# Organizational Climate and Performance in Sciences at Kenya Certificate of Secondary Education in Public Secondary Schools in Nairobi Province

By

UNIVERSITY OF NAIROBI
EAST AFRICANA COLLECTION

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**A Research Project submitted in Partial Fulfillment for the Requirements of the Degree of Master of Education in Educational Administration and Planning, University of Nairobi.**

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# DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

Zachary K. S. Nyaanga

This research project has been submitted for examination with my approval as University Supervisor.

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# DEDICATION

This study is dedicated to my brothers, Samson and Daniel, my sister, Rachael and my wife and children. To my brothers and my sister, who, by their encouragement and support, made this undertaking possible and rewarding. To my wife, Janet, who, by her love and encouragement, made an extensive contribution to this undertaking. To my children Nyasuguta and Nyaanga, who, by their youthful enthusiasm and patience, enabled me to bring this undertaking to a conclusion.

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Finally, the strength received from the Almighty God during the period of the study is humbly acknowledged.

# ABSTRACT

The main purpose of the study was to investigate whether a significant relationship existed between organizational climate as perceived by teachers and performance in sciences at K.C.S.E in public secondary schools in Nairobi Province. The other purpose was to find out the significance of the relationships between selected principals' and schools' variables and organizational climate. The principals' demographic variables were; age, sex, area of specialization, professional experience and academic qualifications. The schools' variables were; category, sex of the student body and size.

The research design used was Ex Post Facto. The sample size comprised 40 principals and 320 teachers from a population of 47 principals and 2437 teachers. Random sampling was used to select 8 teachers from each of the participating schools.

Likerts profile of a school questionnaire was selected as the instrument of the study. The organizational climate score was used to describe the school's climate with respect to its position on Likert's authoritative-participative climate continuum. The techniques used to analyse data were pearson correlation analysis, Analysis of Variance (ANOVA) and t-tests.

Findings of the study indicated that there were no significant differences in school organizational climate as a function of the principal's (a) age (b) sex (c) area of specialization (d) professional experience and (e) academic qualification.

Additionally, there were no significant differences in school organizational climate as a function of (a) school category (b) sex of the student body and (c) school size.

However, there were significant differences in performance in sciences as a function of school category. The mean performance index (MPI) for boarding schools was significantly higher than for day schools. There were no significant differences in performance in sciences as a function of the sex of the student body, nor were there significant relationships between school organizational climate and performance in sciences.

It was found that in cases where there were significant differences, there was a small amount of variance in school organizational climate and performance in sciences accounted for by the variables utilized in this study.

As a recommendation, the Ministry of Education (MOE) should encourage, through legislation and education, widespread participation of stakeholders in school decision making and policy formulation. This will create an enabling school organizational climate for teachers and tempt them to improve performance in sciences.

The Parents Teachers Association (PTA), though not playing a significant role in school policy formulation, should be recognized through legislation and thus be empowered to manage schools. This will encourage parents and teachers to own the objectives of the school and be motivated to improve their performance.

The Kenya Institute of Education (KIE) can, for instance, play a pivotal role in emphasizing parent-teacher-student participative practice through incorporation into the content of the curriculum for educators and institutions of learning at pre-university level.

Replication of the research is suggested so as to draw participants from other provinces and rural settings. Focus should also be directed to identification of variables other than those utilized in this study that may significantly affect organizational climate and performance.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| BA: | Bachelor of Arts |
| BED: | Bachelor of Education |
| BOG: | Board of Governors |
| BSC: | Bachelor of Science |
| DipED: | Diploma in Education |
| F: | Frequency |
| KCSE: | Kenya Certificate of Secondary Education |
| MA: | Master of Arts |
| MED: | Master of Education |
| MS: | Mean of squares |
| N: | Number |
| PGDE: | Post Graduate Diploma in Education |
| PhD: | Doctor of Philosophy |
| PTA: | Parents Teachers Association |
| SD: | Standard Deviation |
| SE: | Standard Error |
| SS: | Sum of Squares |

# CHAPTER ONE

# INTRODUCTION

## Background to the study

Organisational climate remains an elusive subject despite many studies over the years to examine the concept with a view to coming up with a coherent position. There have been evident attempts at improving our understanding and measurement of organisational climate. Indeed, the concept has been widely researched and has attracted considerable attention and controversy. As James (1982) points out, a review of literature indicates that it is not possible to speak of the existence of climate without demonstrating a certain degree of agreement on it. Attempts at devising a reliable measure of climate have not been controversy free. For instance, a case study of a bank by Argyris (1958) showed that the concept, organisational climate, has attracted considerable attention and debate on how it might be satisfactorily measured.

The incoherent view of the concept is apparent in contributions by Rousseau (1988) who observes that the distinction between the concepts: organisational climate and organisational culture, remains ill-defined. He points out that the two concepts have been used interchangeably, often to the neglect of the existing body of research on organisational climate. Rousseau (1988) observes that the concept, organisational climate, has been taken up in a variety of ways leading to a lack of boundaries differentiating what climate is from what it is not.

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Rousseau (1988)observes that most writers on organisational climate see the concept as comprising the combined perceptions of organisational members describing the atmosphere in their organisations. Other writers such as Payne (1971) and Letwin and Stringer (1968), while pointing out that the concept has been widely researched over the past two decades, observe that organisational climate has been generally viewed as a variable, or a set of variables that represent the norms, feelings, and attitudes prevailing at a work place.

The expressed difficulty in measuring and drawing a boundary for organisational climate exposes the elusiveness of the concept. However, the significance of organisational climate in influencing organisational performance is emphasized by Hempton (1973) who alludes to the fact that, what is important about climate is that it can arouse or suppress the motivational tendencies of individuals. He points out that climates tend to mediate between the task requirements and the needs of the individual and that changes in certain climate properties could have profound and immediate effect on the motivational performance of all employees.

Culbert and Mc Donough (1985) view motivation, as a construct, in terms of helping another individual mobilise his/her unique talents and efforts in the service of an organisational cause that also has meaning to him/her. Motivation, then, has the effect of improving the performance level of organisation members.

Hempton (1973) holds that organisational climate influences the motivation of members. He points out that the capacity to influence organisational climate is perhaps the most powerful leverage point in the entire management system.

A study by Owens (1970) asserts that leaders or managers are critical determinants of organisational climate through their leadership styles. Similar findings were reported in a study by Gibbon (1976) involving secondary school principals, in which he observed a significant relationship between leadership styles and organisational climate.

It is thus upon management to initiate pragmatic effort to motivate workers through improvement of leadership and climate. To foster motivation, it is significant for workers to have a greater sense of participation. As Glaser (1973) points out, improvement in the work climate frequently leads to greater productivity as well as greater job satisfaction. He urges administrators to focus on ways that could improve and provide a work climate that would stimulate pleasurable ego involvement in the job, thereby bringing about increased productivity as a possible by-product.

This desire to improve the work climate probably influenced the development of organisational theory, traced through three phases, identified by Schein (1970) and Barnard (1964) as: the Scientific Management; the Human Relations and the Behavioural phases. The focus was to move away from the Authoritative Organisational concept that emphasised organisational needs, to the exclusion of individual needs, thereby denying workers a sense of involvement in the tasks they helped shape. Tendency was towards the participative organisational concept that emphasises the integration of organisational needs and individual needs and gives workers a greater sense of ownership of the objectives of the organisation through participatory decision-making. As Likert (1961) aptly puts it, the principle of supportive relationships, consequently, points to the necessity for an adequate degree of harmony between organisational objectives and the needs and desires of its individual members. He recommends group involvement in setting high performance goals and widespread participation in the decision making process.

The school, as an organization, would like to realize its objectives. Society has a claim of interest in the performance of the school arising from the realization that the school sources its human and material resources solely from society. According to Powers and Powers (1984), what society desires in its citizenry should be appropriately reflected in the school, its main point of enculturation. Indeed, society often holds school leadership responsible for performance levels. As Hersey and Blanchard (1969) aptly put it, the successful organisation has one major attribute that sets it apart from unsuccessful organisations; dynamic and effective leadership.

Indeed, Cobern, Salem and Mushkin (1972) point out that school inputs such as leadership, climate and various characteristics of school environment such as parents' aspirations, teachers' expectations and students' own self-concept were closely related to educational performance. While improvement of school inputs can influence school climate and performance, organisational leadership may lack the courage to change and disregard past authoritative tendencies in favour of participative practice that embraces inclusive decision making.

Drawing an analogy between results of a study carried out in Nigeria, Mbae (1994) points out that secondary school heads in Kenya, as those in Nigeria, were authoritarian and even autocratic in their administrative tendencies. He observes that although such documented evidence is lacking in Kenya, a casual review of literature reveals the situation to be very similar to that in Nigeria. He particularly abhors the top-bottom flow of communication and orders.

Lack of participative practice in schools may encourage existence of environments that are not conducive for the teaching-learning process. As Sergiovanni (1967) points out, the problem lies in providing teachers with an organisational environment that is personally enriching and satisfying, and at the same time, productive for the organisation. Indeed, according to Glass (1972), improving student learning calls for breaking away from the tried and true methods of the past and trying out new and bold unproven procedures.

## Statement of the Problem

There has been considerable concern over the years for the inability to achieve high performance outcomes in sciences in public secondary schools despite overwhelming commitment by the society in general and stakeholders in particular. The National Development Plan (1997 - 2001) has, for instance, indicated that about 40% of the National Budgetary allocations goes to the education sub-sector, out of which 16.2% is allocated to secondary school education. The introduction of cost sharing meant that taxpayers had to pay for the provision of education at market rates. Indeed, according to the National Development Plan (2002-2008), despite investment of significant resources in the education sub-sector by the government and other stakeholders over the years, the cost of education remains a main challenge to its expansion and improvement.

Despite concerted efforts to improve educational facilities like laboratories and workshops, performance in sciences has continued to decline, causing continued concern. Stakeholders have generally blamed administrators and teachers, demanding that they be held accountable for the poor performance in maths and sciences, citing poor school management and leadership (Daily Nation, 1995, March 1, p.1). The government's concern arises from its need for qualified manpower in areas such as engineering to enable it achieve its ambitious target of industrialisation by the year 2020.

A casual survey of public schools shows that the differential performance in sciences and non-science subjects persists despite efforts to address the disparity. The performance in sciences at K.C.S.E in Nairobi Province has been consistently poor. Indeed, the mean performance index for Nairobi Province over a five year period, between 1996 and 2000, was a low 4.8. Without doubt, science learning process calls for an inquisitive mind, creativity and coming up with solutions. This requires an enhancing learning environment, thereby bringing into focus the nature of school organizational climate. Is it, indeed, the case that school organisational climate affects both teachers and students in the teaching-learning process?

This study was set out to investigate the relationship between school organisational climate as perceived by teachers and performance in sciences at K.C.S.E in public secondary schools in Nairobi Province. The problem merits investigation in view of the fact that sciences are of crucial importance to technological development as a basis for industrial development.

