the firm has to use a higher method of coordination and therefore adopts direct supervision and standardization as it grows further.

As the firm continues in its growth in size some horizontal growth continues. In addition, vertical growth is evident. As to the construction firm this growth is shown in figure 13.

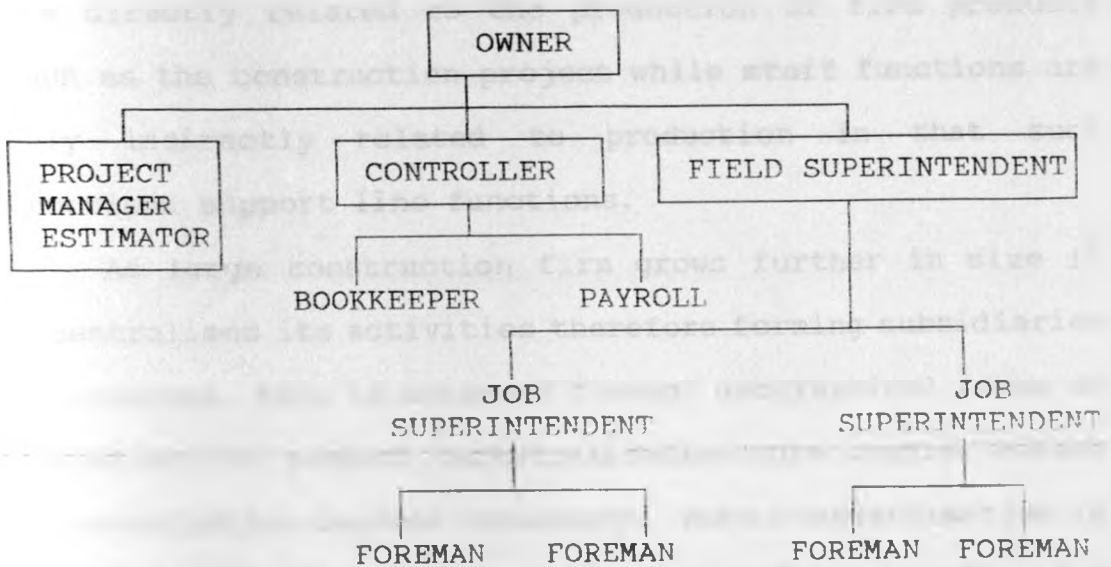


Figure 13. Organization chart - large sized firm  
Construction firm, Adrian, J.J.

There are several job superintendent evident in this structure. Each subordinate is assigned to a field superintendent who is responsible for all field construction. The addition of subordinate estimators and individual job accountants are other examples of vertical growth. Such growth is typical of relatively large firms.

Horizontal growth can be observed in the organizational structure of relatively large construction firms. The procurement function is separated from the estimating function. Another example of horizontal growth is the dividing of the financial function into an accounting or controllership function.

Functions within the organization structure are classified as being line or staff function. Line functions are directly related to the production of firm products such as the construction project while staff functions are only indirectly related to production in that such functions support line functions.

As large construction firm grows further in size it decentralises its activities therefore forming subsidiaries or branches, this is achieved through geographical (area or operation) or product decentralization more complex method of coordination becomes necessary. Here standardisation is more evident due to decentralization and the coordinating method becomes more complex and difficult to coordinate more activities and therefore mutual adjustment becomes the only favoured method of coordination.

## REFERENCES

1. Blau Peter M, On the Nature of Organizations, John Wiley and Sons Inc., New York, p12.  
Ronson, Stewart, Bob Hinnings, Royster Greenwood 1980 "The Structuring of Organizational Structure", Administrative Science Quarterly, 25 No.1 March, p1-17.  
Meyer, John W, and Brian Rowan 1911 "Institutionalized Organizations: Formal Structure as Myth and Ceremony," American Journal of Sociology, 83 No.2 September, p340-363.  
Richard H. Hall Organizations; structure and Process, Prentice - Hall, Incl Englewood Cliff, New Jersey 1982.
2. Herman, Jeanne B, Randou B, Dunhom and Charles Hurlin 1975 "Organization Structure, Demographic Characteristic and Employee Responses" Organization Behaviour and Human Performance, 13 No.2 April, p206-232.
3. Ivancevich John M and James H. Donnely, Jr 1975 "Relation of Organizational Structure to job Satisfaction Anxiety, Stress and Performance," Administrative Science Quarterly, 20, No2 (June) p272-280.
4. Baldrige, J. Victor and Robert A. Burnhom 1975 "Organization Innovation: Individual, Organizational and Environment Impacts". Administrative Science

Quarterly, 20 No.2 (June), p165-176.

5. Litwark Eugene 1961, "Models of Organization Which Permit Conflict", American Journal of Sociology, 76 No.2 (September) p177-184.
6. Mason Haire, Organization Theory in Industrial Practice. A Symposium of the Foundation for Research on Human Behaviour, John Wiley & Sons, Incl. New York p19-20 (1962).
7. Harold Koontz and Heinz Weihrich, Management, McGraw-Hill Co. Singapore 1988 p173-174.
8. Ibid, p289.
9. Etzion Amitol 1964, Modern Organizations, Englewood Cliffs N.J. Prentice - Hall Inc. p3.
10. Fremont E. Kast and James E. Rosezweig, Organization and Management: A System and Contingency Approach - New York McGra-Hill 1982, p199.
11. Harold Koontz, OP Cit p103.
12. Chester I. Bernard, The Function of the Executive. Cambridge Mess, Harvard University Press 1964.
13. Keith Davis and John Newstrom, Human Behaviour at Work, New York : McGraw-Hill Book Company, 1985 p308.
14. Anthony Walker, Project Management in Construction. Grenada, London 1984 p13.
15. Henry Mintzerbg, The Structuring of Organizations, Englewood Cliffs, Prentice Hall, In 1979 p2.
16. Ibid, p32-33.

17. Koontz, D and Kahn R L The Social Psychology of Organization, Wiley, 1966.
18. Harold Koontz et al, p461.
19. Cheter I. Bernard, op cit, 1938.
20. Lesikar R.V., Bussiness Communication Theory and Practice. Homewood, III: Irwin 1968 p26.
21. Aubrey C. Sonford, Gray I. Hunt, Hyler, J. Bracey, Communication Behaviour in Organization, A Bell & Howell Company, Columbus, 1976 p7.
22. Litterer, J.A. The Analysis of Organization, Wiley, 1965 p237.
23. Lyndall Urwrick, "Axioms of Organizations", Public Administration Magazine (London) October 1955 pp348-349.
24. Lyndoll Urwick F. "The Manger's Span of Control", Harvard Bussiness Review (May-June 1956 p39-47).
25. Carzo R. Jr, and Yanouzas, J.N. "Effects of Flat and Tall Organization Structure", Administrative Science Quarterly 1969. p178-191.
26. Blau P.M. and Schoenherr, P A, "The Structure of Organization" Administrative Science Quarterly 1971 p321.
27. Worthy, J. C. Organization Structure and Employee Morale", American Sociological Review (September - October 1967, p91-99).
28. Henry L. Toss Theories of Organization 2nd ed. John Wiley and sons, 1984. p141.
29. John Child, Organization : A Guide to problems and

Practice. 2nd ed. Harper and Row Ltd. p217-218.

30. Kimberlerly John R. 1975, "Environmental constrains and organization structure: A comparative analysis of rehabilitation organizations," Administrative Science Quartely, 20 No.1 (March) p1-19.
31. Blau Peter M. On the Nature of Organization, New York John Wiley and sons Inc. 1974.
32. Puch Derect, S.D.J. Hickson, C.R. Hinings and C.Turner 1968. "Dimensions of Organizations Structure", Administrative Science Quarterly 13 No.1 (June) pp65-105.
33. Mchaney, Thomas, Peter, Frost, Norman, F. Grandell and William Welthel " The Conditioning Influence of Organization, Size on Mangerial Practice" Organizational Behaviour and Human Performance, No.8, (October) 1072.
34. Woodward Joan, Individual Organization Theory and Practice, Oxford University Press, 1965.
35. Ranson, Stewart, Bob Henings and Royster Greenwood 1980, "The Structuring of organizational structures", Administrative Science Quarterly, 25 No.1 (March) p1-17.
36. Pfeffer, Jeffrey, and Hussein Lehubrel, "The Effect of Competition on Some Dimensions of Organization Structure" Social Forces, 52 No.2 (December), 1873, 268-269.
37. John Child 6p Cit p219-220.

38. Giovanni Gasparini, "Organization power, Strategy and Social Classes: Towards a critique of the Contingency Theory of Organizations", Organizational Choice and Constraints: Approaches to the Sociology of Enterprises Behaviour, Saxon House, England 1979, p217.
39. Adrian J. J. Bussiness Practices for Construction Management, American Elsevier Publishing Co. Inc. 1976 p39.
40. Ibid, p43.
41. Barry Fryer, The Practice of Construction Management, Collins Professional and Technology and Technical Books, 1985 p41.
42. Mondy R.W, Arthur Sharplin and Edwin B. F. Management Concept and Practices, Allyn and Bocon, Inc. 1988.
43. Adrian, J. J., Op Cit, p43.



## CHAPTER THREE

### 3.0 ANALYTICAL FRAMEWORK FOR ORGANIZATION ANALYSIS

A large scale synthesis of the organization behaviour has been undertaken by Henry Mintzberg<sup>1</sup>. Although diosyncratic in some respect, it provides a useful framework for classifying organizations and for tracking change in different types of organizations<sup>2</sup>. The primary reason for its value lies both in its comprehensive treatment of the literature and in its capacity to relate organizational configurations to variables, known as contingency factors, which have been found to influence the way in which effective organizations are structured. These factors are concerned with the size and the age of the enterprises, technology employed, enterprise environment and the needs of its members and owners.

Because it identifies the typical effects of a number of variables on the organization characteristics of firms, it can be used to help analyze which of these factors, in a particular situation is exercising the greatest pull on an organization and, therefore, influencing its character most strongly.

It comprises a set of structural configurations and a set of forces impairing on an organization, pulling to one or other configuration. These concepts are graphically represented by the pentagon shown in figure 14.

Organization configuration located at the poles of the pentagon symbolizes a universal of potential organizational configurations. There are five pure types of organizations. These organizations are those in which the various structural parameters - including arrangement of positions and functions, coordination mechanism and extent of vertical and horizontal decentralization are internally consistent. They are:-

#### 1. THE SIMPLE STRUCTURE

This is characterized by little or no technostructure, few support staffers, a loose division of labour, minimal differentiation among its units, and a small managerial hierarchy. Little of its behaviour is formalized, and makes minimal use of planning and training. Coordination is effected largely by direct supervision.

Authority is centralized, therefore the strategic apex is the key part of the structure, indeed, the structure consists of little more than a one-man strategic apex. Most organizations pass through the simple structure in their formative years.

Communication flows informally in this structure. The work flow tends to be flexible, with the jobs of the operating core being relatively unspecialized and interchangeable. This structure can be seen in small construction firms which undertake small projects in terms of value. The owner of the firm maintains close control over the operations both with regard to long term matters

and day-to-day operations. This is accomplished through their office administration of project costs and schedules, using project managers who report directly to him, and frequent personal visits to job-sites.

## 2. PROFESSIONAL BUREAUCRACY

This relies for coordination on the standardization of skills and its associated design parameters, training and indoctrination. It hires daily trained and indoctrinated specialists professionals - for the operating core and then gives them considerable control over their own work. In effect, the work is highly specialized in the horizontal dimension, but enlarged in the vertical dimension.

Professional works relatively independent of his colleagues but closely with the client he serves. Coordination between the operating professionals is handled by standardization of skills and knowledge. The operating core is the key part of the professional bureaucracy. The only other part that is fully elaborated is the support staff, but that is focused very much on serving the operating core. The technostructure and middle line of management are not highly elaborated in the professional bureaucracy. This is because there is little need for planning and formalization and also little need for direct supervision of the operators or mutual adjustment between them. Professionals not only control their own work but they also seek collective control of the administrative decisions that affect them. It is a highly decentralized

structure both vertical and horizontal dimensions.

### 3. MACHINE BUREAUCRACY

It is identifiable because of the division of work along strictly functional lines and reliance placed on standardization procedures for the coordination and control. It depends primarily on the standardization of its operating work process for coordination, the technostructure which houses the analyst who do the standardizing emerges the key part of the structure. The work of operators is highly formalized. Rules and regulations permeate the entire machine bureaucracy structure, formal communication is favoured at all levels and decision making tends to follow a chain of authority.