### Purpose of the study

The primary purpose of the study was to investigate the relationship between school organisational climate, as perceived by teachers, and performance in sciences in public secondary schools in Nairobi Province. The secondary purpose of the study was to find out the nature of differences in school organisational climate as a function of the principals' individual characteristics of age, sex, area of specialisation, professional experience, academic qualification and the school variables of category, sex of the student body and size.

### Objectives of the Study

The objectives of the study were as follows:

1. To determine the relationship between school organisational climate as perceived by teachers and the principals' demographic variables of : (a) Age (b) Sex (c) Area of specialisation (d) Professional experience and (e) Academic qualification.
2. To determine the differences in school organisational climate as perceived by teachers between schools of different: (a) Category (b) Sex of

the student body (c) Size.

3. To identify the differences in science performance between schools of different:- (a) Category (b) Sex of the student body

4. To determine the relationship between school organisational climate as perceived by teachers and performance in sciences.

## Hypotheses of the Study

The hypotheses of the study were stated as follows:

**1.** There is no significant difference in school organisational climate as perceived by teachers between the principal's selected demographic variables of :-

(a) Age
(b) Sex
(c) Area of specialisation
(d) Professional experience
(e) Academic qualification

**2.** There is no significant difference in school organisational climate as perceived by teachers between schools of different:-

(a) Category
(b) Sex of the student body
(c) Size

**3.** There is no significant difference in science performance between schools of different:-

(a) Category

(b) Sex of the student body

**4.** There is no significant relationship between school organisational climate as perceived by teachers and performance in sciences.

## Significance of the study

There is great concern to improve the continued poor performance in sciences in public secondary schools. This has generated a strong need to examine the nature of organisational climates and their possible effects on performance in sciences. Hence, data collected and conclusions from this study should enable educational administrators clearly understand the relationship between organisational climate in schools and performance in sciences and form a basis for improvement. It may also assist educational administrators to recognize the importance of establishing organisational climate that enables teachers to integrate achievement of school goals with fulfillment of personal needs.

Since societies are compelled to be in step with technological changes, the importance of science based manpower to developing countries, like Kenya, can't be overemphasized. Findings of this study may enable society and government appreciate the need for school organizational climate that ensures an environment fit for the science teaching-learning process in educational institutions. This will enhance the prospect of achieving high performance in sciences, thereby establishing a firm basis for technological advancement. Indeed high performance, as reflected by the school science performance index, is critical to both society and students. As Eshiwani (1983) points out, those who perform poorly cannot compete effectively for the few opportunities that exist in either higher education or employment. Findings of this study should enable students and society develop a positive perception towards scientific knowledge as a basis for technological development and industrialization.

### Limitations of the study

This study used Ex Post Facto design. Kerlinger (1973) identified the weakness in an Ex Post Facto research design as lacking in experimental control due to its inability to randomise and manipulate the independent variables. This weakness increases the danger of spurious interpretation.

The description of school organisational climate as perceived by teachers did not constitute an evaluation of effectiveness since the competence and motivation of randomly selected teacher respondents may have influenced results of the study. The performance in sciences may have been affected by other factors beyond researcher's control such as:- learners' past experience, learners' mental ability, school instructional resources, learners' personal effort and learners' self-concept. The findings of the study was thus an overall assessment of the interpersonal milieu of a school organisation expressed in terms of the principals' behaviour dimensions as perceived by teachers.

## Delimitations of the study

Teachers and principals who had served for less than one year in a school were excluded from the study. There was no information from non-participating public schools and all private schools in Nairobi Province. The critical possibility of their influence on the findings of the study was thus ignored.

Nairobi city, which forms the location of this study, is a cosmopolitan setting. Therefore, any generalisations of the findings of the study to public schools in rural settings and even other urban and suburban settings can only be done with caution. It is instructive to note that when dealing with inductive inferences from empirical data, generalisations will be appropriate only when made to populations in the study.

The study focused on performance at K.C.S.E to the exclusion of continuous performance, and utilised only five years' K.C.S.E results, from 1996 - 2000, to determine the performance index of individual schools.

## Basic Assumptions of the study

It was assumed, in this study, that organisational climate, as a construct, was closely related to the perceived behaviours of principals and teachers. It was also assumed that measures of this construct approaches an interval scale of measurement.

## Definitions of significant terms

**Influence** refers to the way a person affects the thoughts, attitudes, perceptions and behaviours of others.

**KCSE** refers to the examination taken at the end of a four-year course in Kenyan Secondary Schools.

**Leader** refers to a formally or informally appointed member of a group who carries out the management of its tasks through influencing the activities of the group members.

**Performance** refers to the level of achievement of organisational goals as measured by the performance index.

**Principal** refers to a formerly appointed leader of a school to carry out the management of its tasks through influencing the activities of members of the school.

**Public schools** refers to schools registered by the Ministry of Education and offering common courses as recommended by the Kenya Institute of Education. Teachers in public schools are provided and paid by the Government.

**Sciences** refers to the science subjects offered at K.C.S.E, namely :-Biology, Chemistry and Physics.

**School Category** refers to either boarding or day public secondary schools.

**School Student Sex** refers to girls, boys or mixed public secondary schools.

**School Size** refers to the number of students enrolled in public secondary schools.

**Teachers** refers to professionally trained persons assigned to specific secondary schools to impart knowledge according to specific rules and guidelines.

## Organisation of the Study

The study is organised into five chapters as follows:-

**Chapter One** comprises Background to the study; Statement of the problem; Purpose of the study; Objectives of the study; Hypotheses of the study; Significance of the study; Limitations of the study; Delimitations of the study; Basic assumptions of the study and Definition of significant terms.

**Chapter Two** comprises Literature review on Concept of an organisation; Development of organisational theory; Concept of organisational climate; Likert's Organisational systems of management; Studies and research findings related to the study and conceptual framework.

**Chapter Three** comprises Research Methodology covering Research design; Target population; Sample and Sampling procedure; Research instruments; Pre-testing the research instruments; Administration of instruments and Data analysis techniques.

**Chapter Four** comprises data analysis and findings.

**Chapter Five** comprises Summary of the study, Conclusions, Recommendations and suggestions for further research.

# CHAPTER TWO

## REVIEW OF RELATED LITERATURE

The review of literature is presented in two parts. The first part examines organisations and the development of organisational theory through three movements, namely: the scientific management movement; the human relations movement and the behavioural movement. The second part presents a review of theory and research findings related to organisational climate. The section also examines Likert's four organisational systems of management which describe human behaviour in an organisation.

### The Concept of an Organisation

Louis (1959), a classical theorist, defined an organisation as the structure of the relationship, power, objectives, roles, activities, communications and other factors that exist when persons work together. Indeed, classical theorists view organisations in terms of structure. Persons (1960), in his study of structure and process in modern sciences, defined organisations as social units (or human groupings) deliberately constructed and reconstructed to seek specific goals. Persons' view gives considerable attention not only to the organisational structure but also to the all-important purpose or goal for which the organisation exists.

This view of organisations through social structure and goal is reinforced by

Schein (1970) who defined an organisation as the rational co-ordination of the activities of a number of people for the achievement of some common explicit purpose or goal, through the division of labour and function, and through the hierarchy of authority and responsibility. According to Okumbe (1998), organisations consist of groups of people whose efforts are deliberately co-ordinated for the achievement of specific goals; while Barnard, in his earlier view, defined an organisation as a system of consciously co-ordinated activities of two or more persons. Later, in his study of the functions of the executive, Barhard (1964) defined an organisation as an impersonal system of co-ordinated human efforts with a common purpose as a unifying principle.

From the foregoing definitions, the school, as a social unit, can be regarded as an organisation. Indeed, according to Okumbe (1998), educational organisations such as schools, colleges, training institutions, and universities are a group of individuals in a given place, whose efforts are deliberately co-ordinated for the purpose of imparting knowledge, skills and attitudes to students or pupils in order to achieve predetermined educational objectives or goals. This is in agreement with the Modern Management theory definition of an organisation as a structured process in which individuals interact for objectives, Hicks (1972).

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## Development of Organizational theory

The development of Organisational theory can be traced through three movements. These are: the scientific management movement, the human relations movement and the behavioural movement (Schein (1970); Barnard (1964)).

## The Scientific Management Movement

According to Scott (1961), a set of concepts about organisations, now known as classical theory, began to be extensively developed in late 1800s. Gerth and Mills (1958) point out that classical theory developed in three streams at about the same period (1900-1950) by separate groups of writers working almost totally independent of each other. The three streams are:- Bureaucracy, Administrative theory and Scientific Management. It is observed that Bureaucracy was developed by sociologists who mainly took a relatively scholarly, detached and descriptive point of view for which Max Weber is credited the most important writer on Bureaucracy. Administrative theory and Scientific Management were developed by writers who took a prescriptive point of view. They prescribed principles and practices for better organisational performance. Administrative theorists focused on overall, relatively macro aspects of organisations while scientific management took a micro view point and emphasised the individual worker and the foreman, particularly in manufacturing activities. It also focused on such micro aspects as elemental units in the work process.

Louis (1959) observes that in the three streams of classical theory development, organisations have been seen in large measure as mechanistic structures. He points out that it is surprising that the three streams developed, to a large extent, independently. It is however evident that the three streams of classical theory are compatible and complimentary. They have a common view about man and his organisations. They all emphasise specialisation and organisational structure, based on hierarchical and functional criteria. The point of variation however is in the basic unit of analysis. Unlike Bureaucracy and administrative theory which emphasise the structure and process of human organisation (macro view point), scientific management focuses its unit of analysis on the physical activities of work (micro aspects).

Hicks (1972) has observed that scientific management has probably been an important factor in the creation of high standards of living in the United States and some other industrialised societies. He however points out that though scientific management movement contributes a significant component of widely accepted professional, modern management practice, some of its elements have nevertheless been severely criticised. Indeed Fredric Taylor, who is often regarded the father of Scientific management movement, has been severely criticised. He was one of the first persons to have systematically studied work and is a leading exponent of scientific management. Taylor (1911) focused attention on the structure of the organisation and maximum production. His work is criticised for having a narrow physiological focus and for ignoring the importance of psychological and sociological factors of a worker. Despite the criticism, it is evident that his inclination has nevertheless indicated an increase in efficiency and production.

Scientific management deals mainly with the relationship of a worker to his work. The emphasis is on the man-machine relationships with the object of improving performance of routine, repetitive production tasks. As pointed out, Taylor, the leading classical theorist, viewed the worker in terms of a machine. In his man-machine advocacy, emphasis was laid on specific definition of small components of a task. The workers, like machines, could be made to do work as systematically determined with increased production and efficiency.

This explains why scientific management advocates an inductive, empirical, detailed study of each job to determine how it could be done most efficiently. According to Etzion (1964), during the scientific management movement, organisations were viewed from a managerial point of view. The motivational basis for scientific movement was economic. It was assumed that the individual worked efficiently to achieve maximum production and thus material rewards could be earned with which to satisfy their economic needs.