Of the five structural configurations, it is the machine bureaucracy that most strongly emphasizes divisions of labour and unit differentiation in all their forms vertical, horizontal, line/staff, functional, hierarchical, and status. It is typically found in mature organizations, large enough to have the volume of operating work needed for repetition and standardization, and old enough to have been able to settle on the standards it wishes to use.

### 4. DIVISIONALIZED STRUCTURE

Divisionalized structure is characterized by the fragmentation of the organization into market related

segments which are relatively independent of each other and have central headquarters. These are units in the middle line. These units are generally called divisions and the central administration, the headquarters. The divisionalized form is most widely used in the private sector of the industrialized economy.

The divisionalized form differs from four structural configurations in one important respect. It is not a complete structure from the strategic apex to the operating core, but rather superimposed on others. That is, each division has its own structure. The divisions are drawn towards machine bureaucracy configuration but the divisionalized form configuration itself focuses on structural relationship between the headquarters and the division. In effect between the strategic apex and the top of the middle line.

The divisionalized form relies on the market basis for grouping units at the top of the middle line. These divisions are created according to the market served and then given control over the operating functions required to serve the markets. Thus each division may contain its own purchasing, engineering, manufacturing and marketing activities. The dispersal (and duplication) of the operating functions minimizes the interdependence between divisions, so that each can operate as a quasi-autonomous entity, free of the others. The headquarters allows the divisions close to full autonomy to make their own decisions, and then monitors the results of these

decisions. This monitoring is done after the fact, in specific quantitative terms, in the case of the business corporation be measures of profit, sales growth and return to investments. Hence the prime coordinating mechanism is the standardization of outputs; and the key design parameter the performance control. This form of structure may be seen within large construction firms which have decentralized their operation to market or product based.

## 5. THE ADHOCRACY

None of the structural configurations so far discussed is capable of sophisticated innovation. The simple structures certainly innovate but only in a relatively simple way. Both machine and professional bureaucracy are performance, not problem-solving structures. They are designed to perfect standard programs, not to invent new ones.

Sophisticated innovation requires a very different structural configuration, one that is able to fuse experts drawn from different disciplines into smoothly functioning ad hoc project teams.

In adhocracy, we have a fifth distinct structural configurations highly organic structure with little formalization of behaviour, high horizontal job specialization based on formal training, a tendency to group the specialists in functional units not for housekeeping purposes but to deploy them in small market-based project teams to do their work, a reliance on the

liaison devices to encourage a mutual coordinating mechanism within and between these teams, and selective decentralization to and within these teams, which are located at various places in the organizations and involve various mixtures of line managers and staff and operating experts.

To innovate means to break away from established patterns. So the innovative organisation cannot rely on any form of standardization for coordination, in other words it must avoid all the tapping of bureaucratic structure, notably sharp divisions of labour, extensive unit differentiation, highly formalized behaviours and an emphasis on planning control systems of all the structural configurations. Adhocracy shows the least relevance for the classical principles of management, especially unity of command. In this structure, information and decision process flow flexibly and informally, wherever they must to promote innovation. And that means overriding the chain of authority if need be. The adhocracy must hire and give power to experts - professionals whose knowledge and skills have been highly developed in training programs.

These are five pure type of organisations in which the various structural parameters discussed in earlier chapters which include arrangement of positions and functions, co-ordination mechanisms and extent of vertical and horizontal decentralisation are internally consistent. Considering characteristics of each type of organisation do construction firms in Kenya fall among these types of

organisations? If construction firms in Kenya show characteristics of these pure structures then this can be used to answer study objective No.2.

These organizational configurations are affected by the contingency factors as earlier noted which tends to pull organization structure toward one or other pole of the pentagon (figure 14).

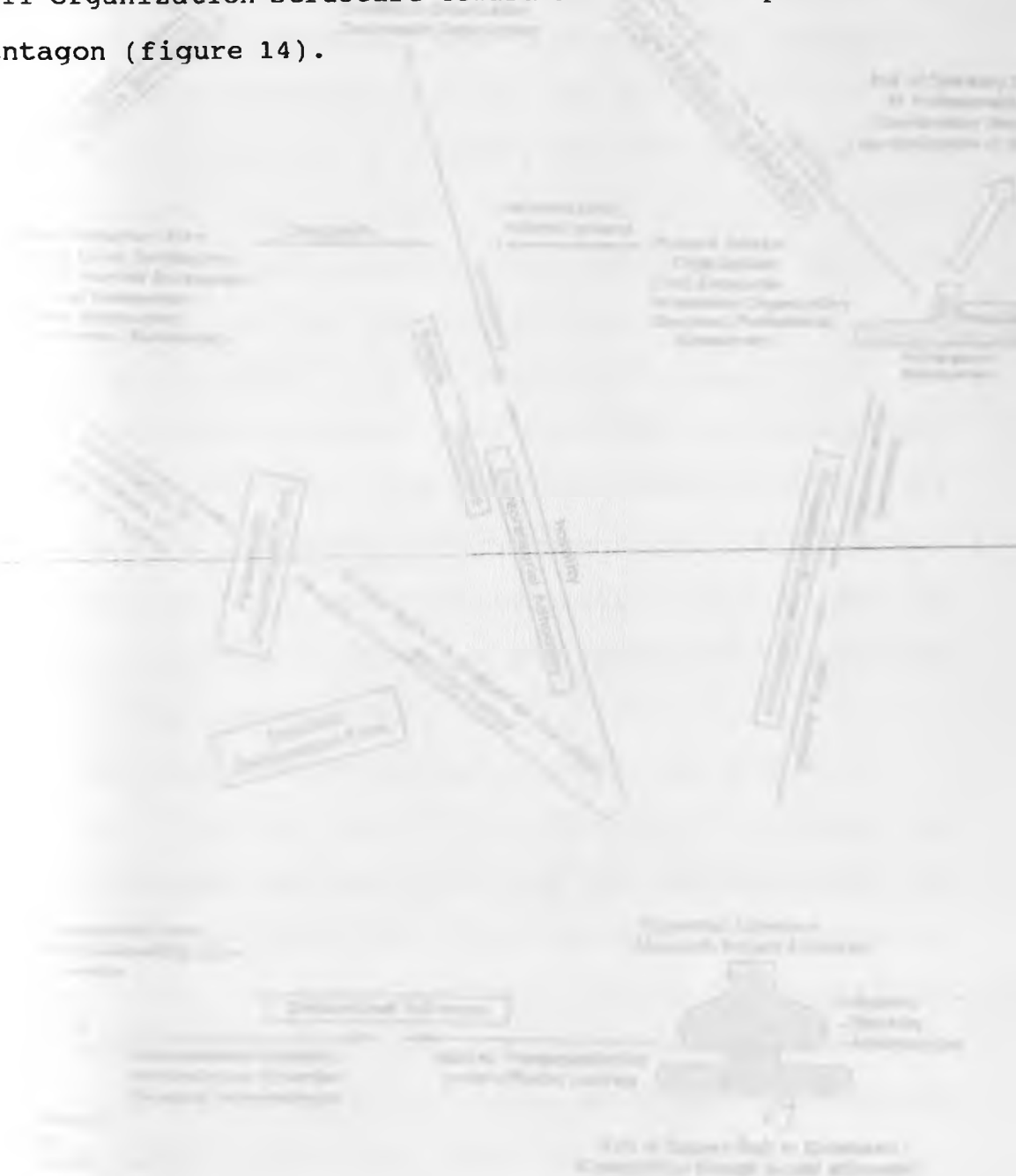


Figure 14: The Pentagon of Pure Structures



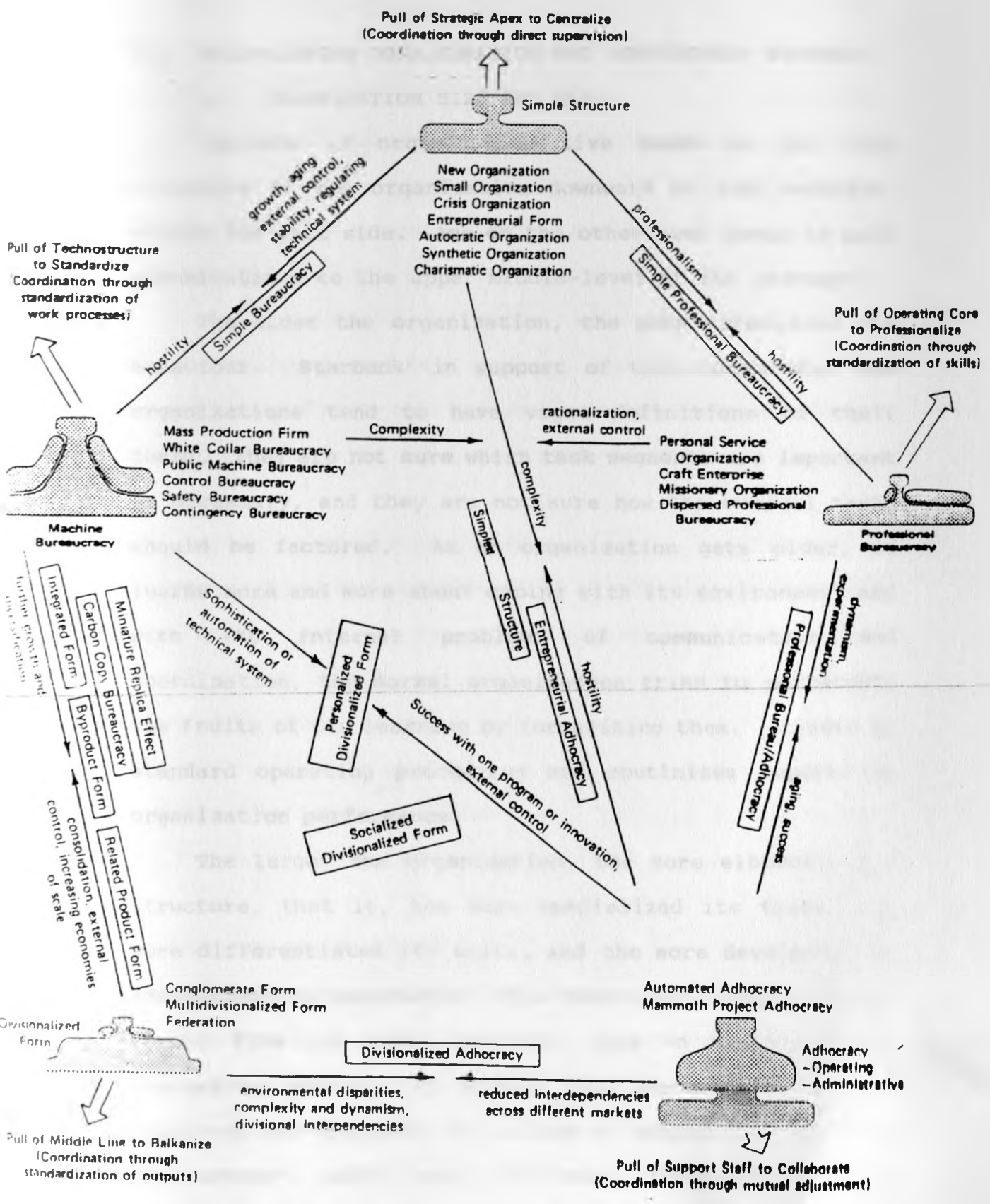


Figure 14 The Pentagon, By Henry Mintzberg

### 3.1 ORGANIZATION CONFIGURATION AND CONTINGENCY FACTORS

#### 1. ORGANIZATION SIZE AND AGE

Increase in organization size tends to pull the structure of the organization downward on the pentagon, around its left side. Age on the other hand tends to pull organizations to the upper middle-level of the pentagon.

The older the organization, the more formalized its behaviour. Starbuck<sup>1</sup> in support of this noted that new organizations tend to have vague definitions of their tasks. They are not sure which task segments are important or necessary, and they are not sure how the overall tasks should be factored. As an organization gets older, it learns more and more about coping with its environment and with its internal problems of communication and coordination, the normal organization tries to perpetuate the fruits of its learning by formalizing them. It sets up standard operating procedures and routinizes reports on organization performance.