Lawler (1971), in his study of pay and organisational effectiveness, observes that the scientific management approach assigns pay the primary role in motivating employees while modern management theory tend to ignore pay almost entirely or to see it as only one of a large number of possible influences on motivation. He found that Scientific management falls under the approach of autocratically tying pay to performance. In this approach, there is no room for employee participation in discussions about how pay should be administered. Indeed Taylor's work emphasizes the primary role of management in setting piece rates and tying pay to performance. Piece rate plans were developed within the context of scientific management and have typically been run in an authoritative manner. Traditionally, such plans have been established as a management control device.

Getzels; Lipham and Campbell (1968) described Taylor's management goals as the rational analysis of administrative procedures for exploiting human and material resources in order to attain the objectives of an organisation expeditiously. This resulted in preoccupation with organisational requirements to the neglect of the economic needs of the individual in the organisation. The view of man in terms of a machine is further enhanced by the human behaviour assumptions of scientific management as pointed out by Urwick (1956), who wrote thus:

(i) Scientific management is a whole-hearted attempt to deal with every question arising from the conduct of business, or indeed any human system of co-operation, in the temper and spirit of the scientist and by using tools of definition, analysis, measurement, experiment and proof. It is the substitution of inductive thinking (thinking based on facts), for the old deductive thinking (thinking based on theories or opinions) in all matters concerning the organisation of human groups.

(ii) There is a primary focus on work itself and not the particular person doing the work. The good worker is viewed as one who accepts orders but does not initiate actions. The worker is told how to do his job based on the scientific analysis of the job. Focus is at this basic work-worker level, typically in a production shop. Scientific management does not emphasise the integration and co-ordination of higher levels of the organisation.

(iii) Scientific management assumes rationality in the classical sense - each worker is assumed to be the classical "economic man," interested in maximising his monetary income. The organisation is seen as a rational instrument of production. The complicated motivational, emotional and social actions and reactions of persons in organisations is not emphasised.

The implications of these assumptions is that the scientific management approach strongly uphold the practice of close supervision of subordinates, subdivision of tasks into their elementary components that are most easily learnt and which require simple repetitive operations and a detailed standardised form of doing work as established by management. Indeed scientific management approach regards the worker as an important tool or machine in production whose behaviour can be regulated and controlled to the desired level of efficiency to increase production.

Child (1984), in his study of organisations, observed that many writers regard the main contribution of organisational design to be the means it provides for controlling the behaviour of employees. Control has been singled out as the greatest problem about management practice by critics of the system. Control was only one of the basic managerial activities that Henri Fayol, a scientific management proponent, identified in 1916. Child described control within organisations as aimed at ensuring that a predictable level and type of performance is attained and maintained. Indeed, Boot; Cowling and Stanworth (1977) have pointed out that the scientific management proponents emphasised the practice of rule of thumb based mainly on the division of labour and a belief in hierarchical structure.

The major contributors to the scientific management approach were prominent writers such as Taylor (1911), Gulick and Urwick (1937) and Fayol (1949). They came up with a set of general statements outlining how organisations "ought" to be set up and run. They have however come under criticism from sociologists and psychologists who question the behavioural assumptions of these approaches.

Boot et al (1977) has observed that these scientific management proponents emphasised:- (a) that employees should be formerly grouped and organised in specialist functional departments. (b) Hierarchical structure with top-down authority (c) Structure with lines depicting chain of command and proper channels for official communication (d) that employees should report to only one superior (e) that the span of control of subordinates by superiors should be limited to permit effective supervision (f) that job description and nature of duties should be prescribed preferably in writing (g) effective top-down control and communication (h) that authority should be commensurate with responsibility (i) categorization of departments as line or staff. From the foregoing, it's apparent that these authoritative requirements effectively controlled workers' behaviour.

Boot et al (1977) further observes that while in their time (up to and well into the twentieth century) these principles probably had some validity and helped a large number of managers and thus contributed to increased efficiency, by the nineteenth century, empirical evidence was already accumulating that questioned the basis of many of these principles. Monhan (1975) aptly put it thus: in classical theory, the conflict between man and the organisation was neatly settled in favour of the organisation. The only road to efficiency and productivity was to surrender man's needs to the service of the bloodless machine.

Advances in the social sciences led to criticism of the behavioural assumptions of these approaches, with psychologists suggesting that workers were influenced by many factors other than money while sociologists began to question assumptions about social order at the place of work. Mayo (1933) has criticised scientific management approach for its assumptions about human behaviour and has called its view the "rabble hypothesis" for assuming that workers behaved like a rabble of isolated individuals motivated chiefly by a desire to earn money. These behavioural assumptions were fertile ground for the establishment of authoritative organizational climate.

Indeed, schools, as organisations, were directly influenced by the scientific management movement. Seawell (1974), in his study on the organisation and people, observes that in the early twentieth century, educational organisations, particularly in the USA, (home to Taylor, the father of scientific management movement) were operated as classical bureaucracies with more emphasis upon the organisation than upon the human elements within the organisation.

### The Human relations movement

The prevailing view of the worker in scientific management approach was that of "economic man" for whom any higher order needs were irrelevant, Boot (1977). It became evident that scientific management ideas about motivation proved inadequate in explaining all worker behaviour. This led to subsequent development of theories and emergency of empirical studies to compensate for the inadequacies in the underlying theories of worker motivation. The 1930s and 1940s saw the development of what became to be known as the "Human relations school of thought" as a reaction to the scientific management movement. It explained man's behaviour at work primarily in terms of his social needs, Blackler and Williams (1971).

Fredrick Winslow Taylor was regarded the father of scientific management movement and so was Elton Mayo regarded the father of the Human relations movement. Reactions to inadequacies of scientific management was registered by Mary Parker Follet in her thesis as reported by Metcalf and Urwick (1940) who studied collected papers of Mary Parker Follet. They observed that in a significant reaction to scientific management principles, parker argued that co-operation between managers and workers, mutual understanding, sharing ideas and integration of view points, that is, good human relations, were the Warp and Woof of society and of industry. A strong desire was indeed emerging – to replace the closed, authoritative organizational climate with an open, participative climate that listened to workers' needs.

Parker's thesis received strong empirical backing from findings of the Hawthorne studies, Mayo (1933). The Hawthorne studies were initiated by Elton Mayo and were carried out over a twelve-year period from 1927 at the Hawthorne works of the Western Electric company, Chicago. Roethlisberger and Dickson (1939) have described in detail the Hawthorne studies. The studies and subsequent theories were, ironically initiated by attempts to examine the effect of various aspects of the physical working conditions upon production.

The Human relations and the scientific management phases overlapped in the 1920s and 1930s. Boot (1977) has pointed out that by the 1920s, psychologists had began taking an active interest in what went on at the place of work. Indeed, during the 1930s and 1940s prominent writers and researchers had started putting great emphasis upon the significance of human relationships at the place of work and its impact upon productivity. They laid particular emphasis upon group behaviour, joint consultations and informal organisations.

Roethlisberger et al (1939) have pointed out thus: That a team of psychological researchers from Havard University carried out the famous investigations into the Hawthorne plant of Western Electric Company in Chicago. Two of the research investigations in the Hawthorne studies generated most interest. In the investigation, a small group of female operators whose task it was to assemble telephone relays, was transferred to a room all by themselves along with their equipment, and asked to continue with their test. This they did whilst the researchers made changes to their working conditions in order to see whether these had any appreciable effect upon output. The workers continued to be paid by the company on an individual incentive scheme. In one set of experiments the quality of lighting was improved in stages, and in another, rest periods and refreshments were introduced.

It was found that output increased significantly as compared to previously recorded levels as these improvements were made. But what was more startling was that it remained at this high level even after a return to the original conditions. Furthermore, sickness and absenteeism decreased. The workers themselves had no clear explanation as to why they worked so much faster, nor were they conscious of speed-up and increased productivity. In the second investigation, discreet observation was kept on male workers in the Bank Wiring room in the factory. Workers were also on individual incentive scheme. It was found, however, that instead of asserting maximum effort, they worked well below their real capacity. Individuals who showed signs of outpacing the rest were brought into the line and made to conform.

Roethlisberger et al (1939) have observed that the results of the Hawthorne and other studies were surprising, even puzzling. The output seemed to improve almost regardless of what variations were made to the working conditions. This seemed to question the primacy of economic motives in governing work behaviour. The findings of the studies led to a search for explanations outside the man-machine relationship and an emergence of sets of assumptions based on the view of man primarily as a social animal, gaining his basic sense of identity through relationships with others.

Contrary to expectations, findings indicated that production increases were related to social and psychological factors rather than to the working conditions. This was puzzling. Indeed Musaazi (1972) observes that the puzzling Hawthorne results showed that development of social groups with their own codes of behaviour was very important in the functioning of an organisation. The findings of the studies pointed to: the importance of social needs that influence the work behaviour; greater concern for creating good morale at work; fostering good relations at the place of work through group incentive schemes rather than individual incentive schemes under traditional authoritarian management; stress on better communication so as to pass on more information and thereby keep the employees informed and device strategies aimed at making the work place a source of social satisfaction.

As Organ (1991) points out, the Hawthorne studies had a major influence on management thought. The studies proposed that when people are given the opportunity they will spontaneously develop informal organisations that provide them with a satisfying sense of attachment or affliction and some sense of worth and personal identity. Informal organisations should therefore not be seen as a necessary evil for managers but should be accommodated by managers as being complementary to the formal organisation in serving constructive purposes such as promoting attendance, dealing with unforeseen problems at work, providing leadership, and passing on an accumulated store of knowledge and skills for enhancing working efficiency.

The significance of informal organizations is alluded to by Argyris (1964), a psychologist, in his writings on integrating the individual and the organization. He showed concern for the well being of people working in organisations. He points out that psychologically healthy individuals should work in formal organisations run on participative organizational management. He underlines the dangers inherent in situations where they work in organisations run on traditional and authoritarian management. He observes that psychologically healthy individuals will be predisposed toward relative independence, activeness, use of their important abilities and control over their immediate work world and are thus best suited in participative management organisations.

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An organization that embraces participatory decision-making is more likely to achieve high performance levels since members tend to own the outcome of their organization. Indeed, Boot (1977), in his study on Behavioural science for managers, noted that since increase in output seemed to require the active co-operation of employees, supervisors had to be trained to show greater consideration and a more democratic style of leadership. He points out that Human relations movement advocated a human face to capitalism, with the promise of pay-off to all concerned. As Argyris (1964) puts it, an approach that attempts to breakdown barriers between individuals and encourages frankness and an open exchange of views tempts us with the promise of both higher productivity and a more contented and satisfied work force.

The emphasis put on pay by the Scientific Movement approach was strongly discounted by the Human Relations advocates who emphasized the workers needs. Lawler (1971), in his study of pay and organisational effectiveness, pointed out that any attempt to relate pay to performance must deal with the issue of how this can be accomplished. The human relations approach advocates using democratic or participative management but not tying pay to performance. The approach stresses the involvement of workers in administrative decision making and relating their pay more to their needs than to their performance. Indeed, as Organ (1991) observes, the findings of the Hawthorne studies indicated that although economic need explained why people went to work, social needs accounted for what happened once people got there.

Whereas classical theorists were principally concerned with the structure and mechanics of organisations, the human relations theorists were more concerned with the human factor in organisations. Indeed, protagonists of the human relations approach emphasised co-operative goal attainment, group dynamics, participative decision-making, the existence of informal organisations and democratic leadership. A significant finding of the Hawthorne studies was the implication that what goes on inside the workman and between workmen is more significant for production than what goes on outside, even in the most rigorously job-analysed work situations.

It should, however be pointed out that Human relations approach is not a panacea; it certainly has limitations. Nevertheless, human relations movement can be powerful in improving the organisational climate and work performance. It however became evident that the human relations approach assumptions and views about motivation proved just as inadequate in explaining the variety of behaviour evidenced at the workplace as its predecessor, the scientific management approach to motivation.

As Argyris (1964) has pointed out the harsh fact of the matter is, however, that working groups seem to be becoming more militant or appear less satisfied with their working conditions inspite of several decades of human relations oriented organisation policies. He observes that, clearly, we need a wider analysis of the problem of organising people at work than that provided by the human relations school alone. Etzion (1964), in agreeing with this contention, wrote thus: Scientific management assumed that the most efficient organisation would also be the most satisfying one, since it would maximize both productivity and workers pay while the human relations approach assumed that the most satisfying organisation would be the most effective.

**The Behavioural movement**

The inadequacy of the Human relations movement in explaining the variety of human behaviour evidenced at the work place led to the emergence of a group of theorists in the 1960s whose approach Schein (1972) referred to as the “self-actualising man” approach. Although sharing in the Human relations views in rejecting the scientific management ideas about motivation, the self-actualizing man approach claimed that the Human relations views were not only far from complete in understanding the nature of man but were no less manipulative than the scientific management approach to motivation.

The self-actualising man approach theorists held that the manager’s task is to make use of the full human potential of his subordinates by providing opportunities for them to achieve self-fulfillment in their work. Boot et al (1977) has pointed out that the emphasis upon the needs of the individual and the demands of the organisation, which was then referred to as Neo-human relations, was carried on during the 1950s and 1960s under the impetus of the American Behavioural Scientists such as Maslow (1954), Likert (1961), McGregor (1960), Argyris (1964) and Herzberg (1966).

Indeed, neither the scientific management movement nor the Human relations movement represented a complete view of human behaviour in a work organisation. The need to understand human behaviour before an integrated approach to management is contemplated became more apparent. This is alluded to by Barnard (1964) when he used a social science frame of reference in his definition of an organization. He stressed co-ordinated human effort, personal willingness, effectiveness and efficiency and deliberately distinguished effectiveness and efficiency as they relate to organisation thus: effectiveness referred to the extent to which organisational goals were achieved while efficiency referred to the degree to which the personal motives of individuals within the organisation are satisfied.

The interaction of the needs of the individual and the demands of the organization, within an organisational system, was the focal point of modern or Behavioural organisation theory, which, as previously noted, began to be recognised as such in the 1950s and 1960s. According to Boles and Davenport (1973), the behavioural organisational approach was based on "third force" psychology of which Maslow was the acknowledged father. In third force psychology, man was considered as having a proactive tendency in terms of which he expressed his need for growth, and influenced the very forces which compel him to react. Sergiovanni and Carvar (1975) observed that according to this view of behaviour, man was moved by the attraction of what is ahead; ... one's visions and goals, hopes and aspirations are the prime movers of man.

Indeed, modern or Behavioural organisation theorists concentrate their fire on building an organisation in which people will be motivated by intrinsic rewards such as a desire for growth and competence. As Lawler (1911) has stated, they are concerned with motivating ....... self-actualising man. He has pointed out that organisation theorists should think in terms of what he calls "complex man".

Such a view of man is necessary, particularly if we wish to integrate the scientific management and the Human relations approaches to motivation. The movement to integrate individual needs and task needs in an organisation was apparent in a formula Bakke (1953) referred to as "the fusion process". This was explained as the process of the individual using the organisation to fulfill his needs and simultaneously the organisation using the individual to achieve its demands. Indeed Boles et al (1973) pointed out that typically, Behavioural movement, which emphasises needs integration, comprised many disciplines which included McGregor's philosophical view point about the nature of man, Maslow's and Herzberg's motivational theories, Argyri's personality theory, and Bakke's and Likert's management theory. The complex behavior of man may be exemplified by observations by Cannon (1932), in explaining behavioural responses to internal disequillibrium. He coined the word homeostasis to refer to the physiological mechanisms set into action to restore the internal state of an organism to its normal and optimal condition of functioning whenever such a condition has been disturbed. An example is the automatic response of perspiration when the body temperature moves above its equilibrium state of 37°C. He explained behavioural responses to internal disequallibrium thus: We all have a number of basic physiological needs (for example food) which if not met will give rise to specific drives (such as hunger). These drives give rise to activity (such as the search for food) which is aimed at attaining some incentive, goal objective or state (for example food) which can satisfy the original need.

Cannon (1932) further points out that the concept of equilibrium underlies many approaches to the study of motivation. He observes that unfortunately the complexities of human motivation makes it impossible to make simple predictions as to which human needs will give rise to what work-related activities in response to what organisationally available goals or incentives. For instance, he points out: (a) the same goal may be reached by a number of different activities (b) a single activity may lead to the attainment of a number of different goals (c) attainment of a single goal could satisfy a number of different basic needs. Indeed Boot et al (1977), in apparent reference to the complexities of human motivation, caution that any attempt to draw up a list of basic human needs must of necessity be tentative and as yet is unlikely to be universally accepted.

The foregoing observations show the necessity to attempt to understand human behaviour so as to ensure organizational climates that will motivate workers into achieving high performance levels.

Murray and Maslow have compiled lists of basic human needs. Murray (1938) has listed forty human needs, divided into twelve physiological needs and twenty eight psychological needs while Maslow (1954) has compiled five ranked sets of human needs. Maslow (1943), in his papers on human motivation saw a human being as being a perpetually wanting animal. He maintained that nearly all individuals are motivated by the desire to satisfy certain specific needs which could be classified into five major groups.

Maslow's study was primarily based on clinical observations. Organ et al (1991) point out that Maslow's underlying premise is that human needs can be arranged in several distinctly different classes which can be related to each other in terms of prepotency, that is, one class of needs, until satisfied, takes priority over certain others. Upon realisation of need satisfaction, a different type of need becomes dominant in behaviour until it, too, is satisfied, paving the way for still other needs to direct behaviour.

Blunt and Jones (1992) noted three fundamental assumptions which form the basis of Maslow's theory in proposing the "need hierarchy" which captures the sequential arrangement of priorities in need categories. They list the assumptions thus:

1. People have needs which influence their behaviour. Only needs which have not been satisfied can act as motivators, that is, they dominate the individual and energy is directed at satisfying the need.
2. An individual's need are arranged in a hierarchy of importance, from the most basic needs such as food and shelter to more complex psychological needs such as the need for esteem and fulfilment of creative potential.
3. Needs at the upper levels of the hierarchy are only activated once needs at the lower levels have attained some minimally acceptable level of satisfaction.

Blunt et al (1992) observe that Maslow's theory is one of the most popular theories of motivation in the organisational theory and

> Behaviour literature. They argue that it has provided the basis for much research and writing by organisational theorists, and a readily interpretable framework for practitioners.

Ivancevich J. M; Szilagyi and Wallace, (1977) have outlined Maslow's need hierarchy as set out in Table 1. The table presents the levels of need in the hierarchy; the general factors associated with each level of need and the organisational factors associated with each level of needs.

The five levels of Maslow's need hierarchy are (a) Physiological needs (b) Safety and Security needs (c) Social needs (d) Ego, Status and Esteem needs and (e) Self-actualisation needs. The significance of the organisation in satisfying the individual worker's needs at the work place in accordance with Maslow's need hierarchy theory, as it relates to motivation to work, is discussed.

**Table1: Maslow's need Hierarchy**

| General factors associated with each level of needs | levels in the hierarchy | Organisational factors associated with each level of needs |
|---|---|---|
| 1.Growth<br>2.Achievement<br>3.Advancement | Self-actualisation | 1. Challenging job<br>2. Creative Opportunities<br>3. Advancement in the Organisation |
| 1. Recognition<br>2. Status<br>3. Self-esteem<br>4. Self- respect | Ego; status and esteem | 1. Job title<br>2. Merit pay increases<br>3. Peer/supervisory recognition<br>4. Work itself<br>5. Responsibility<br>6. Interactions with Supervisors and peers |
| 1. Companionship<br>2. Affection<br>3. Friendship | Social | 1. Quality of supervision<br>2. Compatible work group<br>3. Professional |
| 1. Safety<br>2. Security<br>3. Competence<br>4. Stability | Safety and security | 1. General Salary Increases<br>2. Job Security<br>3. Fringe benefits<br>4. Safety of working Conditions |
| 1. Air<br>2. Food<br>3. Shelter<br>4. Sex | Physiological | 1. Basic Salary<br>2. Canteen facilities<br>3. Working conditions |

Source: Ivancevich, J. M.; Szilagyi, A. D. and Wallace, M. J. (1977)

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### (a) Physiological needs

Physiological needs refer to the basic recurring needs of individuals such as air, food, water, sleep, shelter, avoidance of pain and waste elimination that are essential to their very survival. Indeed, inattention to physiological needs can, in some instances, result in death. Maslow (1954) included in this category other physiological needs which appear to be basic but which don't have an obvious survival function such as the need to have sex and sensory stimulation (touching, smelling e.t.c.). Physiological needs take initial priority and govern our behaviour until they are met. To the extent that they have been met, they will fade to the background of conscious behaviour. Thus, at the work place, such factors as salary level, working conditions (Heat, cold, noise e.t.c) and the distance to and from the place of work would feature prominently.

As Kiggundu (1988) points out, physiological needs in Africa are generally poorly catered for, unlike in the U.S.A, where it is estimated that eighty five in every hundred of the population have their physiological needs well catered for. As a consequence the physiological need category in Africa features prominently in people's motivational make-up.

### (b) Safety and Security needs

Having satisfied immediate physiological needs, an individual is concerned to ensure a relatively stable, safe, predictable, generally ordered environment. The individual here reacts to reduce uncertainties associated with "fear of and threat from" in a bid to restore security. Such fear and threat may arise from ominous forces, looming natural calamities, violence, loss of possessions, and breakdown of the social order. Thus, at the work place, safety and security needs are reflected in the worker's attitude toward the safety of his work, his job security and possibility of pay increases.

Indeed, Ankomah (1985) points out that most people in post independence Africa are not inspired to work, because they lack desire to accomplish something. The African bureaucrat is often motivated by material things he can gain from work. He engages in those activities of work that will result either in immediate financial gains or possess the potential of such.

### (c) Social needs

Social (or belongingness and love) needs take effect upon reasonable satisfaction of physiological and safety needs to an individual's acceptable degree. The individual is prepared for the need for affectionate relationship with others, a sense of belongingness and acceptance as a member of a group. Social needs is a reflection of man's social nature of wanting to give and receive affection in relationships with others. Indeed, as earlier observed, the Hawthorne studies showed that the informal structures arise in organisations to satisfy the needs that the formal structure often does not provide. The formal structure does not adequately cater for social needs.