The larger the organization, the more elaborate its structure, that is, the more specialized its tasks, the more differentiated its units, and the more developed its administrative components<sup>2</sup>. This relationship would seem to spring from job specialization, from an organization's increasing ability to divide its labour as it adds employees and increases its volume of output. As Lawrence and Lorsch<sup>3</sup>, point out, the more differentiated the structure, the more it must place on coordination. Hence,

the larger organizations must use more and more elaborate, coordination devices, such as larger hierarchy to coordinate by direct supervision, more behaviour formalization to coordinate by the standardization of work process, more sophisticated planning and control systems to coordinate by output standardization, or more liaison devices to coordinate by mutual adjustment. All this means a more elaborate administrative hierarchy with a sharper administrative division of labour. That means lines drawn between operators who do the work, the analysts who design and plan it, and the managers who coordinate.

## 2. NATURE OF TECHNICAL SYSTEM

Sophistication and automation of the technical system both tend to pull the organizational configuration to the right of the pentagon and downward, subject to the constraint that the technical system does not strongly control or regulate the work of members of the organization. In such situations, there is a pull to the left, towards the bureaucratic level of the pentagon.

## 3. NATURE OF ENVIRONMENT

A dynamic organization environment, in which changes occur unexpectedly with little or no advance warning and make the work unpredictable, tends to pull the organizational configuration to the bottom right corner of the pentagon. Environmental hostility, as evidenced by intense competition or scarce resources, requires fast

response and tends to pull an organization structure in the opposite direction, towards the type appearing at the top of the pentagon, the simple structure.

Complex organizational environment requiring that enterprises have a great deal of sophisticated knowledge to perform the work, tend to pull the structure to the right of the pentagon, towards a more horizontally decentralized system. Diversity of the environment, on the other hand exerts a pull towards the lower left of the pentagon, towards the divisionalized form of organization which can better cope with a variety of different contexts.

These contingency factors have great influence in the designing of organization structures. Organization configuration can be classified as performance or problem-solving structures.

An organization comes into being due to demand for services or product they provide to the society. Problem solving structure arises due to competition and therefore need to improve the method of production and quality of either services or products.

Performance can be seen as the achievement of the desired objectives of that organization (firm).

### 3.20 ORGANIZATION PERFORMANCE

It is clear that a number of different criteria can be applied to the design of organizational structures and systems. This follows from the alternative ways in which

good performance may be defined. It also follows from the possibility that certain organizational arrangements may be valued in themselves or at least regarded as "right and proper".

Paul Goodman and Johoness Penning<sup>5</sup>, comment that "effectiveness" is one of the most pervasive yet least well delineated of constructs applied to organizations.

It enters into virtually any theory of organizations and there have been many writings on the definition of organizational performance yet no general agreement has been reached.

The different definitions which have been offered reflect opinions on a number of issues:

1. Whether one should look at a single dimension of organization performance, such as return on investment for a business firm as opposed to a range of dimensions.
2. Whether or not to regard an organization as a set of arrangements which have to attain certain goals. If they so regarded, then good performance can be defined with reference of attainment to those goals. There are complications, however, since not all members of an organization necessarily come to it with the same purpose or priorities. Secondly, whether goals are appropriate both in content and in the

level at which they are set could itself be used to constitute an aspect of effectiveness. For example, the purpose set for an organization may fail to meet a significant need, while target levels might be unrealistically high or unnecessarily low. In these instances poor goal setting could threaten an organization's survival. Some writers on organization's have therefore advanced a system view of performance as an alternative to the goal model. This takes as its measure of performance the survival of organizations based on their capacity:-

- a] to attract needed resources;
- b] to integrate these effectively; and
- c] to adopt to change.

The design of organizations is involved in the matter of alternative objectives in two respects:-

- 1]. The direction of collective units towards different ends, such as growth via diversification or profit enhancement via consolidation, will tend to call forth different organizational structures.
- 2] Certain ends are incorporated within the design of an organization itself. Different design of organization presents alternatives in the provisions, they include for employees share and control to enjoy autonomy to exercise skills in

their jobs and generally to achieve a superior quality of working life.

Williamson Oliver (1975)<sup>6</sup> attaches criteria of efficiency to organization as a method of coordinating and regulating transactions and tasks. The efficiency rationale for organization treats its design as a technical issue. It asks which design leads to the most effective management of the various contributions and transactions required for carrying out the task of the unit in question.

The persistence of competing criteria and models for organizational design, even in business companies where ultimate financial considerations are dominant is encouraged by the difficulty of specifying what effect organization actually has on overall performance.

Organization is only one of the influences which bear upon performance. Some of these influences are external and may lie outside management's ability to predict or control. Others stem from the quality of management itself and its policies. Quality of management is a pervasive factor affecting all aspects of behaviour within an organization. Management policies have a strategic aspect which affords the organization a certain potential to achieve performance, and they have an operational aspect which relates to how well the internal activities of organization are performed. The role played by the design of structure and systems within this complex of influences on performance is virtually impossible to quantify apart

from the aspects of cost. While it is possible to specify a process on which organization will have an impact, such as control, integration and information process these processes are diffused through the organization and they are also affected by the competence and motivation of the people who are involved.

The presence of multiple criteria and the ambiguity about the effect of organization design on performance would seem to make it rather unlikely that any single design on performance, will emerge clearly as the most acceptable or successful, even within a relatively homogenous sector or area of activity. Nevertheless, the design of organization has been singled out as a significant factor in achieving good performance by senior managers and experienced consultants.

Figure 15 illustrates how external and internal factors affects designing of an organization in order to achieve a high performance.



INTERNAL ENVIRONMENT  
(INTERNAL DESIGNING FACTORS)

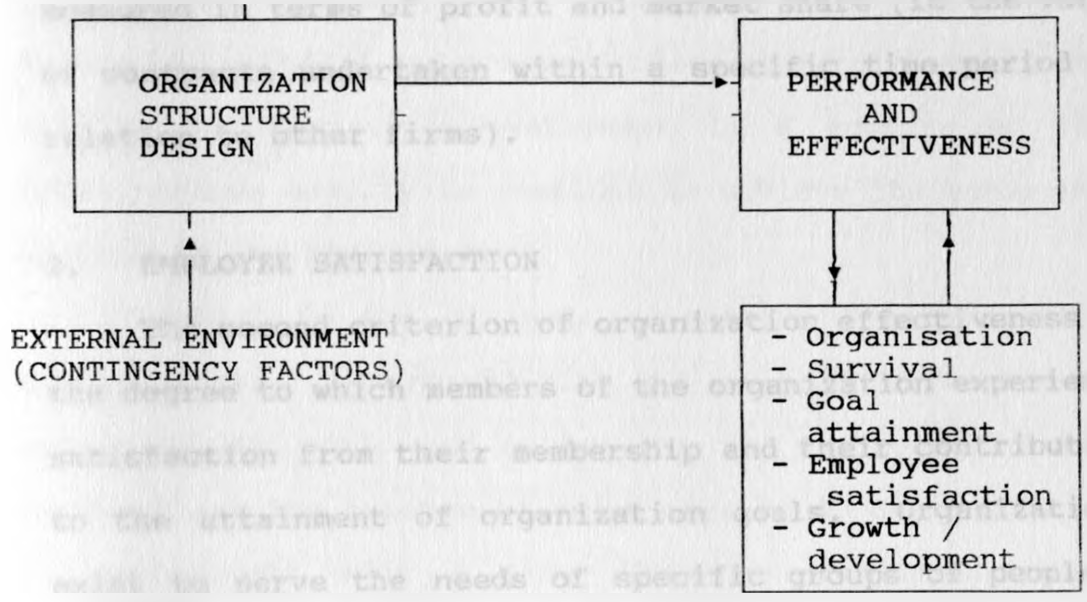


Fig 15. Organization design performance model.  
(Working model).

As noted earlier it is meaningful to say that organizations are effective to the degree that they can achieve their objectives, satisfy the needs of their members and grow in their ability to continue to do both of these things.

### 1. GOAL/OBJECTIVES ATTAINMENTS

Organizations are created and operated to satisfy the needs of the society through achieving their own goals - goals of providing services and goods. An Organizations which fails to realize its objectives eventually fail. Construction firms are established in order to provide the building demanded by their client within specified quality, time and funds available. Hence the firms structure should

be well designed in order to achieve the clients needs. Goal attainment in relation to construction firms can be measured in terms of profit and market share (ie the value of contracts undertaken within a specific time period in relation to other firms).

## 2. EMPLOYEE SATISFACTION

The second criterion of organization effectiveness is the degree to which members of the organization experience satisfaction from their membership and their contribution to the attainment of organization goals. Organizations exist to serve the needs of specific groups of people - owners, clients, suppliers and employees. In a relatively free society, any organization that consistently fails to satisfy any of these groups of people will fail and die. Employee satisfaction is a major determinant of the degree to which organizations achieve their goals. However, employee satisfaction has such important long-term effects on goal achievement and it should be considered one of the standards of effectiveness, especially in short-term, measures which reflect satisfaction are attitudes, productivity, turnover, absenteeism, tardiness and grievances.

## 3. DEVELOPMENT/GROWTH

The third criterion of organization effectiveness is development and growth. Development refers to changes in the organizations ability to achieve its goals through

serving the interests of society. More specially, development refers to changes in the organizations problems-solving ability and to changes in its ability to respond to external and internal changes and ultimately its ability to survive. Development is a measure of the organizations ability to continue to achieve its goals and to satisfy its employees.

Survival is the ultimate criterion of organization effectiveness. An organization can be quite effective in attaining its goals and satisfying its employees in the short-run at the expense of being able to do so in future. So development adds a time dimension to organization effectiveness.

There are no precise measures of development. Most often development is measured in relative terms by questionnaire assessment of such things as (1) the way conflicts are handled, (2) how planning takes place, (3) methods used to make decisions, (4) degree of goal orientation, (5) communication climate. Measures of these variables are then compared with measurements in other organization either in the same class or different and then judgement about development is then made.

Growth refers to increase in firms size in terms of personnel, increase in volume of workload and may also include diversification.

In reference to construction firms attainments of growth may have various dimensions, it refers to increase in size (personnel), increase in project size undertaken in

terms of individual project value. Contractors are categorized as earlier explained by ministry of Public Works, this categorization is based on capital investment, value of individual projects a firm is capable to handle, qualifications of personnel and type of work a firm can undertake (i.e simple or complex referring to method employed in order to produce building facility). The transaction from lower category to upper category means increase in all these factors. This reflects growth and development of a construction firm. In chapter two figures 12, 13 and 14 show the metamorphosis of a construction firm, this shows phases of growth from small - medium - large firms, that is a firm first grows in horizontal dimension and in later stages of growth both horizontal and vertical dimensions becomes evident. Within this concept, it should be seen there are also changes in coordination mechanism that a firm employs as it changes from one phase to the other.

Growth reflects the performance of a firm. Firm performing badly, eventually leaves the market leaving those firms performing well. Within a specific market where a construction firm can offer its services, there is competition. Survival of a firm as a result of this competition requires a firm performing at best in order to remain in this competitive market. Therefore survival is another measure of performance in a competitive market (environment).

As explained earlier within the context of

organization configuration, there are those structures designed for performance purpose which include machine and professional bureaucracies, simple structures and divisionalized form, these structures are designed to perfect standard programs of which performance is measured against these standard programs. Within the study therefore, it should be expected construction firms in Kenya to fall within these structures if they are designed for performance purpose, if not so, they should tend towards adhocracy structure more designed for innovative purpose rather than performance orientation.

## REFERENCES

1. Henry Mintzberg, The Structuring of Organization, Prentice Hall Inc. Englewood Cliff 1979.
2. Starbuck, W.H. "Organization Growth and Development" Handbook of Organization J.G. Morch (ed) Rand McNally 1965 p480.
3. Woodward J. Industrial Organization : Theory and Practice. Oxford University Press 1965 p55-57.
4. Lawrence, P.R. and Lorsch J.W. Organization and Environment, Irwin 1967.
5. Goodman P.S. Pennings, J.M. et al, New Perspective on Organization Effectiveness. Jossey - Boss 1977.
6. Williamson Oliver T, Market and Hierarchies. Free Press 1975.
7. John Child Organization: A Guide to Problems and Practice, 2nd ed. Horper and Rov Ltd, p217-218.
8. Gibson J. et al Business Publication, Dallas 1973.

## CHAPTER FOUR

### FINDINGS AND ANALYSIS

This chapter sets out to analyze how construction firms are structured in order to implement building projects demanded by their clients. The aim is to find out how effective these structures are in implementing their objectives and maintaining a high level of performance. The contractors under study include small, medium and large construction firms as defined earlier in Chapter one.

An attempt is made to identify existing structures within this broad classification of contractors. Factors both internal and external (contingency) influencing designing of these structures are established and compared with what has been discussed in literature review and within a framework of organization analysis.

In particular, factors influencing internal design in order to achieve internal consistency which include coordination mechanism applied in each category of contractors, parts of the firm influencing its functioning, internal organization design parameters and communication system are established to determine if they are inconsistency with factors already discussed in the foregoing chapters.

Contingency factors which include size of the firm, defined in terms of personnel employed in the firm, departmentation (unit size) and type of construction project it undertakes.

The market in which the firm operates is defined in terms of value of individual construction project the firm can undertake and complete.

The technical system the firm applies is viewed in terms of the method of construction the firm utilizes in its building project whether simple or complex building structures. Firm design their structures in order to attain organizational goals (objectives). Structuring is part of management process, Quality of management is a pervasive factor affecting all aspects of behaviour in an organization. Management policies have a strategic aspect which affords the organization a certain potential to achieve performance and they have an operational aspect which relates to how well the internal activities of organization are performed. It is in this view the study looks into how the internal design and contingency factors influence designing of structures and the effect of the structure on performance.



The information collected is as tabulated below.

	LARGE CONSTRUCTION FIRMS	MEDIUM CONSTRUCTION FIRMS	SMALL CONSTRUCTION FIRMS
TOTAL NO. OF CONTRACTORS	109	233	378
NO. OF FIRMS SELECTED FOR INTERVIEW	36 (33%)	78 (33%)	126 (33%)
NO. OF FIRMS THAT RESPONDED TO QUESTIONNAIRE	25 (69%)	50 (64%)	80 (63%)

TABLE 1: SAMPLE AND RESPONSE OF CONTRACTORS

	LARGE CONSTRUCTION FIRMS	MEDIUM CONSTRUCTION FIRMS	SMALL CONSTRUCTION FIRMS
HIGH PERFORMANCE FIRMS	21 (84%)	40 (80%)	56 (70%)
LOW PERFORMANCE FIRMS	4 (16%)	10 (20%)	24 (30%)

TABLE 2: CONTRACTOR PERFORMANCE

From the tables shown above small construction firms comprises largest number of construction firms in Kenya. In Nairobi there are a total of 378 construction firms grouped in this class out of which 126 (33%) were sampled for interviews and only 80 (63%) construction firms responded to the questionnaire administered satisfactorily.

Among 80 construction firms 56 (70%) were classified as high performance construction firms while 24 were classified as low performance construction firms. This classification was done using performance indicators which included objective attainment, types of construction project the firm has undertaken and completed, number of operatives in the firm, plants and equipment the firm owns, major clients, category of the firm and labour turnover.

There are a total of 233 medium construction firms in Nairobi out of which 78 (33%) were sampled for interviews, 50 (64%) construction firms responded to the questionnaire administered satisfactorily. Among 50 construction firms, 40 (80%) construction firms were classified as high performance which 10 were low performance construction firms. The classification was also based on performance indicators.

The lowest number of construction firms fall under large construction firms. There are a total of 109 construction firms in this class out of which 36 (33%) were sampled for interviews and only 25 (69%) responded to the questionnaires satisfactorily. In this class 21 (84%) were classified as high performance while 4 (16%) were low performing construction firms. The classification also was based on performance indicator as explained earlier.

## SMALL CONSTRUCTION FIRMS

Table 3 shows comparison between high and low performing construction firms.

	Low performing	High performing firms
No. of firms	24 (30%)	56 (70%)
Objectives of the firms	-Make profits -Achieve growth	-Maximise profits - Attracts more clients -Attain growth
Type of construction project undertaken and completed	-Small renovation works -Repair	-Renovation works -Maintenance and repair -Construction mainly of houses
Range of individual projects value the firm has undertaken and completed	Kshs 0- 1,500,000	Ksh 0-2,700,000
Method of securing contracts	- competition - negotiation	- Competition - Negotiation
Permanent no. of employees in the firm	2- 5	2-7
Ownership	- Sole proprietorship	- Sole proprietorship -partnership

TABLE 3: COMPARISON BETWEEN HIGH AND LOW PERFORMING SMALL CONSTRUCTION FIRMS

Small construction firms comprise the largest number of contractors in the country. The firms in this class of contractors were found to undertake works involving renovation, maintenance and repair and small construction works (tables 3). The individual projects are generally small in nature and of low monetary value as compared with

individual projects undertaken by firms in other classes of contractors under study (Tables 3, 5 and 7). The building projects undertaken by this class of contractors are located within the area of study as cited by 86% of construction firms interviewed and only 14% undertakes works in other districts other than Nairobi. The reason why these 86% firms prefer projects within area of study is because they have few employed operatives, to minimise on transport cost, maintenance and overhead costs.

There is a high competition for building projects as cited by this class of contractors. There are a total of 378 small construction firms in Nairobi competing in the same market. Due to high competition 41 construction firms left construction industry to engage in other form of businesses, these are the firms which could not be located either through their registered physical address nor through the telephone, out of 41 construction firms, 3 firms traced were engaging in furniture making and hardware shops. The reason for their closer is due to competition they faced in the industry and loses incurred due to non-payments.

Small firms are owned by indigenous Africans and 20% of these construction firms attributed their failure to collapse of an association of African Contractors. Small firms also do not have qualified personnel neither departmentation as shown in the organisation charts in figure 16a and 16b. Failure of these firms can largely be attributed to lack of management skills and lack of know-

how. The owners have no basic management skills and founded their firms due to high profits envisaged in the construction industry. There is also lack of pricing system of contract documents which has resulted in underpricing of works, this explains the reason why many public building projects undertaken by this class of contractors are abandoned after realising that they are making losses due to low prices offered for the project.

There are two organisation charts identified in this class of construction firms showing varies relationship. This was represented in question 28 of the questionnaire and further emphasized in questions 10, 11 and 13 dealing with communication and skilled operatives respectively. The organisation charts shown in figure 16a showing simple relationship characterised 30% of small construction firms identified as low performing firms.

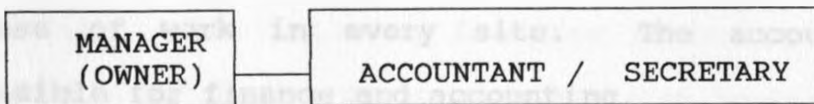


Figure 16(a) Organization chart of low performing small construction firm.

These firms have fairly simple relationship between the manager (owner) and his accountant. The manager assumes all the management duties of the firm. He is responsible for sales, marketing and production which entails projects estimating, planning and project supervision. He is the sole decision maker. The accountant reports to the manager and he is responsible for

finance and accounting.

The other group of contractors had organisation chart shown in figure 16b which represented 70% of small construction firms.

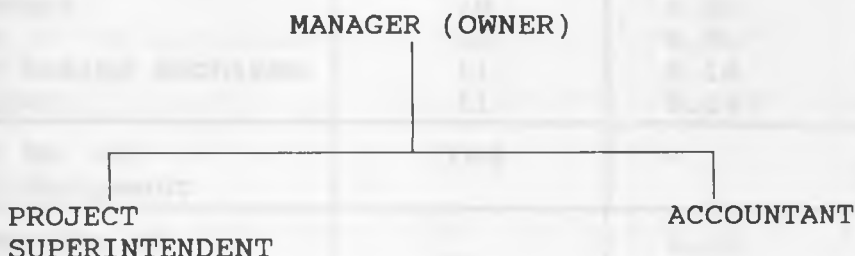


Figure 16b. Organization chart high performing small construction firms.

The manager (owner) is the sole decision maker and he is responsible for all management duties of the firm. The project superintendent is generally a foreman who is responsible for purchase of materials and preparing of cost data for each project. He reports to the manager the progress of work in every site. The accountant is responsible for finance and accounting.

Small construction firms have low capital investment as shown in Table 4 compared to other classes of contractors (Tables 6 and 8).

Plants/equipments	Total owned by 80 No. small firms	Average No. per firm
Concrete mixers	48	0.60
Lorries	54	0.68
Vibrators	29	0.36
Hoist	16	0.20
Block making machines	11	0.14
Scroller	11	0.14
Total No. of Plant/Equipment	169	-
Average No. of Plants/Equipments	-	2.12

Table 4. Plant/Equipment - Small construction firms

The responsibility of plant/equipment owned by the firm are under foreman as shown by 60% of the construction firms while 40% placed responsibility under the manager of the firm. The firms hires plants/equipments which it does not own when work necessitates use of such plants/equipments. When these plant are not in use, 56% of the firms rent them out while 16% repair and store them for later use.

Public construction projects undertaken by this class of contractors as shown in question 21 of the Questionnaire have suffered delays and cost exceeded the original contract sum. According to 68% of firms interviewed, deviation of estimated cost to actual cost is because of increases in both materials and labour cost, while delays in construction period is due to additional works, weather conditions, unforeseen ground conditions and non-payments.

Though these problems do not directly point at the contractor, they still have a contributory factor towards

poor performance of the building projects they undertake. These firms lack a well defined structure especially low performing construction firms. This is a contributing factor to this poor performance. The manager assumes overall management duties and production function of the firm. Some of these problems can be alleviated if work is delegated and employment of personnel to deal with specific areas.

In small construction firms, the authority is centralised, the manager (owner) assumes all the responsibilities of the firm. The key part of these firms is the strategic apex comprising only the manager. Communication flow informally between the manager (owner) and his employee and the structure is horizontal because of the managers control of the firm. Therefore small construction firms show the characteristics of simple structure discussed in Chapter 4.



## MEDIUM CONSTRUCTION FIRMS

Table 5 shows comparison between high and low performance medium construction firms.

	Low performing firms	High performing firms
No. of firms	10 (20%)	40 (80%)
Objectives of firms	<ul style="list-style-type: none"> <li>- make profits</li> <li>- attract clients</li> </ul>	<ul style="list-style-type: none"> <li>- profits maximization</li> <li>- attract more clients</li> <li>- achieve growth</li> </ul>
Ownership	- Sole proprietorship	<ul style="list-style-type: none"> <li>- sole proprietorship</li> <li>- partnership</li> <li>- company</li> </ul>
Type of construction work undertaken	<ul style="list-style-type: none"> <li>Building works</li> <li>maintenance and repair</li> </ul>	<ul style="list-style-type: none"> <li>major building works</li> <li>maintenance and repair</li> <li>major renovation works</li> </ul>
Range of individual projects value the firm has undertaken and completed	Kshs 2,000,000 - 27,000,00	Kshs. 2,500,000 - 40,000,000
No. of permanent employees in the firm	2 - 10	2 - 15
Method of securing contracts	<ul style="list-style-type: none"> <li>- competition</li> <li>- negotiation</li> </ul>	<ul style="list-style-type: none"> <li>- competition</li> <li>- negotiation</li> </ul>
Subsidiary firms	none	18 firms have subsidiary firms
Credit facilities	30% firms receive credit facilities from suppliers and manufactures of materials	67.5% firms receive credit facilities

Table 5: continued

Plant owned	- concrete mixers - cranes	- cranes - forklifters - concrete mixers - dumpers - rollers
Major clients	Public and private	Public and private
Labour turnover	46% labour turnover	12% labour turnover
Upgrading	20% firms have applied to be upgraded to higher category of contractors	42.5% have applied to be upgraded to a higher category of contractors

TABLE 5: COMPARISON BETWEEN HIGH AND LOW PERFORMING MEDIUM CONSTRUCTION FIRMS

Medium construction firms comprise second largest number of contractors in the country. About 66% of these construction firms were founded more than 10 years ago and therefore have been in the construction industry for along time.

Contractors in this class expressed various opinion in the manner the Ministry of Public Works categorizes construction firms, 67% said the method is justified because various factors are considered before a construction firm qualifies to be in a certain category. The factors include, type of work the firm is capable to undertake or has undertaken, financial capability of the firm, number of employees and their training. While 20% were of opinion that the method is not justified because there is a lot of "undertable" deals in registration and upgrading of construction firms and 11% did not answer the

question.