As Maslow (1943) noted, a prolonged thwarting of one's love needs characterises the extreme cases of maladjustment and psychopathology: People who have given up even trying to get affection and whose behaviour is utterly indifferent to the harm it may inflict on others. He further observes that man's social nature of need for friendship and company of others is demonstrated by studies of prisoners of war which found that solitary confinement, even with the adequate food and physical comfort, predisposes even the bravest and most patriotic soldiers to seek communication with their captors, even at the risk of revealing strategic military information or denouncing their government.

Jones (1988), in his investigation of management thinking in Malawi, points out that one of the most important social relationships at work, has to do with the relationship between managers and workers. He indicates that this can be a difficult relationship to manage in Africa. Peil (1972) studied Ghanaian factory workers and noted that the nature of supervision at work can be the cause of frequent complaint. Workers, he observed, complained that the supervisor is too close, comes too often making them uneasy while working and is too enthusiastic.

A poor social relationship between managers and workers in Africa, as observed in these studies, may lead to inadequate satisfaction of the social needs of workers and thereby affect their motivational tendencies towards work. At the work place, organisational factors associated with social needs include quality of supervisors, compatible work group and professional friends.

### (d) Ego, Status and Esteem needs

Maslow (1943) argues that all people in our society have a need or desire for a stable, firmly based (usually) high evaluation of themselves, for self-respect or self-esteem. He observes that as one experiences some success in satisfying the social (Belongingnesss and love) needs, a set of needs centred around ego come to the fore. He points out that the term "ego" refers to a natural and healthy progression to reflect one's worth, adequacy and competence once a reasonable degree of "inclusiveness" with others have developed. There is a basic need for independence and confidence in the face of the world. This category of needs, thus incorporates the needs which people have for self-respect and respect for others, and needs associated with desire for self-confidence, attention, status and prestige. We seek and prefer attachments that provide a sense of respect from others and which eventually form a basis for our own self-respect.

Maslow points out that gaining acceptance alone does not suffice - we must be able to regard ourselves as capable of independent thought and action, deserving of respect, and confident in confronting our problems. Maslow sees a logical sequence in this category of needs: we first seek and secure relationships that provide affection on any basis and then strive for respect and affection as a foundation for deriving our own internal criteria for self regard, even at the expense of or in opposition to attaining status in the eyes of others. He, however, observes that only a minority ever become so completely confident of respect from others that they venture more than precariously into their own sense of self-esteem.

At the place of work, occupational preferences provide some indication of the degree to which different types of work are seen as satisfying esteem needs. Organisational factors associated with esteem needs include job title, the nature of work itself (high skilled, scientific, professional etc) and the amount of autonomy, power and responsibility associated with the job. Indeed, Morgan (1965), in his study of occupational prestige ratings by Nigerian students, found that the prestige ratings attached to various occupations, by a sample of University students, were very similar to western ratings: high ratings were given to occupations such as physician and accountant and the lowest ratings to manual work such as domestic servant. This was corroborated by findings of McQueen (1969) in his study on unemployment and future orientation of Nigerian school leavers. He found that sixty five per cent aspired to professional or white collar occupations and 5.6 per cent aspired to lower-level jobs such as farmer, trader and unskilled labour. These findings indicate that esteem needs are very strong and thus workers whose esteem needs are not adequately satisfied may not be motivated at the place of work.

### (e) Self-actualisation need

According to Maslow (1973), self actualisation refers to the individual's need for self-fulfilment, to become everything that one is capable of becoming, to realise one's full potential for doing or creating, that is, to strive not just to be good at something but to be as good as one is capable of being. It is the highest and final class of needs in Maslow's hierarchy of needs. It is only after all other needs have been relatively well satisfied that one becomes free to persue the ultimate need, which, Maslow refers to as the quest for self-actualisation. Self-actualisation entails a fundamental change in orientation, since, unlike in other lower needs, one measures oneself against one's own personal ideals of what constitutes the best of one's capabilities.

Maslow observes that in his study, he found only a few people (excluding himself) who had precariously ventured into this need. He noted that such people had little concern for conventional codes of morality and behaviour and were not radical or rebellious. He points out that such people had little concern for "self" since they were immersed in something larger than self. He noted that they were capable of being callous, if not cruel, toward those who loved them. Maslow awarded this type of need a special status of "growth" need and regarded the physiological, safety, social and esteem needs as "deficiency" needs. He noted that it is only when all of these "deficiency" needs have been satisfied that a person becomes psychologically healthy. Then, and only then, do the "growth" needs that define the search for self-actualisation take control.

In his study on farther reaches of Human Nature, Maslow indicates that only a tiny fraction of adults ever reach this point. At the place of work, organisational factors associated with self-actualisation need include the challenge of the job, the amount of creativity entailed, the degree of autonomy available, and the opportunity for recognition, achievement and advancement. Maslow's need hierarchy has aroused considerable interest and challenge to scholars and practitioners. What is of particular concern is the fundamental aspect of Maslow's theory in which he maintains that there is a set of priority in which the human needs become important to us. That is, they should be thought of as constituting a hierarchy-with physiological needs at the bottom and the need for self-actualisation at the top as represented in Table 1.

## Controversy over Maslow's need hierarchy theory

Boot et al (1977) point out that, this theory, which, as indicated before, was originally formulated in a clinical setting, has surprisingly attracted relatively little empirical research to test the relevancy of the theory in organisational settings. Organ et al (1991) however observes that certain ideas in the need hierarchy do lend themselves to empirical test. A review of relevant research by Wahba and Bridwell (1976) provides mixed support for the need hierarchy. They observed that data suggested a more parsimonious two-level need system, rather than five distinct categories. They point out that, studies suggest a clear separation between lower-order (physiological and safety) needs and various higher-order (love, esteem and self-actualisation) needs. Indeed, research supports the inverse relationship between the degree of satisfying a need and its importance, but only for lower-order needs. Studies suggest that some degree of satisfying high-order needs renders them more important. These study suggestions, on high-order needs, viewed against the background of the consistency of the need hierarchy, appear to contradict Maslow's theory which holds that: Once needs have been satisfied, they cease to play an active role. This means that a satisfied need is not a motivator.

As Boot et al (1977) point out, this apparent contradiction is however accommodated by Maslow's latter formulation of theory in which he points out that, a satisfied high-order need does not necessarily cease to be a motivator. They, for instance, pointed out that, for self-actualisation needs, increased satisfaction leads to increased need strength.

Maslow's need hierarchy theory has also been subjected to continued attention, controversy and criticism. As organ et el (1991) points out, while much of what Maslow says is plausible and intuitively compelling, it has not been easy to test the theory with data. They point out that Maslow did not develop measures or what they call "operational definitions" of the need categories. This resulted into some of the need categories, in particular, self-actualising need, to present major difficulties to researchers trying to give the theory an honest and fair test.

The importance of utilising the need hierarchy theory to satisfy and motivate workers at the work place cannot however be overemphasised. To this end, the importance of cross-cultural stability with respect to Maslow's need hierarchy theory brings to focus the significance of social and cultural environments in designing organisational structures and administrative systems that will attribute a similar set of priority in which these human needs become important.

Blunt et al (1992) indicate that literature reveals some consistence with regard to cross-cultural stability. They point out that previous research has indicated that the importance ranking assigned to the various Maslowian need categories cut across the cultures. They have observed that the most impressive findings was the relative overall similarity among managers in different countries and cultures with regard to their evaluation of the importance of different needs. They thus inferred that these findings may indicate that what people want from their jobs is relatively unaffected by the cultural environment in which they operate. Indeed Maslow (1954, p.98) pointed out that the "findings" imply, in very general terms, that "irrespective of culture and local conditions, organisational structures and administrative and reward systems, should be designed to attribute the same priorities to, and therefore satisfy, a unitary set of managerial needs, arranged in the same, predetermined, hierarchical order". The assumption of cross-cultural stability that is used to justify Maslow's need-category is however contradicted in a study conducted by Blunt (1976) on management motivation in Kenya, among a group of Kenyan Managers. He found that they attached highest importance to security needs. A parallel study by Jones (1988), in Malawi, involving 105 managers produced similar results. He observed that the striking aspects of these findings was the data suggestion that Kenyan and Malawian managers exhibit a need-category dominance profile which contradicts the assumption of cross-cultural stability among managerial groups with respect to ordering of need categories.

It can be pointed out, notes Jones, that these findings, in which managers in the developing world exhibit need importance profiles which depart greatly from the expected range of scores, and differ significantly between themselves, add credence to the conclusion by Badawy (1980) that social and cultural environments need to be studied with care when designing organisational structures and management systems.

### Motivation theories

A significant contribution to work motivation theory is evident in Herzberg's two factor theory. Herzberg (1966) developed the motivation-Hygiene theory, based on extensive empirical research, in which he emphasised the avoidance and approach drives in man. The importance of Herzberg's theory in understanding the behaviour of workers at the work place is profound.

Herzberg's two factor theory, like Maslow's need-hierarchy theory, is a content theory of motivation, which evolved from Herzberg's efforts to explain controversies in research findings concerning job satisfaction. Hezberg's theory grew in an inductive manner from a study involving 200 accountants and engineers in Pittsburge, U.S.A. The theory, which is widely researched and published, was first published in 1959 and has since been a source of continuing attention and controversy among scholars and practitioners. The study required workers, in interview, to remember and describe in detail, in their own words, job experiences when they felt exceptionally good (satisfied, interested or enthusiastic) about their work and times when they felt exceptionally bad (dissatisfied, frustrated and unhappy) about their work.

Herzberg (1959) observes that the study findings indicate that workers seemed to be referring to quite different events and activities when they felt exceptionally good about their jobs from those they described when they felt exceptionally bad about their jobs. Findings from the study imply that positive reactions to work (job satisfaction) were associated with jobs which provided opportunity for achievement and advancement, scope for individual development, recognition of performance, responsibility and work itself (interesting and challenging work). These factors seemed to be relatively unimportant in connection with job dissatisfaction. Negative reactions (job dissatisfaction) seemed to be associated with jobs which were characterised by deficiencies in technical supervision, company policy and admnistration, job security, salary, fringe benefits, interpersonal relations and work conditions. These factors seemed to be rarely influential in job satisfaction.

From these study findings, Herzberg (1966) proposed that contrary to intuition, satisfaction and dissatisfaction are separate and distinct dimensions of man's nature, not opposites of each other. He notes that, while one dimension (satisfaction) is concerned with seeking personal growth, the other dimension (dissatisfaction) is primarily concerned with unpleasantness. According to Hezberg, satisfaction will be sought in aspects of job content (such as achievement, advancement and responsibility). These aspects provide opportunity for growth and Herzberg called them motivators. Their absence does not cause dissatisfaction but merely lack of positive satisfaction and their presence provides both satisfaction and renewable incentive to seek them further.

Avoidance of dissatisfaction will be sought in aspects of job context (such as company policies, working conditions and salary). Using a medical analogy, Herzberg referred to these aspects of work as Hygiene factors. He observes that we notice these aspects of work only when there is a problem and we feel discomfort and pain. However, when these aspects are effective, we take them for granted and do not think about them, hence the medical analogy used by Herzberg. The presence of Hygiene factors does not lead to positive satisfaction but simply to dissatisfaction. When hygiene factors are operating to a sufficient degree, they prevent dissatisfaction but they can not act as motivators.

It is apparent that high salary or good working environment alone are not sufficient to induce high levels of motivation or satisfaction. Similarly, irrespective of how interesting or how challenging a job might be (that is, intrinsically motivating) there will still be dissatisfaction if pay or working conditions are inadequate. In effect, while job content sets the limits for our capacity to experience positive satisfaction and the motivation for its renewal, job context determines the extent and severity of dissatisfaction. However it is evident that findings by Herzberg (1966) showed that the hygiene factors and the motivating factors indeed do overlap in practice.

Herzberg's theory has had considerable influence on the business community and, in particular, practising managers. The theory has generated heavy controversy and criticism from critics on a number of grounds. Herzberg, to an extent, much more than other motivation theorists, actively persued the implications of his theory and has proposed a "job enrichment" programme approach to motivate employees. Herzberg (1968) provided a neat recipe-like series of steps to job enrichment which are easy to understand and unequivocal. They are clear, definite proposals which many managers who are interested in improving their organisation's performance find difficult to resist. Managers and management trainers have indeed found the job enrichment proposals attractive for being straightforward and relatively easy to implement in work organisations.

As Hackman and Oldham (1980) put it: In sum, what Herzberg's theory does, and does well, is point attention directly to the considerable significance of the work itself as a factor in the ultimate motivation and satisfaction of employees. They pointed out that because the message of the theory is simple, persuasive and directly relevant to the design and evaluation of actual organisational changes, the theory continues to be widely known and generally used by managers.

The enormous influence exerted by Herzberg's ideas has compelled critics to carefully examine his work (both the theory and the methodology). It has been pointed out, though, that one of the major weakness of the theory is that it makes no allowances for the different meanings which individuals attach to work or their orientations. The theory assumes that all workers will respond in a similar manner to different conditions of work.

Vroom (1964) is critical of Herzberg's research methodology. He suggests that the findings reported by Herzberg are likely to be a function of the critical incident story telling method used. Vroom wrote thus: It is possible that obtained differences between stated sources of satisfaction and dissatisfaction stem from defensive processes within the individual respondent. Persons may be more likely to attribute causes of satisfaction to their own achievements and accomplishments on the job. On the other hand, they may be more likely to attribute their dissatisfaction not to personal indecencies or deficiencies but to factors in the work environment.

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Wall and Stephenson (1970), in controversy to Herzberg's ideas, stated that their own studies suggested that the results upon which Herzberg's theory is based are a function of "social desirability". They noted that consequently, as a description of the structure of job attitudes of the determinants of satisfaction and dissatisfaction, the two factor theory is not tenable. Indeed, critics have pointed out that conceptually, Herzberg's original theory seemed amenable to differing, even contradictory interpretations and prediction. Methodologically, critics observed that Herzberg's story telling technique is open to charges of bias due to the "social desirability" effect. People tend to attribute negative events to what is around them (job context), but take credit for the positive events as things they did themselves (job content).

Ewen (1964), in dismissing Herzberg's theory, claims that since Herzberg's study contains no measure of overall satisfaction, there is no basis of assuming that the so called motivators and hygiene factors contribute to overall satisfaction or dissatisfaction as claimed. Critics have further questioned the methodology Herzberg employed in his study. They point out that the original results obtained by Herzberg et al (1959) and by other studies which have replicated their findings, may have been partly a function of the data collection methods employed rather than being an accurate reflection of what motivated the individuals concerned.

Critics have cast doubt on the validity of responses from people on why they feel satisfied or dissatisfied. They point out that, when asked to explain why they feel happy or satisfied, people tend to explain in terms of their own behaviours (take credit) and when asked to explain why they feel dissatisfied, people tend to lay blame elsewhere (on extrinsic factors associated with the environment). Vroom (1966) aptly put it thus: people tend to take the credit when things go well, and enhance their own feelings of self-worth, but protect their self-concept when things go poorly by blaming their failure on the environment.

Herzberg's theory has been criticised on the grounds that certain job characteristics can cause job dissatisfaction for one person and job satisfaction for another, or vice versa. A study by Lahiri and Scrivastva (1966,p.263) puts the same point. The study, involving 93 Indian middle managers found that "both intrinsic and extrinsic job factors caused feelings of satisfaction and dissatisfaction towards the job". They concluded that the respondents in this study endorsed job factors differently from what the motivation-hygiene theory would have predicted. Critics of Herzberg's theory found further support in a study by Jibowo (1977) on the effects of job performance of motivators and hygiene factors among a group of 75 agricultural extension workers in Nigeria. The findings corroborated those by Vroom (1966). There was evidence from the study to suggest that hygiene factors such as poor working conditions, low levels of pay and poor supervision depressed productivity and performance in general, thus contradicting Herzberg's theory. It was found that hygiene factors such as pay, supervision and working conditions acted as motivators among the Nigerian workers involved in the study.

Criticism has also been directed at the research population sample. It has been noted that much of the research on Herzberg's theory has been conducted on workers in interesting jobs, such as engineers and accountants, and that workers in the humdrum, boring, repetitive jobs that so many do in formal organisations seems to have escaped the attention of these researchers. Indeed, Jones (1988) has pointed out that Herzberg's theoretical edifice was built on conversations with people in interesting, rewarding jobs. He pointed out that this did not prevent Herzberg from generalising the whole of mankind. It has been pointed out that tests of the two factor theory, using different methods, have usually led to results other than those Herzberg himself found.

Despite controversy and criticism, Herzberg's theory has been influential. The development of work motivation theory has not been the same since Herzberg's contribution. While Herzberg's entire framework may not be accepted, it is significant that organisational behaviour theorists have been greatly influenced by certain themes Herzberg boldly underlined. For instance, Herzberg's job enrichment approach to employee motivation may be used to assess the presence of factors which have been proposed by various theorists as major determinants of motivation at work in the work setting.

Hackman et al (1986) however observe that job enrichment has been found to have a number of flaws and is thus no panacea to employee motivation. Nevertheless, Herzberg's theory, like Maslow's theory, has contributed enormously to our attempt to understand motivation at work by turning attention to the potential significance of intrinsic characteristics of work. Employee motivation previously took the carrot and stick approach to motivation, in terms of rewards and punishments relating mainly to extrinsic factors such as pay, fringe benefits, working conditions and tight supervisory controls associated with the scientific management approach.

Parallel to the above theories of motivation, McGregor (1960) conceptualised a set of managerial assumptions about human nature and work which he labelled Theory X and Theory Y. These assumptions were illustrative of the behavioural approach to organisational theory. In his Theory X assumptions, McGregor argued that the dominant needs people seek to satisfy through work are those pertaining to economics and security. Theory X assumptions hold that: (i) the average human being found work inherently distasteful and will avoid it if external pressures are weak (ii ) Because of this human characteristic of dislike for work, most people must be coerced, controlled, directed and threatened with punishment to get them to put forth adequate effort toward the achievement of organisational objectives (iii) Further more, the average human being, prefers to be treated this way because they lacked ambition and had no desire for responsibility but want, above all, security. Indeed the views of schools of management thought before the 1940s was that people sought work that minimises labour and discomfort and maximises material gain. People were viewed in terms of striving to keep their jobs but no more than that and would avoid hard work if they can.

Elton Mayo (1933) referred to this view of the rank-and-file as the "rabble hypothesis". He points out that McGregor believed that Theory X continued to influence the thinking of many of those who manage work organisations. McGregor criticised Taylor's scientific management approach and labelled it Theory X. He observed that if managers try to regulate our behaviour, limiting us to only the most physically and mentally onerous tasks, much of our work-relevant motivation will revolve around maximising the discomfort of the work, and taking whatever advantage we can, thereby inviting more stringent controls from managers. McGregor's preference was the integration of the individual and organisational goals based on the assumptions he labelled Theory Y.

Morse and Lorsch (1970) observe that Theory Y assumptions focus on the integration of goals which emphasise the average person's intrinsic interest in his work, his desire to be self-directing rather than the need for external control, his desire to seek and accept responsibility and his capacity to be creative in solving organisation problems. He endorsed Theory Y as a valid and workable theory for administering work organisations, and as a way of getting out of the trap of the self-fulfilling prophesies of Theory X. McGregor pointed out that if management suppresses these Theory Y tendencies by continuing practices derived from Theory X assumptions, then, consistent with frustration-regression hypothesis, people will revert to the more punitive stages of psychological development.

McGregor described the assumptions of Theory Y thus: (i) There is no inherent dislike of work. The expenditure of physical and mental effort in work is as natural as play or rest. (ii) External control and the threat of punishment are not the only means for bringing about effort toward organisational objectives. Man will exercise self-direction and self-control in the service of objectives to which he is committed. (iii) The degree of commitment to objectives is a function of the rewards associated with their achievement. In this context, the most significant rewards are the satisfaction of higher order needs. Such rewards are intrinsic to work but not externally mediated. (iv) If the conditions are right, the average human being learns to not only accept but seek responsibility. (v) The capacity to exercise a relatively high degree of imagination, ingenuity and creativity in solving organisational problems is widely, not narrowly, distributed, in the population. (vi) Industrialisation has meant that the intellectual potentialities of the average human being are under-utilised.

According to McGregor, work organisations compatible with Theory Y framework: would emphasise broad and substantive forms of participation by all employees in matters that significantly affect them; would redesign jobs to tap the ego needs for self-esteem and increased competence and would encourage supervision that stressed teaching and coaching rather than controlling. Theory Y assumptions imply that if employees appear lazy, indifferent or uncooperative, the causes lie in management's methods of organisation and control.

McGregor however holds that the essential task of management is to arrange organisational conditions and methods of operation so that people can achieve their own goals best by directing their own efforts towards organisational objectives. He implies that if a manager can get high performance targets and get his/her subordinates to accept them as their own, he/she is not likely to worry about discipline. This position is in agreement with advocates of Management by objectives as opposed to management by control. While Theory Y has produced good results in some situations, it has not always done so.

Indeed, studies by Lawrence and Lorsch (1967) indicate that there is not one best organisational approach; rather the best approach depends on the nature of the work to be done. They point out that organisations with highly predictable tasks perform better in highly formalised procedures and management hierarchies of the classical approach. Highly uncertain tasks that require more extensive problem solving, on the other hand, are more effective in less formalised procedures that emphasise self-control and member participation in decision-making.

The foregoing imply that managers must design and develop organisations so that the organisational characteristics fit the nature of the task to be done. The question thus put focuses on which of the above two organisations provides a high level of motivation for its members.