The objectives of these firms include profit maximization, to attract more clients and to achieve growth. High performance firms in this class have achieved their original objectives and 45% of them have already applied for upgrading to the Ministry of Public Works to be upgraded to a higher category of construction firms. There is also a high percentage of negotiated contracts undertaken by this class of contractors which implies that they have achieved clientele or have established themselves in the construction industry.

There is departmentation of employees in medium firms compared to small construction firms as depicted in their organisation chart (figure 17a and 17b) and represented in Question 10 and 11 of the Questionnaire. These departments include personnel, accounts, administration, and estimating. There is also both horizontal and vertical growth in these firms as their management requirement and employees increased as opposed to small firms where growth is horizontal. These departments are under a middle line manager who is responsible for the performance in his department and he has delegated certain degree of authority. The communication within these departments is direct. The general manager monitors the overall performance of the firm.

The works undertaken by this class of contractors include major building works, maintenance and repairs and major renovation works as shown in table 4. They undertake

works for both public and private clients. 94% of these construction firms undertake construction projects in other districts rather than Nairobi while only 6% undertake works in Nairobi only. This can be explained by the fact that there are more personnel in these firms and are ready to take risks compared to small construction firms. This is one way of trying to diversify firms operation to cover a wider area of operation in order to survive within a competitive market. Generally the value of individual project ceiling is Ksh 27 million for low and 40 million for high performing construction firms which is higher than in projects undertaken by small construction firms. 18 High performing firms in this class have subsidiary firms in the field of manufacturing and suppliers of building materials and 68% of these firms are assured of credit facilities.

In the process of tendering for a construction project, profit margins allowed by these firms differ, but all firms interviewed allow low profit margins in case of competitive tendering compared to negotiated tendering. The profit margin allowed depends on the firm overhead costs, nature and location of project, workload at time of tendering and the type of client.

High performing firms have a considerable capital investment compared to low performing firms as shown in table 6. In 80% of the medium firms interviewed, plants/equipments are under the responsibility of a contract manager while in 20% of the firms the responsibility is under a foreman. These plants are hired

out when not in use to reduce idle capacity.

Plants/Equipments	Low Performing firms (total No. of plants /equipments)	High Performing firms (total no. of plants /equipments)
Cranes	8	27
Concrete mixers	9	33
Forklifters	12	79
Rollers	5	53
Bulldozers	7	13
Vibrators	5	15
Excavators	-	10
	-	11
Total No. of Plants/ Equipments	46	271
Average plants/ equipments	4.6	6.78

Table 6: Comparison of plants/equipment- medium construction firm

Among the medium firms 72% were started as small construction firms and were originally placed in the category of small contractors and later up-graded to the category this thesis classify as medium firms. They also showed increased personnel, departmentation, works undertaken and this was also portrayed in Question No.28 in the Questionnaire showing growth of the firm interms of organisational chart from the time the firm was started to present state of the firm. These were among the firms found to be high performing medium firms while 28% showed a constant structure which indicates they were started and placed among medium firms and still remains in the same category of construction firms.

There are two organizational charts identified in this

class of construction firms showing various relationships. These were represented in Question 26 of the Questionnaire and further shown in Questions 10, 11 and 13 dealing with departmentation, communication and skilled operatives respectively. The charts are as shown in figures 17a and 17b.

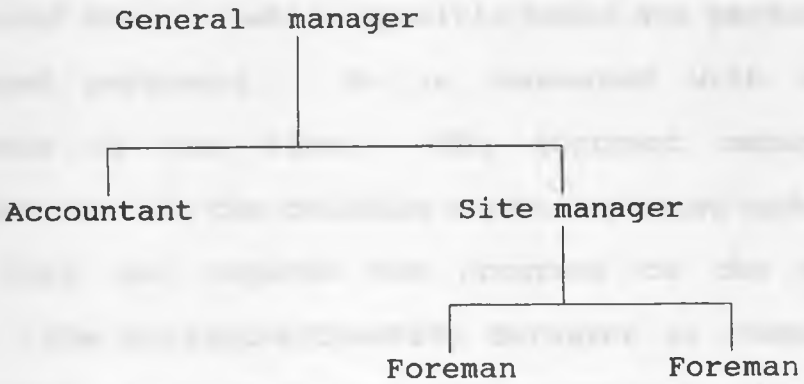


Figure 17a Low performing medium construction firms.

About 20% of medium firms had organization chart as shown in figure 17a, while 80% showed organization chart in figure 17b.

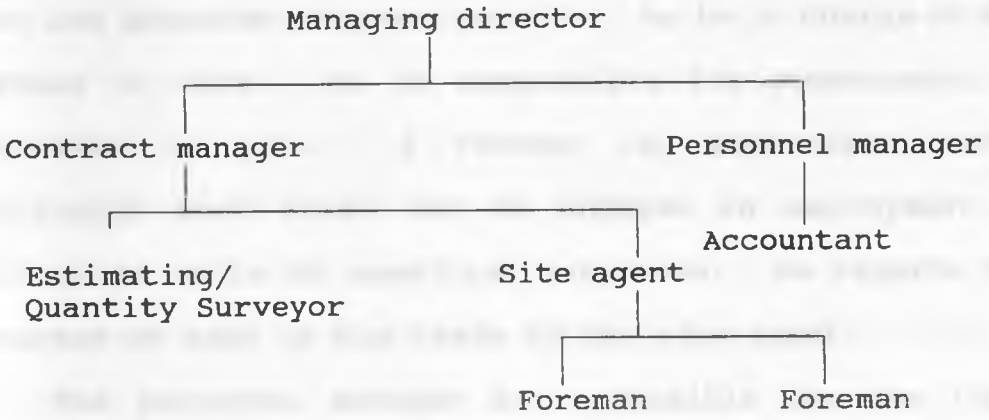


Figure 17b High performing medium construction firms.

High performing medium construction firms have more

departmentation and specialised personnel as shown in figure 17b, also they have more capital investment (table 6) and undertake building projects of higher monetary value with a ceiling of Ksh 40 million compared to low performing medium construction firms (table 5) who can not undertake a construction project whose cost are above Ksh 27 Million.

The general manager is responsible for overall operation of the firm while specific tasks are performed by specialised personnel. He is concerned with overall performance of the firm. The contract manager is responsible for all the building contracts being undertaken by the firm and reports the progress to the general manager. The estimator/Quantity Surveyor is responsible for pricing and analysing the contract documents, measurements of works and advice on all constructural claims, he also liaises with clients quantity surveyor in preparing the projects final account. He reports to the contract manager.

The site manager/agent is responsible for the work on site and prepares progress reports. He is in charge of all foremen on site. He is responsible for procurement of materials on site. A Foreman is responsible for a particular work trade and he engages in employment of skilled as while as unskilled labourers. He reports the progress of work in his trade to the site agent.

The personnel manager is responsible for the firms personnel matters and he reports to the General manager. Under him is an accountant who is responsible for finance

and accounting.

The deviation of contract sum to actual final cost according, to 81% of the construction firms in this category is due to increases in labour and materials cost and variations issued by the clients while delays in project completion time are due to delays in issuing details by the client consultants, delays in honouring interim payments, bad weather conditions and non-availability of materials.

The method of coordination in this class of contractors is direct supervision as opposed to mutual adjustment in small construction firms. This is derived through the method of communication, reporting system and departmentation as explained earlier. Questions 10, 11 and 13 of the Questionnaire, organisational chart in Question 28 and figures 17a and 17b shows this method of coordination. Whereas in small construction firms the relationship is fairly simple and direct and growth is horizontal (figure 16a and 16b), in medium construction firms, both horizontal and vertical growth are evident (figure 17a and 17b). This can be explained by the fact that the firm has grown from its past simple form and therefore this necessitates additional responsibility as both workload and specialised personnel increases which in turn necessitates departmentation and delegation of duties.



## LARGE CONSTRUCTION FIRMS

Table 7 shows comparisons between high and low performance large construction firms.

	Low performing firms	High performing firms
No. of firms	4 (16%)	21 (84%)
Ownership	- sole proprietorship - partnership	- sole proprietorship - partnership - company - multinationals
Type of construction undertaken	major buildings works	- Major building works - civil engineering works
Range of individual projects value the firm has undertaken and completed	minimum Kshs. 2,000,000	minimum Kshs. 4,000,000
Method of securing contracts	- completion - negotiation	- completion - negotiation
No. of permanent employees	2 -12	5-20
Subsidiary firms	50% firms have subsidiary	33% firms have subsidiary firms
Credit facilities	75% firms benefit from credit facilities from suppliers and manufacturers	90% firms benefit from credit facilities

Table 7: continued

Plant owned	- cranes - forklifters - rollers - caterpillars	- cranes - forklifts - caterpillars - excavators - vibrators
Labour turnover	23% labour turnover	7% labour turnover

TABLE 7. COMPARISONS BETWEEN HIGH AND LOW PERFORMING LARGE CONSTRUCTION FIRMS

This class of contractors comprises a total of 109 construction firms the lowest number of contractors compared to medium (233) and small (378) construction firms in Nairobi.

In large construction firms 88% were founded 15 to 38 years ago. To find the whether manner in which the Ministry of Public works categorises construction firm was justified Question No.4 of the Questionnaire was posed to the construction firms, 50% of the firms said yes and gave reason that all contractors merit is considered which includes capital investment, financial capability, personnel the firm has and experience and also the type of work the firm can undertake. 20% said no, and gave reason that the present method assumes that a construction firm must have had an experience to be registered yet there are some firms with no experience yet are founded and do very well. 30% of the firms did not answer the Question.

The objectives cited by these firms include profit maximization, attract more clients and achieve growth so as to decentralise their operation to cover a wider market.

In these firms 84% are either sole proprietorship or

partnership and 16% are either company or multinationals. Employees in these firms are grouped into departments which include personnel, estimating, planning and administration. They undertake building projects for both public and private client and these projects involve major building works and civil engineering works. Some of the projects which have been undertaken by this class of contractors are complex involving large financial investment.

High performing large firms have a considerable capital investment compared to low performing large construction firms as shown in table 8. Large construction firms have more capital investment compared to medium and small construction firms. In 84% of large firms interviewed, plants/equipments are under the responsibility of plant manager while in 16% the responsibility of plants/equipments is under a foreman.

Plants/Equipments	Low performing firms (total no. of plants/equipments)	High Performing firms (total no. of Plants/Equipments)
Cranes	5	25
Concrete mixers	7	130
Lorries	10	217
Forklifters	3	8
Vibrators	2	50
Exactors	2	25
Dumpers	-	47
Bulldozers	-	42
Rollers	-	37
Total No.	29	581
Average No. Per Construction firm	7.25	27.67

Table 8: Plant/Equipments - Large construction firms

There is low labour turnover in high performing construction firm compared to the low performing construction firms, this is because in high performing firms employees are given both monetary and non-monetary incentives which include provision of transport facility, health care and bonuses based on performance of the firm in a year and there is a great feeling of closeness of employees to the management.

Among large construction firms 23% were started as small firms while 41% were originally medium construction firms and later up-graded to the category this thesis classifies as large construction firms. These firms showed increase in personnel, departmentation, works undertaken and this was also portrayed in Question no. 28 in the Questionnaire showing growth of the firm interms of organisational chart from the time the firm was founded to the present state of the firm. These also are among the firms this thesis classifies as high performing large construction firms, while 36% showed a constant structure which indicates that they were founded and originally registered as large construction firms.

These construction firms do not have a drawn organization chart just as the case with small and medium construction firms though the employees relationship is implied by the work each performs, the reporting system and the method of communication as indicated in Question 10, 11 13 and 28 of the Questionnaire.

There are basically two organisational charts

identified in this class of construction firms showing various relationship between personnel, their reporting system and the authority flow. These charts were represented in Question 28 of the Questionnaire and explained on Question 10, 11 and 13 dealing with the departmentation, communication and the personnel respectively. These charts are as shown in figures 18a and 18b.

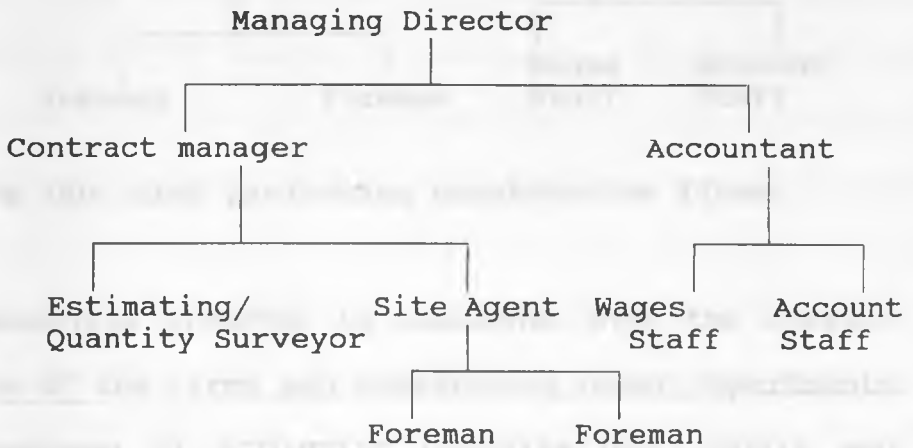


Figure 18a low performance large construction firms.

About 16% of the firms interviewed had the organization chart shown in figure 18a. These were classified as low performing contractors while 84% of contractors interviewed in this class had an organization chart as shown in figure 18b. These firms were classified as high performing contractors using performance indicators as explained earlier and shown in the Table 5.

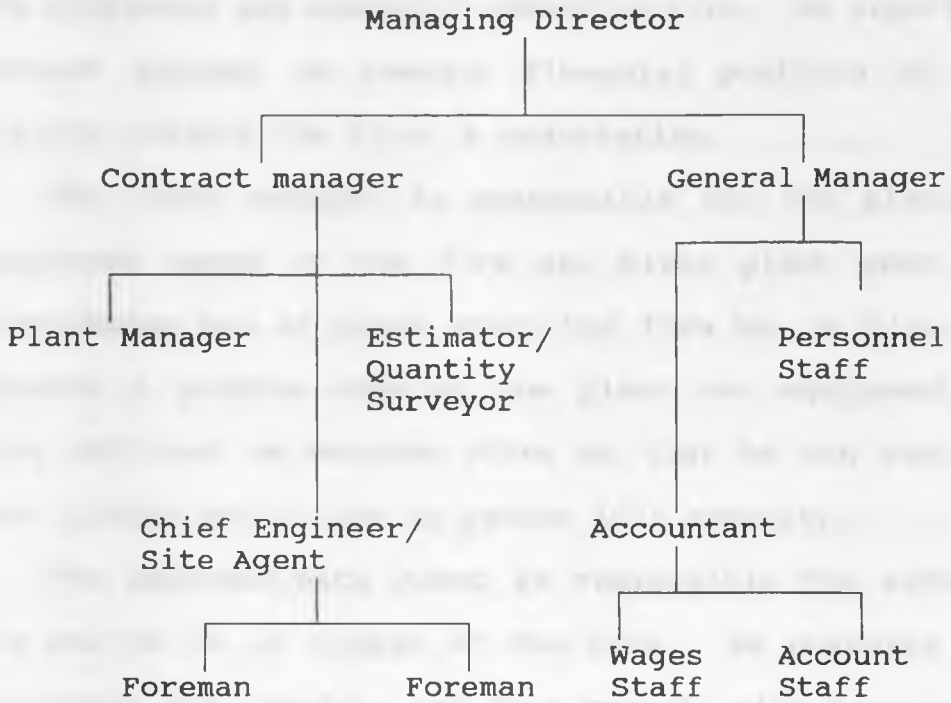


Figure 18b. High performing construction firms.

The managing director is concerned with the overall performance of the firms and coordinates other departments for the purpose of achieving organizational goals and objectives. Each middle line manager reports vertically along functional departmental lines. In large firms, there is more vertical and horizontal growth as shown in figures 18a and 18b.

The contract manager is responsible for all the building projects the firm undertakes and reports the progress of each site to the managing director.

The estimator/quantity surveyor is responsible for measurement of works. He prepares interim valuations and liaises with client Quantity Surveyor for final account. He is also involved in placing of subcontracts order for

both nominated and domestic subcontractors. He reports to contract manager on overall financial position of each building project the firm is undertaking.

The plant manager is responsible for the plant and equipments owned by the firm and hires plant when work necessitates use of plant which the firm has to hire. He prepares a program showing how plant and equipment are being utilized on various sites so that he can rent out those plants not in use to reduce idle capacity.

The Engineer/Site Agent is responsible for works on site and he is in charge of the site. He prepares work programmes and schedule and does overall site management. Under him are foremen who are responsible for various work trades.

The General manager is concerned with general welfare of the employees, he is responsible for employment and motivation of workers. The accountant reports to the general manager and he is responsible for finance and accounting.

The coordinating mechanism in large construction firms is direct supervision and standardization. This is derived through the method of communication, reporting system and departmentation as explained earlier. Questions 10, 11 and 13 of the questionnaire, firm organisational chart in Question 28 and figures 18a and 18b shows this method of coordinating. The middle line managers and those reporting directly to them coordinate through direct supervision while among specialists coordination is largely through

standardization specifically of skills.

The managing director is charged with overall responsibility of the firm and he forms the strategic apex. The contract and general managers form the middle line managers. each of these managers collect feedback information on the project performance of his own unit and passes information to the managing director (strategic apex).

The Engineer/Site Agent and Estimator/Quantity Surveyor form the technostructure or functional specialists who provide backup service to the line manager. Their authority is limited to their own area of specialist and have a line relationship among themselves. Foremen form the operating core and he performs the basic work in the production of a building project.

The accountant has a staff function and provides support to the organization outside the operating work flow.



## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATION

This study was conceived mainly as an investigation of the relationship between organization structure of construction firms and its performance and also its relationship with the model of organization configuration of other business enterprises (chapter 4) in terms of its sensitivity to the contingency factors which have been found to influence the organization structure of other business enterprise and therefore pulling their structure to one or other parts of the pentagon.

The study main objectives were cited as:-

1. To find the relationship between organization structure and performance of construction firms, performance measured through use of indicators which include goal (objectives) attainments, growth of the firm, survival in a competitive market and satisfaction of employees.
2. To find out if construction firms behave in a similar manner as other business enterprises in responding to contingency factors which have been found to influence the way in which effective organizations are structured. The factors are concerned with:-
  - i) Size and age of the firm
  - ii) Nature of technology employed and
  - iii) environmental factors

To give the study direction an hypothesis was formulated stating that "organization structure has a significant influence on performance and effectiveness of a construction firm".

The methodology used in conducting the study was also defined. It was felt that for the issue raised under study objectives to be adequately addressed to, there was need for elaborate theoretical framework. On the basis of this framework, the information gathered through interviews and questionnaires was analyzed and observation in respect to the sources of the problem made.

The theoretical framework is taken care of through the literature discussed in chapters 2 and 3. The two chapters discuss the factors considered in the structuring of an organization and further develop a conceptual framework under which organization structure can be compared.

On the basis of the information collected and analyzed and also the theoretical base provided in the earlier chapters it became possible to make the following conclusions.

#### OBJECTIVE 1

There is quite a high degree of consistency among the characteristic of high performing construction firms regardless of the class. These characteristics are elements of organizational design. The following is a distillation of the firms attributes which this study has linked to high performing construction firms.

1. There is an emphasis to communicate key goals and objectives and to ensure that action is directed towards these, for example there is a regular information feedback between the site staff and office staff as the project progresses.
2. There is delegation of identifiable areas of responsibility to relatively small units including work groups. These units are encouraged to carry out their responsibilities with a considerable autonomy and scope for initiative but they are subject to performance assessment which manifests a preservation of tight central control.
3. Use of line structures which simplify and clarify responsibility within the firm.
4. There is considerable delegation of decision making to the line managers.
5. There is low labour turnover in these firms due to motivation of workers which include provision of transport facilities, health care and monetary gains. There is also greater feeling of closeness of employees to management.

The low performing construction firms have the

following characteristics:-

1. There is less specialisation of labour and lack of well defined departmentation.
2. There is less delegation of authority and decision making.
3. There is high labour turnover due to dissatisfaction of employees with the management

Among medium construction firms 72% were started as small firms and grew to medium firms, while in large construction firms 23% were started as small firms and 41% were originally medium firms and were up-graded to their present status (chapter 4). About 18% of small construction firms especially from those found to be performing poorly have continued operating as small firms for a number of years, this is because the manager (owner) has desire to maintain control over his business. Small construction firms are generally sole proprietorship and suffer financial problems because their financial position depends wholly on the owner of the business. Low performing small construction firms end up leaving the market. There is a high competition for building projects among small contractors and due to this survival of a firm depends on its performance in the industry but some survives due to their owners enthusiasm. The owners of small firms assume all management duties including finance, production and he is sole decision maker.

The objectives of a firm change over time as needs of

the owner change. High performing small firms had achieved most of their desired original goals and objectives and they have shown some signs of growth (as reflected in their organisational chart) and undertake more construction projects than originally did.

Medium construction firms are more organised and coordination noted among its members than small construction firms. Small firms have a horizontal relationship. As small firms grow to medium firm the growth assumes both horizontal and vertical dimensions. There is also delegation of duties and decentralised decision making and this becomes more as the construction firm grows from medium to a large construction firm.

## OBJECTIVE 2

Chapter 3 discusses five pure structures, their characteristics and how each responds to contingency factors affecting their structures. In chapter 4 the characteristics of construction firms in Kenya and their behaviour is also discussed and portrayed in their respective organisational charts, in lieu of these one can conclude that construction firms in Kenya behave in similar manner as other business enterprises in responding to contingency factors which have been found to influence the way in which effective organisations are structured.

The size of the firm defined in terms of its personnel, financial capacity and the size of construction project the firm can undertake and complete (project value)

and the environment (the market in which the construction firm sells its services as categorised earlier) are the greatest factors affecting the organisation design of a construction firm in Kenya.

Construction firms behave in a similar manner as other business enterprises in responding to contingency factors which have been found to influence the way in which effective organizations are structured.

The size of the firm and the environment within which it operates are the greatest factors affecting the organization design of a construction firm.

#### ENVIRONMENT

The primary interest is the market in which the construction firm operates. Each class of contractor provides a market in which the construction firm can sell its services. Small construction firms cannot undertake construction projects meant for a large construction firm because its services are limited to its market and therefore its environment. The services a construction firm can provide are dictated by its financial structure, capital investment, personnel and its managerial capability. Each environment provides different requirements to the firms within that environment. Small, medium and large construction firm have different organization structure because they operate in different market and have adjusted their structure to suit their respective environment (market). Those construction firms

that this research has found to have a high performance seem to have addressed themselves to the environment and their structures are those suitable to that environment. Those low performing construction firms have not adjusted their structures to the environment. For example those medium construction firms performing poorly have those organizational characteristics of small construction firms and this applies also to large construction firms.

The geographical location of a firm is not of great importance because in every geographical location there is still market separation which really dictates the behaviour of a firm. It should be noted that in each market the level of competition varies and survival of a firm depends on how it has adjusted itself to that market.

#### SIZE

The size of a construction firm is defined in terms of the number of personnel in the firm, the number of construction projects the firm can undertake at the same time/period, capital investment of a firm and its financial capability.

Large construction firms have a large number of employees, they are capable of undertaking more than two building projects at the same time period and have high capital investment and have strong financial bases compared to medium and small construction firms.

Size determines the degree of delegation of authority. The larger the size of a firm the greater the degree of delegation and formalization, this is because there is increased need for control and requirements for administration. As the size of a firm increases the more development of specialised roles in areas of accounting, production, control, personnel and general administration.

The organization configuration of a construction firm exhibits similar structural configuration as do other business enterprises.

Small construction firms have many of the characteristics of the simple structure. The manager (owner) of the firm maintains close control over the operations of the firm. he is often in contact with individuals performing tasks at fairly low levels in the firm. This control is accomplished through office administration and his personal visits to building project sites while updating and monitoring of work progress and functions are performed on site. The size of the firm and the market in which it sells its services appear to be the forces which predominate influencing the organization structure of small construction firms.

Medium construction firms display characteristics located between a simple structure and adhocracy. The General manager is responsible for management and maintains a close contact in the firms operations. Responsibility of operations remains fairly in the hands of middle line managers who are delegated a considerable amount of



managers who are delegated a considerable amount of authority. The size of a building project undertaken by this class of contractors and the market in which the firm operate appear to be the factor pulling these firms away from simple structure. The move towards a more decentralized configuration in which delegation of authority is by function and skill while coordination through direct supervision.