Morse et al (1970) carried out case studies involving a set of managers in highly formalised and in less formalised organisational settings. The study yielded paradoxes in McGregor's Theory X and Theory Y assumptions. Case I study involved managers who worked in a highly formalised organisational setting with relatively little participation in decision making, yet they were found to be highly motivated. According to Theory X, people would work hard in such a setting only if they were coerced to do so. According to Theory Y, they should have been involved in decision-making and been self-directed to feel motivated. These results indicate that neither of these sets of assumptions was valid. Case II study involved managers who worked in a less formalised organisational setting with more participation in decision-making and yet they were not as highly motivated as in Case I. Theory Y assumptions would suggest that they should have been more motivated than in Case I.

In a study into questions arising from these paradoxes in McGregor's Theory X and Theory Y assumptions, Woodward (1965) suggests a new set of basic assumptions which move beyond Theory Y, into what is referred to as Contingency Theory, to establish a fit between task, organisation and people. These theoretical assumptions emphasise that the appropriate pattern of organisation is contingent on the nature of the work to be done and on the particular needs of the people involved.

Indeed Mcgregor has pointed out that changes without real confidence in positive human responses to work, were bound to lack in real substance and doomed to be short lived. This is manifest in a curious case scenario witnessed by McGregor in 1960, involving a small but growing electric company. The company made a conscious attempt to put into practice, what McGregor described as derivative of Theory Y. For a few years, the company confirmed growth and showed improvement in productivity, customer relations, product quality and reliability. However, in 1965, the firm experienced financial problems, and the management promptly associated it with Theory Y framework management and called off its more radical attempts at decentralised, participative management approach. Sceptics argue that this behaviour confuses cause and effect, pointing out that the financial troubles could have been due to other reasons. They pointed out that the abandonment of such practices indicates that management never really accepted Theory Y. As Strauss (1963) aptly puts it, it appears that managerial concepts of work motivation are more tentative and flexible than suggested by Theory X and Theory Y, tending toward one or the other depending on the context and the people in question. In similar approach to that of McGregor, another dimension of the Behavioural approach to organisational theory is evident in interviews expressed by Argyris (1957). He concentrated on the very nature of psychological growth and human development. He emphasised the conflict between organisational demands and personal needs and argued that organisational structures are predominantly founded on Theory X concepts of human nature. He observed that Theory X concepts narrowly defined jobs thereby blocking further development of one's repertoire of competence and inhibits deep involvement in tasks. He pointed out that people still want to grow, but work organisations militate against it, leading to frustration.

Argyris believed that the eventual response to frustration is "regression" - people simply stop trying to grow and indeed revert to an earlier stage of psychological development. He argued that as the individual developed from childhood to adulthood, he experienced different personality needs. He outlined childhood characteristics as being: passive dependency on others, restricted behaviour patterns, erratic and shallow interests, short time perspective, subordinate results and little self-awareness. He pointed out that adulthood personality features included: Relative independence, variable behaviour patterns, boarder time perspectives, deeper interests, equal or superior status in respect of others, self-awareness and self-control. Argyris observed that the needs of the adult or mature personality clashed with the structures imposed on the individual by a formal organisation. He believed that the needs of healthy individuals tend to be incongruent with the maximum expression of the demands of the formal organisation.

Argyris (1960), a psychologist, in his writings showed concern for the well being of people working in organisations. He emphasised the concept of an ideal type of psychologically healthy individual. Such an individual predisposed toward relative independence, activeness, and use of their important abilities and control of their immediate work world. He criticised formal organisations run on traditional lines and emphasised that healthy organisations need healthy people and healthy people need healthy organisations, if they have to mature psychologically.

Argyris points out that organisational structures need to be modified and traditional hierarchies broken down in order to permit self-actualisation by individuals at their work place. These will pay-off in ensuring more responsible and psychologically healthier individuals. Argyris points out that such an approach attempts to break down barriers between individuals and encourages frankness and an open exchange of views thereby tempting us with the prospect of both higher productivity and a more contented and satisfied work force.

Indeed, Argyris (1964) claims that there is an inevitable compatibility between the way organisations have developed in the service of limited economic goals, and the natural development of a psychologically healthy individual, that is, there are severe human costs which outweigh the advantages of organisation structures designed for technical efficiency. It is evident that Argyris was doing more than sketching a theory of psychological growth; he was issuing a trenchant criticism of work organisations. Such criticism is apparent in contributions by Likert Lensis on the need to integrate organizational and individual needs to enhence performance.

Likert Lensis, a management theorist of the behavioural school, used extensive empirical research in business to develop a new pattern of management. Likert (1961) claims that with effective management, reliance is not placed solely or fundamentally on the economic motive of buying man's time and using control and authority as the organising and co-ordinating principle. He formulated the principle of supportive relationships which specified that all human interactions within the organisation should be supportive, and should build the individual's ego. He pointed out that highly motivated, co-operative orientation towards the organisation and its objectives is achieved by harnessing effectively all the major motivational forces.

In contradiction to Argyris, Likert was of the opinion that organisational objectives and personal needs of individuals were compatible. Likert's claims were based on similar basic assumptions about the nature of man as those of McGregor. He stated that the principle of supportive relationships, consequently, points to the necessity for an adequate degree of harmony between organisational objectives and the needs and desires of its individual members. Likert recommends group involvement in setting high performance goals and wide-spread participation in the decision making process.

It is significant to this study to note the emphasis on individual needs and organisational goals evident throughout the literature review of the Behavioural phase theorists. Though such approaches seem to have considerable appeal to the practicing manager, they still seem to rely on an over-generalised view of man. By assuming common motivational responses to management initiatives, they have failed to address themselves to the problem of explaining individual differences in the effort and performance between employees, for instance, in the same department.

In the review of literature, it is apparent that a set of relationships emerged. One set of relationship was observed between Maslow's higher order needs; McGregor's Theory Y assumptions; Herzberg's motivational factors; Argyris adult personality needs; tenets of Human relations theories of organisation and Likert's management principle of supportive relationships. A second set of relationship emerged between Maslow's lower level needs; McGregor's Theory X assumptions; Herzberg's hygiene factors; characteristics of Argyris' childhood personality type and classical elements of management.

This section of review of relevant literature examined the development of organisational theory through three phases: the scientific management, the Human relations and the Behavioural phases. It was suggested that emphasis was on the organisational objectives and the individual needs. These emphases were considered to be consistent with systems theory and were thus expected to characterise organisational climate, the subject of our next review of literature.

## The Concept of Organisational Climate

Drexler (1977) observes that, since first discussed in the late 1950s, the overall climate concept has been much scrutinised. Climate has tended to be employed as a descriptive concept unlike culture which has a prescriptive or normative slant. He points out that there has been a widespread lack of agreement emerging on the status of climate in overall models of organisations, or how the concept climate should be operationalized and measured. Dastmalchian; Blyton and Admson (1991) noted that designing a reliable measure of climate and charting its influence within diverse work contexts has proved complicated and time-consuming.

Indeed, Rousseau (1988) points out that one of the problems in the past has been the potential breadth of the climate concept, resulting in a lack of precision both in the concept itself and in the instruments used to measure it. Payne (1971 pp.143-4) stressed that, "far from obvious is the differentiation of climate from other common terms referring to what surrounds the individual such as environment, ecology, milieu, culture, atmosphere, situation, behaviour setting and conditions. What the term provides is a synthetic, molar concept instead of middle range theory".

The other problem, with regard to the concept, organisational climate, as pointed out by Glick (1985), is the controversial aggregating of individual perceptions of the concept which, they point out, lies at the heart of methodological debates on the future direction of research on organisational climate.

The problem of an adequate climate measure manifested itself in a study by Katz et al (1983), involving examination of the introduction of quality of work life (QWL) programme on Industrial Relations and Economic Performance in eighteen plants in a division of General Motors (GM) in the United States. They cite the problem of using information collected by management, namely, the tendency of supervisors and other managers to report an exaggerated positive climate.

Schneider; Parkinson and Buxton (1980), in a study on employee and customer perception of services in banks, pointed out that over the years, the organisational climate concept has been refined and as part of this a number of studies have investigated the validity of viewing organisations not as characterised by a single, all encompassing, but rather as several distinct climates attaching to different aspects of the organisation. Roberts; Hulin and Roussea (1988) argue that the use of aggregate data and concepts makes it more likely that interpreters will be confused and information lost. Indeed, James; Joyce and Slocum (1988) point out that aggregate concepts such as perceived organisational climate, by definition, have a degree of ambiguity attached to them.

However, Glick (1985), writing on conceptualising and measuring organisational and psychological climate, observes that there are clearly two well established positions by researchers with regard to organisational climate. He points out that they chose to subscribe to one of the perceived positions which holds that organisational climate is an aggregate concept and an organisational phenomena.

Drexler (1977) argued that an acceptable measure of climate is only obtainable where there is a relatively high level of agreement between the individual respondents. He observes that several writers on the subject do agree that the concept, climate, can be viewed as an intervening variable between organisational inputs and constraints on the one hand and individual behaviour on the other. This is qualified by Rousseau (1988) who emphasises that the impact of organisation and the characteristics on individual responses is mediated by individual perceptions of the situation.

However, according to Payne (1971), climate, by definition, has to be the perception and the cognitive interpretation of the individual in question, not a score taken from the perception of others and then regarded as an individual property. He points out that the climate score derived can only be used as an organisational property if convincing evidence is provided that shows some degree of shared perception between the respondents in each organisation.

The foregoing implies that there could be almost as many definitions of organisational climate as there are researchers in its study. An examination of typical examples of definitions may suffice.

As Rousseau (1988) points out, most writers see the concept, organisational climate, as a description of the general atmosphere prevailing in a workplace as perceived by organisational members. According to Owen (1970), the term climate is used to describe characteristics of the general administrative environment in which members of an organisation operated. This environment was created as a result of the policy and practices of the leaders and managers in the organisation.

Howard (1974), in a study on school climate improvement, defined climate as the aggregate of social and cultural conditions which influence individual behaviour in the school. However Hempton (1973) holds that the organisational climate in which employees work refers to the subjective perceptions held by individuals of such objective organisational realities as structure, standards, leadership and rules.

Wiggins and Lonsdale defined organisational climate from a behavioural point of view. Their definitions were consistent with, and directly relevant to, the emphasis on organisational goals and individuals needs. Wiggins (1969), in a paper he presented at the annual meeting of the American Educational Research Association, held that conceptually, organisational climate is that state of the organisation that results from the interaction that takes place between the organisation members as they fulfil their prescribed roles while satisfying their individual needs.

The concept of integration of organisational demands and personal needs is apparent in views presented by Lonsdale (1964). Referring to two dimensions that are synonymous with the nomothetic and idiographic dimensions, he defined organisational climate as the global assessment of the interaction between the task achievement dimension and the needs satisfaction dimension within the organisation, or, in other words, the extent of the task-needs integration.

As Dastmalchian et al (1991) aptly puts it, pursuing climate and its relationships has given us the opportunity to re-examine the notion of climate and its implications for organisational change and human resource management, and to contribute to the current theoretical debates on climate and related subjects such as organisational culture. To this end, James (1982) holds that to improve our understanding and measurement of the climate variable, it would be necessary to adopt a more systematic approach to concepts construction. Indeed the foregoing illustrates the significance of developing an instrument to measure organisational climate to enhance research into the nature and influence of organisational systems on management.