Large construction firms undertake construction projects in a wide geographical area than do medium and small construction firms. Despite diversity of projects locality there is a significant degree of similarity of construction projects the firms in this class undertakes in terms of project value, complexity and construction methods. These firms can be located between professional bureaucracy and divisionalised structure in the pentagon. These firms show a greater amount of functional differentiation. The managing director concentrates on management and administration of the firm while the line manager deals with the production function. Control is exercised on site by site personnel but information is submitted to the head office on a regular and frequent basis for additional manipulation and analysis and for use in providing advise to the construction sites. Both size of the firm and diversity of projects and factors calling for decentralization are forces which influence the organization structure of large construction firms.

## RECOMMENDATIONS

Organization structure has a significance influence on performance of a construction firm. An individual intending to start a construction firm must be aware of the importance of the structure in determining the firm's performance. He must be aware of the need to maintain coordination and integration among his employees and channel their efforts towards achieving the firms objectives. Such factors as the firm size and the market which the firm as to operate should determine the structure of the firm. He should exercise a degree of delegation of authority and decision making while maintaining control.

For an effective performance of public construction projects, selection of construction firms should take a further dimension of analysing the structure of the firm to undertake the project. The performance of the construction firm applying for public project should be considered. Besides other factors for considering a construction firm, organization structure of the firm should also be a criteria for selecting a contractor. Those construction firms with the characteristics and structures which this thesis classifies as high performing construction firm in each category should be selected to undertake public construction projects.

## AREA OF FURTHER STUDY

This study has established that the organization structures for small, medium and large construction firm are designed for performance purposes. Medium and large construction firms have some of the characteristics of

adhocracy structure which is a problem solving structure. Further study is needed in this area to establish the relationship of organization structure and the degree of innovation.

## BIBLIOGRAPHY

- Adrian Fryer, Business Practice of Construction Management, American Elsevier Publishing Co. Inc. 1976.
- Antony Walker, Project Management in Construction, Granada, London, 1984.
- Aurbery C. Sabford, Garry I. Hurb, Hyler J. Bracey, Communication Behaviour in Organization, Charles E. Meril Publising Comany 1976.
- Baldrige, J. Victor and Robert A. Burnhom, "Organizational and Environmental Impact", Administrative Science Quartely, 20, No.2 June 1975.
- Barry Fryer, The Practice of Construction Management, Collins Professional and Technology and Technical Books 1985.
- Blau Peter M., On the Nature of Organization, John Wiley and Sons Inc. New York 1974.
- Blau P.M. and Schoenherr P.A., "The Structure of Organization" Administrative Science Quartely, 1961.
- Chester I. Bernard, "Effects of Flat and Tall Organization Structure" Administrative Science Quartely, 1961.

Chester I. Bernard, The Function of Executive, Cambridge  
Mess, Havard University Press, 1964

Cooper E.W. et al, New Perspective in Organization  
Research, New York, John Wiley and Sons Inc.  
1962.

Etzion Amitol, Modern Organizations, Englewood Cliffs W.J.  
Prentice Hall Inc. 1964.

Fremont E. Kast and James E. Rosezweigh, Organization and  
Management : A System and Contingency Approach,  
New York McGraw-Hill 1982.

George W.H., Cost Planning" The Building Economist 12:2  
1973.

Gibson J. et al "organization Power, Strategy and Social  
Classes, Towards a Critique of the Contingency  
Theory of Organizational Choice and Constraint:  
Approach to the Sociology of Enterprices, Saxon  
House, Teak Field Ltd., Westmead, Farnborough,  
Hants, England 1979.

Goodman, P.S. Pennings, S.M. et al New Rerspective on  
Organization Effectiveness, Jossey-Boss, 1977.

Harold Koontz and Heinwelhrich, Management, McGraw Hill Co,  
Singapore 1988.

Herman, Jean B. Randon B. Dunhom and Charles Hurlin,

"Organizational Structure Demographic Characteristic  
and Employee Response" Organization Behaviour and  
Human Performance 13 No.2 April 1975.

Henry L. Toss, Theories of Organization 2nd Ed. John Willey  
and Sons, 1984.

Henry Mintzberg, The Structuring of Organizations,  
Englewood Cliffs, Prentice Hall Inc. 1979.

Ivancevich, John M. and James H. Donnelly Jnr. "Relation of  
Organizational Structure to Job Satisfaction,  
Anxiety, Stress and Performance" Administrative  
Science Quarterly No.2 (June) 1975.

Ivor Seeley, Quantity Surveying Practice Macmillan. London  
1984.

John Child, Organization : A Guide to Problems and  
Practice, 2nd Ed. Harper and Row 1984.

Keith Davis and John Newstrom Human Behaviour at Work. New  
York MacGraw Hill Book Co. 1985.

Khangati A. "The Implementation of Public Building Projects  
A Case Study of Ministry of Works, Housing and  
Physical Planning" M.A. Thesis, Nairobi, 1986.

Kimberly John, R. "Environmental Constrains and Organization Structure : Comparative Analysis of Rehabilitation Organizations" Administrative Science Quartely, 20 No. (March) 1975.

Koortz D. and Hahn, R.L. The Social Psychology of Organization. John Wiley, 1966.

Lansley P. "Disturbing Trend for National", Building Technology and Management, May 1983.

Lawrence, P.R. and Lorsch, J.W. Organization and Environment, Irwin 1967.

Lesikar, R.V. Bussiness Communication Theory and Practice, Homewood III Irwin, 1968.

Litwark, Evegene, "Models of Organization Which Permit Conflicts" American Journal of Sociology, 79 No.2 (September) 1961.

Litterer, J.A. The Analysis of Organization, Wiley 1965.

Lyndoll Urwick "The Manager's Span of Control" Harvard Bussiness Review, (May-June) 1956.

Lyndal Urwick, "Axioms of Organizations" Public Administrative Magazine, London (October) 1955.

Mahaney, Thomas A. Peter Frost Norman F. Grandell and  
William Weitzel, "The Conditioning Influence of  
Organization, Size on Managerial Practice"  
Organizational Behaviour and Human performance,  
8 No (October) 1972.

Mason Haire, Organization Theory in Industrial practice, "  
A Symposium of the Foundation for Research on  
Human Behaviour", John Wiley and Sons Inc. New  
York 1962.

Mbaya John S. "The Standard Forms of Building Contracts in  
Changing Times" Build Kenya March 1981.

Meyer, John W. Brian R. "Institutionalized Organizations :  
Formal Structure as a Myth and Ceremony",  
American Journal of Sociology 83 No.2 (September)  
1911.

Moondy Row, Arthur Sharplin and Edwin B.F. Management  
Concept and Practices, Allyn and Bocon Inc. 1988.

P.A. Stone, Building Economy Design Production and  
Organization, Oxford 3rd Ed. Pergamon Press,  
1983.

Puch, Derect, Soj Hickson, C.R. Hinings and C. Turner  
"Dimensions of Organizations Structure"  
Administrative Science Quartely, 13 Vol. (June)  
1968.



Pfeffer, Jeffrey and Hussein Labubrel, "The Effect of Competition on Some Dimensions of Organization Structure" Social Forces 52 No.2 (December) 1973.

Ranson, Steward, Bob Henings, Royster Greenwood, "The Structuring of Organization Structure" Administrative Science Quarterly, 25 No.1 (March) 1980.

Republic of Kenya : The Development Plan 1984-88, Nairobi Government Printer 1984.

Richard Hall, Organization : Structure and Process, Prentice-Hall Inc. Englewood Cliff, New Jersey 1982.

Sefu, K.W. "Role of Organization Structure in the Implementation of Public Building Projects in Kenya", M.A. Thesis 1986, Nairobi.

Starbuck, W.H. "Organization Growth and Development" Handbook of Organization March (Ed) Rand McNally 1965.

The Kenya Times, (Nairobi) February 6, 1985.

The Kenya Times (Editorial) April 6 1983.

Woodward Joan, Management and Technology, Her Majesty's Stationery Office, London 1985.

Woodward Joan, Industrial Organization Theory and Practice. Oxford University Press 1965.

APPENDIX I

QUESTIONNAIRE (MANAGERS)

(PLEASE TICK WHERE APPLICABLE)

RESEARCHER: BUCHA, P.M.

RESEARCH ASSISTANT: MDCU4

DATE: 21/3/91

QUESTIONNAIRE NO.: 16

- 1. When was your firm started 19 83
- 2. In which category was your firm first placed in the Ministry of Public Works categorization?

- 1. A  5. E
- 2. B 6. F
- 3. C  7. G
- 4. D 8. H

- 3 (a) In which category is your firm placed at present?

... E .....

- (b) Have you applied for upgrading from the above category?

- 1. Yes
- 2. No.

- (c) What factors would you attribute to changes from category in Q2 to present category?

- 1. Increased personnel in the firm.
- 2. Our fixed assets have increased.
- 3. We handle projects of increased value than earlier did.
- 4. Others (Please specify)
- .....

4 (a) In your opinion do you think the method the Ministry of Public Works categorizes contractors is justified?

- 1. Yes
- 2. No.

(b) Why do you think so?

Experience, Personnel and Capital Investment are considered.

5. Does your firm have subsidiaries in this country?

- 1. Yes
- 2. No.

If Yes, state the number and location

..... N/A .....

6. What were the original objectives of your firm?

- 1. To make profits.
- 2. Attract many clients.
- 3. Attain growth.
- 4. To survive.
- 5. Others (Please specify)

.....

(b) Which of the above objectives has your firm achieved?

..... 1, 2 & 3 .....

(c) Which objectives has your firm not achieved?

We have not grown to undertake the project we would like - big projects.

(d) What factors would you attribute to above failure or success?

..... N/A .....



9. (a) Please indicate the number of permanent employees in your firm in the table below.

Year	No. of Permanent Employees in the firm (in Figures)	No. of Permanent Employees Leaving the Firm (in figures)	
		Resigned	Sacked
1980			
1981			
1982			
1983	TWO	-	-
1984	FOUR	-	-
1985	SEVEN	-	-
1986	SEVEN	-	-
1987	THIRTEEN	-	-
1988	THIRTEEN		
1989	SIXTEEN	-	TWO
1990	SEVENTEEN	-	-

(b) What factors make an employee leave the firm?

1. Dissatisfied with the firm's management.
2. Better opportunities.
3. To start their own firm.
4. Others (please specify)  
.....

10. (a) Does your firm have the following departments (please specify the number of employees in each).

<u>Department</u>	<u>Number of Employees</u>	<u>Location of Offices</u>
Personnel	1	HQ
Accounts	2	HQ
Estimating	1	HQ
Planning	—	
Marketing	—	
Surveying	—	

(b) How do these departments communicate to each other?

1. Use of letters
2. Personal communication
3. Telephone
4. Any other (please specify)  
.....

(c) Does each department communicate directly to each other during execution of work?

1. Yes
2. No.

P l e a s e e x p l a i n  
.....

11. Does your firm have a diagrammatic organization chart showing who reports to who?

1. Yes
2. No.

12. Does your firm reward employees?

Yes

No.

If yes, what type of rewards are given and what criteria does your firm use to reward an employee?

..... Money depending on No. Years Profits. ....

13. Does your firm have the following professionals (please indicate the number)

<u>Professionals</u>	<u>Number(s)</u>
1. Draughtsman/men	-
2. Estimator(s)	1
3. Accountant(s)	2
4. Engineer(s)	2
5. Planner(s)	-
6. Surveyor(s)	-
7. Project manager(s)	2
8.	
9.	

14. How often do you have meeting with your permanent employees?

1. .... per week

2. .... ONCE ..... per month

3. .... per year

15. What type of work does your firm undertake?

Building works.

Maintenance and repair.

Civil engineering works.

4. Others (please specify)

UNIVERSITY OF MAIRBODI  
ADD LIBRARY

16. Please tick below your major client whom you undertake work for.

Private clients.

Public clients.

3. Parastatals.

4. Cooperatives/Societies.

(b) How do you secure works from public clients?

Competitive tendering

2. Negotiation

3. Other methods (specify)

.....

.....

(c) How do you secure works from private clients

(a) Competition tendering

Negotiation

(c) Other methods (specify)

.....

(d) How and where do you meet these clients?

Friends, our clients or through  
architects

17. When you tender competitively, what measures does your firm take to win contracts?

Low profit margin.....

18. What percentage of contracts undertaken by your firm have you secured through:

1. Competition 60 %

2. Negotiation 30 %

19. (a) Does your firm/subsidiaries manufacture any building materials that you utilize in contracts that you undertake?



1. Yes

No.

Please specify the materials  
.....

(b) From whom do you purchase your materials?

1. Manufactures

Dealers

Suppliers

4. O t h e r s ( s p e c i f y )  
.....

(c) Do(es) the above provide you with credit facilities?

Yes

2. No.

(d) Do you store materials used in all your construction sites in:

1. Central location

At each site

3. O t h e r ( s ) ( s p e c i f y )  
.....

20. (a) Does your firm advertise/market itself?

Yes

2. No.

(b) If yes, what marketing strategy do you apply?

1. Audio

2. Daily Newspapers

Professional journal

Only signboards at our construction sites

5. Others (specify)

21. Please give details of public construction projects which have been undertaken by your firm below.

YEAR	NO. OF PROJECTS UNDERTAKEN	CONTRACT AMOUNT IN KSHS	ESTIMATED CONTRACTORS COST	ACTUAL CONTRACTORS COST	ESTIMATED CONTRACTORS TIME	ACTUAL COMPLETION TIME	SECURED THROUGH COMPLETION	SECURED THROUGH NEGOTIATION
E.G 1979	2	750,000 50,000	400,000 20,000	410,000 15,000	2 Years 1 Month	2 1/2 3 Weeks	✓	✓
1980								
1981								
1982								
1983	1	45,000	280,000	250,000	1 yr	8 months	✓	
1984	1	1.2M	890,000	900,000	1 1/2 yrs	2 yrs	✓	
1985	1	5.6M	5.2M	5.35M	3 yrs	3 1/2 yrs	✓	
1986	2	10M	9.1M	9.4M	2 1/2 yrs	3 yrs	✓	
1987	1	3M	2.6M	2.4M	2 yrs	1 yr 8 months	-	✓
1988		4.3M	4.0M	3.8M	1 yr	8 months	-	✓
1989	1	23.5M	22.9M	22.7M	4 yrs	4.5 yrs	✓	
1990								

21. (b) What factors explain the deviation from estimated and actual cost incurred by your firm in a contract? Speed of work & Site conditions

(c) What factors explain deviation from your estimated and actual time?

Weather & availability of materials

(d) Does your firm undertake construction projects in Nairobi only?

1. Yes

2. No.

(e) If no, in which other districts do you undertake work?

1.

2. All over Kenya

3.

4.

(f) Why only the above districts?

.....*N/A*.....

(g) If you undertake more than one contract of varying size and complexity in different sites at a particular time period, how do you monitor progress in site?

1. Use of project manager based

2 Use of a travelling Project Manager who visits each site and reports to head office.

3 Use of foreman who reports to head office.

4. Manager visits each site.

5. O t h e r  
(specify).....

(h) If you undertake more than one small project (in terms of value) in different sites, how do you monitor the progress in each site?

.....*Through our Site Agents & Foremen*.....

22. How do you determine the cost of labour and materials in each site? (please explain)

.....*Constant Stock Taking every week & costing per week*.....

(b) What is the general ratio in terms of cost of plant to labour that you use in your construction projects?

.....*2:1*.....

23 (a) Please tick whether you own or hire the following plant/  
machines below. (please give others).

<u>Plant/Machine</u>	<u>No.</u>	<u>Own</u>	<u>Hire</u>
Cranes			
Concrete Mixers	1	✓	
Lorries	3	✓	
Forklifts			
<u>Others</u>			
...dumpers.....	2	✓	
...rollers.....	1	✓	
...Derrick-ups	2	✓	

(b) Who is responsible for the plant you own?

1. Plant Manger
2. Site Superintendent
3. Foreman

4. Other (specify) *General manager and contract manager*

(c) In case you hire plant/machinery, who becomes responsible for them? *General manager*

(d) At times when you are not utilizing your plant/ machines, what economic use do you engage them in?

1. Rent them out
2. Sell them
3. Other

(e) Besides plant/machines, what other fixed assets does your firm own?

1. Land
2. Houses/Offices/Yards ✓

3. Garages

4. Others (specify)

24. What level of profit do you generally allow in case your tender in the following methods?

Competitive tendering ..... High  
.......... Low

Negotiation tendering .......... High  
..... Low

25. Besides tendering methods, what other factors determine the level of profit you allow in each project you tender for? *type of client and location of the project.*

26. When pricing the tender document, do you

Use Ministry of Public Works price list?

Build your own rate?

27. When building your own rate, do you

1. Start from lumpsum and then break it into item prices, or

price each item to determine tender sum?

28. Please, could you present your firm organization structure in the form of a simple organization chart giving a brief explanation of duties performed by each department or person(s).

(a) At the start of your firm.

(b) Represent the same at mid-age of your firm.

(c) Represent the same as it is at present.

THANK YOU FOR YOUR COOPERATION

QUESTIONNAIRE (EMPLOYEE)  
(PLEASE TICK WHERE APPLICABLE)

RESEARCHER: BUCHA, P.M.

RESEARCH ASSISTANT: NDEGWA

DATE: 3/4/91

QUESTIONNAIRE NO.: 29

1. When did you join this firm? 19.....<sup>89</sup>

2. What are your duties?

..... SITE ENGINEER .....

.....

.....

.....

3. How many people work under you?

.....<sup>40</sup>.....

4. (a) Who do you report to?

- 1. General manger
- 2. Quantity surveyor
- 3. Foreman
- 4. Architect
- 5. Others (please specify)
- .....
- .....

(b) What method of reporting do you use?

- 1. Use of letters
- 2. Telephone

3. Face to face
4. Meetings
5. Others (please specify)

Radio call.....

.....

5. What training have you done?

1. Architect
2. Construction Management
3. Accounts
4. Estimating
5. Others (please specify)

Civil Engineering.....

(a) What were you doing before joining this firm?

- Working in another construction firm.
2. Attending training
3. Carrying out my private business
4. Others (please specify)

.....  
.....

(b) In case you were working, what made you leave your previous employer?

Better prospective.....

.....

7 (a) Since joining this firm, have you experienced any changes in terms of the firm's organization?

1. Yes
- No.

(b) If yes, what particular changes?

.....  
..... N/A .....  
.....

8 (a) How long do you intend to work in this firm?

..... 2 ..... years.

(b) What factors can make you leave the firm before the above stated years?

1.  Better pay elsewhere
2. Better social relationship
3. Sound management
4. Proximity to your home
5. Others ( please specify )

..... To start .....  
..... On my own .....

Please can you explain further

.....  
.....  
.....

9 (a) Do you have a workers' society in your firm?

1. Yes

2. No.

(b) If yes, what is its main objectives?

.....  
..... N/A .....  
.....



.....

(c) How often do you employees have meetings?

1. .... 2 ..... per week.
2. .... per month.
3. .... per year.

(d) What are the purposes of these meetings?

... discussion on matters ... -  
... concerning ... -  
... the workers ... -  
.....  
.....  
.....

10 (a) Does the firm offer you any loan facilities?

1. Yes
2. No.

(b) If yes, what type of loan?

... Advance Salary, House ... -  
... loans ... -  
.....  
.....

(c) How does the firm assist you (and others) in case of any emergency?

... It always helps in case ... -  
... of any problem ... -  
.....  
.....

11. (a) Does your firm offer you (and others)

1. Housing ✓
2. Transport ✓
3. Meals
4. Canteen facilities?

(b) Are there bonuses offered by the firm?

1. Yes ✓
2. No.

(c) When are these bonuses offered and how are they determine

..... End of Year, depending on .....  
..... Year Profit .....  
.....

12. What advice would you offer to manager of this firm in order improve the working relationship within the firm?

..... Keep up the relationship .....  
..... between the Employees and .....  
..... Employer .....  
.....

THANK YOU FOR YOUR COOPERATION.

Form No. ....  
(For Official Use)

To:

Application No. ....

The Secretary,  
Registration Committee,  
Ministry of Works, Housing and Physical Planning,  
P.O. Box 30260,  
Nairobi.

Through Provincial Works Officer,  
Ministry of Works, Housing and Physical Planning,  
P.O. Box .....

Date .....

## APPLICATION FOR INCLUSION IN THE M.O.W., H. & P.P. LIST OF APPROVED CONTRACTORS

1. Name of the Company (Registered under the Companies Act) .....

2. Address to which all communications should be sent .....

3. Telephone No. ....

4. Name of Bank .....

Branch .....

Box Number .....

Is the Account held at this Bank in the name of the Company? .....

Is the Account held at this Bank a Current/Deposit Account?  
(Delete as necessary)

5. Location of Office .....

6. Location of Workshop.....

7. In which Province are you prepared to work .....

8. Indicate the kind of work your Firm can undertake.

State the Value of Work  
you are prepared to  
undertake.

(i) Building .. .. .	Sh. ....
(ii) Civil Engineering .. .. .	Sh. ....
(iii) Roads .. .. .	Sh. ....
(iv) Electrical* .. .. .	Sh. ....
(v) Plumbing* .. .. .	Sh. ....
(vi) Sewers* .. .. .	Sh. ....
(vii) Carpentry and Joinery .. .. .	Sh. ....
(viii) Painting .. .. .	Sh. ....
(ix) .. .. .	Sh. ....
(x) .. .. .	Sh. ....

9. Give the names of two persons whom references can be obtained. (References from Partners or Relatives are not acceptable).

(a) Name .....

Address .....

Occupation or Profession .....

(b) Name .....

Address .....

Occupation or Profession .....

10. In connection with your application please complete the following:

(a) Date of Registration with K.A.B.C.E.C., K.A.A.C. or other Organization:

Date ..... Organization .....

(b) All applicants should attach copies of Certificates of Registration with Registrar of Companies.

(c) Are you an Incorporated Company? Yes/No.

(d) If so with or without Liability?

With .....

Without .....

(e) Name of Owner(s), Partners or Directors: (Applications will not be considered without this information).

Name ..... Kenya Citizen. Yes/No.

Name ..... Kenya Citizen. Yes/No.

Name ..... Kenya Citizen. Yes/No.  
(Delete as necessary)

(If more than three Owners, Partners or Directors, submit a separate list with this application).

(Documentary evidence or Citizenship if Non-African must be attached to this Application).

Do you or any of your Partners have any connections with any other Firm which has or will submit an Application for Registration? Yes/No.

If yes please give details .....

.....

(f) Who in your Firm has attended Training Courses? State names of Courses, where attended, when attended, subjects taken.

.....

.....

(g)	What Equipment do You Own	Where can it be Inspected	Is it Subject to Hire Purchase Agreement

(h)	What Transport do You Own	Where Can it be Inspected	Is it Subject to Hire Purchase

(i) Do you possess valid T.L.B. permits to operate these vehicles?.....

(j) Has your Firm at any time been included on the list of Contractors of the N.C.C. or a Provincial Works Officer?

If so, give details .....

.....

.....

.....

(k) Give details of the Contracts you have completed within the last five years:

Place, Project and Description of Works	Value	Contract No. (if known)	Client	Date Commenced	Date Completed
(a)					
(b)					
(c)					
(d)					
(e)					
(f)					
(g)					

Note.—Under the heading of Client, the applicant is requested to state the Architect, Municipality, Government Department, Organization.

We, Messrs. .... hereby submit this application and confirm that all facts are to the best of our knowledge true and correct. It is clearly understood that the decision of the Registration Committee is Final and that in the event of non-registration no correspondence will be entered into.

Signature.....

**FOR OFFICIAL USE ONLY**  
**CONFIDENTIAL REPORT ON CONTRACTORS**

Contractor's Name .....

Bank References .....

Personal References .....

Plant Inspected: Location ..... Comment .....

Previous Works Inspected: Site ..... Comment .....

Reports on Completed Works .....

Standard of Work .....

(a) Concrete Works .....

(b) Stone Work .....

(c) Carpentry and Joinery .....

(d) Plastering .....

(e) Electrical Works .....

(f) Plumbing Works .....

(g) Drainage Works .....

(h) Painting Works .....

(i) Other .....

(j) Site Organization .....

(k) Speed .....

**REMARKS AND RECOMMENDATIONS**

.....  
.....  
.....  
.....

Signed.....  
*Provincial Works Officer*

Approved/Not Approved by Registration Committee.

Signed.....  
**SECRETARY OF COMMITTEE**