### Likert's Organisational Systems of Management

Owens (1970) points out that in the late 1950s and early 1960s, research on organisational climate was given impetus by the development of two instruments designed to measure climate, namely, Halpin and Croft's organisational climate description questionnaire (OCDQ) and Stern and Steinhoff's Organisational Climate Index (OCI). The OCDQ, developed by Halpin and Croft (1963) was used to describe an organisation's climate by locating it on an open-closed continuum, comprising six climates ranked sequentially; thus: open, autonomous, controlled, familiar, paternal and closed. Stern (1963) developed two questionnaires, in an attempt to assess the climate of colleges, which were used to measure the "needs" of individuals and the "press" of the organisation. Steinhoff and stern adopted the instruments in order to develop the Organisational Climate Index (OCI).

Steinhoff (1965) identified two dimensions of organisational climate, namely, development press and control press. Development press was described as the capacity of an organisational environment to support, satisfy, or reward self-actualising behaviour. Control press was described as those characteristics of the environmental press which inhibit or restrict personal expressiveness. Stern (1963) points out that OCDQ was designed for elementary schools. Doubt was cast on its validity with respect to utilising it in secondary schools, and, in particular, in large secondary schools.

An effective instrument to measure organisational behaviour in schools, the profile of a school questionnaire, was developed by Likert and his wife, in 1968. The profile was designed to measure perceived individual behaviour in an organisational setting. The organisational profile of a school is a topological description of the organisational process in a specific school as reflected by the mean score for each process measured in the profile of a school questionnaire. It was formulated on the basis of Likert's management system model in which the concepts of social systems theory, of the behavioural approach to organisations, and of the interaction-behavioural theory of leadership were interwoven.

Likert designed the profile of a school questionnaire to locate an organisation in a continuum in which four systems of management have been arranged sequentially, thus: Exploitive-authoritative (System 1) through Benevolent-authoritative (System 2) and consultative (System 3) to participative group (System 4). Gauthier (1975) described the chararistics of each of the four climates or systems as follows: System 1 (Exploitive-Authoritative): Formal Hierarchical structure, pressure to conform, decisions made at top, people must be forced to work, punitive climate, communication flows downwards.

System 2 (Benevolent-authoritative): Hierarchical structure, a little less coercion than in System 1, persons allowed to make token decisions, paternal leadership, basic needs of workers concerning economic and safety needs are met, communication mostly downwards. System 3 (Consultative): Structure less pyramidal, members are consulted but don't have final authority, some attempts made to satisfy higher needs of workers related to autonomy and self-esteem, communication both downward and upward. System 4 (participtive group): Organic structure, interaction.... every attempt made to integrate the needs of the individual with those of the organisation, individuals involved in important decisions and policy making, attempts to satisfy higher and emotional needs of esteem and self-actualisation, communication flows freely in all directions allowing systems to adapt quickly.

Likert's organisational system of management can be used to describe the organisational climate of a school and locate the school on an authoritative-participate continuum. Likert emphasised that on the basis of studies in a number of schools, system 4 (participate group) is as effective in educational institutions as it is in business organisations.

In a study of organisational relationships in two select secondary schools, Ferris (1965) found that in the few schools recognised as excellent, administrative systems of system 4 (participate group) type were practised. In a study on co-operative decision making, Lepkowski (1970) found that teachers perceived decision-making and communication to be better in schools in which principals behaved supportively than in schools in which less supportive behaviour was displayed.

Though Likert's approaches to organisational management seem to have had considerable appeal to the practising manager of the sixties, they still seem to rely on an over-generalised view of man. By assuming common motivational responses to management initiatives, they, too, have failed to address themselves to the problem of explaining individual differences in effort and performance between employees in the same department and are certainly inadequate to explain the results of the Luton studies of Goldthorpe et al (1968).

Gauthier (1975) described Likert's theory as an interaction-influence theory which is primarily concerned with interacting human needs with those of the organisation. According to Likert's theory, the human organisation should be an integrated, internally consistent management system, based on a structure of overlapping work groups. Likert sought to assess an organisation in terms of organisational processes which constituted the six dimensions or processes measured in the profile of a school questionnaire. The six organisational processes are: Leadership, Communication, Interaction, Decision-making, Goal setting and Motivation. Likert described the ideal organisation in terms of the six organisational processes, thus:

### 1. Leadership:

Leadership within an organisation should be based on the principle of supportive relationships. This requires the leadership and other processes of organisation to ensure certainty that in all interactions and relationships with the organisation, each member will view the experience as supportive and one which builds and maintains his/her sense of personal worth and importance. Likert holds that the application of the principal of supportive relationships enables individuals to feel valued and respected, leading to the fostering of mutual confidence and trust.

### 2. Communication

Likert holds that vertical and horizontal channels should be employed to permit a free initiation and movement of relevant information in all directions and levels as a result of which accurate data are available at all levels in the organisation as a basis for effective decision making.

### 3. Interaction

Interaction between individuals and groups in the organisation should be friendly and supportive. Likert points out that through such interaction, individuals express a high degree of confidence and mutual trust and feel that they are able to exercise control and influence. Groups and individuals are not isolated but are mutually interdependent and continuously interact with each other.

### 4. Decision making

Decisions should be made at all levels by members in the organisation on a group basis. Likert observes that this leads to the integration of contributions by members of overlapping work groups and ensures that co-operation is fostered and motivation is increased.

### 5. Goal setting

According to Likert, individuals in work groups should work together in establishing goals which are fully accepted by members of the organisation. He argues that this leads to a strong commitment towards the achievement of organisational goals.

### 6. Motivation

When members of the organisation belong to a workgroup, interacts with others on a friendly basis, are involved in decision-making and goal setting and receive support and encouragement from leaders, they experience a sense of satisfaction and self-actualisation. Likert observes that such members commit themselves enthusiastically to their tasks and in the process find fulfillment of their personal needs.

## Studies and Research findings related to the study

While pointing out that leadership in Kenyan and Nigerian secondary schools was authoritative and even autocratic in their administrative tendencies, Mbae (1994) abhores top-bottom unidirectional flow of communication, pointing out that lack of participative practice in schools may encourage environments that are not conducive for the teaching learning process. McCormick (1980) points out that the participatory decision-making theory postulates that in an organizational setting, it is the group, more than an individual that is of real use to the administration of the organization. The theory advocates the humanization of working conditions in an organization and calls for the replacement of authority with the concept of acceptance and the replacement of power with persuasion and participation.

In support of participative organizational practice, Blackmore (1989) argues for leadership that would involve a move away from notions of power and control over others towards a leadership defined as the ability to act with others. Blackmore points out that leadership should be at the center of a group rather than at a hierarchical distance from it. This would encourage caring and reciprocal relations to be at the heart of organizational culture, and hold out the possibility that schools might become fully human communities. He points out that the cultural practice of hierarchical and autocratic leadership and of management as the imposition of social control is an impediment to the realization of the ideal type of school leadership; one with established democratic forms of decision making in which the hierarchical position of the headteacher was minimized.

In supporting participative organizational practice in schools, Caldwell and Spinks (1988) argue that the most effective schools, like the most successful business corporations, involve the use of collaborative styles of management, which provide for the appropriate involvement of teachers, parents and students in an on-going management process of goal-setting, need identification, policy making, planning, budgeting, implementing and evaluating. The focus is on programmes for students and the effective and efficient allocation of resources to support learning and teaching. This approach is likely to motivate teachers and students and tempt them into achieving high performance levels.

In distinguishing the characteristics of Likert's four systems or climates of management, Gauthier (1975) observes that Likert favours system 4 (participate group), which is an organic structure that recommends group involvement in setting high performance goals and widespread participation in the decision making and policy-making processes. The system emphasises integration of individual and organizational needs, satisfaction of higher and emotional needs of esteem and self-actualization and free flow of communication in all directions.

The significance of organizational leadership and organizational climate on performance is underscored by Owens (1970) and Hempton(1973). Owens (1970) points out that organizational leadership is a critical determinant of organizational climate while Hempton (1973) observes that organizational climate influences worker motivation; which has the effect of improving the performance level of organizational members. Indeed, Group involvement and wide-spread participation in decision-making and policy-making processes enhances the motivation of members of the organization. Bacharach and Mitchell (1983) hold the position that the quality of work life should be maintained or improved because it is important in its own right and because there is an implicit assumption that satisfied workers will perform better than dissatisfied workers.

Indeed, a study by Benson (1983) shows that on the basis of the kind of leadership adopted by the principal, faculty members who perceive their schools to be bureaucratically run were more disastisfied and willing to leave, than those who perceived their schools to be less bureaucratic. In another study by Calvery (1975), to investigate the relationship between the degree of bureaucratic structure and organizational climate of selected public elementary schools, in the state of Mississippi, it was found that there were significant relationships between the degree of bureaucratic structure and the organizational climate of the schools. The degree of bureaucratic organization significantly predicts the degree of closedness (authoritative climate) of a school. Closed climates affect the Morale and job satisfaction of employees and their subsequent performance.

Study findings by Weiser (974) to investigate the relationship between organizational climate and teacher morale in four secondary schools in Louisiana, also revealed a significant relationship between climate and teacher morale. The study indicated that teachers who perceived the climate to be open (participative) scored high on teacher morale and those who perceived the climate to be closed (authoritative) scored low on teacher morale.

In another study, Craig (1979) sought to investigate the possible relationships of organizational climate, leader behavior and job satisfaction. It was found that teachers in open (participative) climates had higher mean scores for teacher job satisfaction than did the teachers identified in schools of closed (authoritative) climates. Teachers in open (participative) climates identified creativity, moral values and social service as important aspects of job satisfaction while teachers in closed (authoritative) climates identified ability, social service and moral values as important aspects of job satisfaction.

The relationship between performance and climate at the work place is apparent in a study by Indick; Georgopoulos and Seashore (1961) on superior – Subordinate relationships and performance. It was reported that high levels of group performance were associated with participative climate which emphasized supervisor's supportiveness, open communication, mutual understanding and worker autonomy on the job.

Although these studies were carried out in different cultural settings, the question of transferability of cross-cultural issues was addressed by Barrett and Bass (1976) who concluded that despite the difficulties in adapting and using westernized tests on other cultures, the evidence is clear that these tests can be used effectively for selection and prediction – even in underdeveloped countries. Indeed, Morris (1956), in a cross cultural study spanning six national cultures, reported that intricate but direct relationships were found between the values and institutional structure and behaviours.

Studies indicate that schools that are characterised by authoritative climates don't experience true participatory decision-making and free flow of communication in all directions as a prerequisite for integrating individual and organisational needs. Langston (1978) however points out that school administrators can indeed use participation as an instrument to achieve their own ends other than improving performance in sciences.

The kind of repressive climates that can be experienced in schools are best depicted in a study by Johnson (1970) in which he equates them to prisons and mental hospitals in the sense that sub-groups of the population lack voluntary and uncoaxed commitment to the institution. In this case study, Principals were found to be out of touch, insensitive to individual needs and resentful to any encroachment on the power from which they have traditionally operated. Such repressive climates tend to affect the morale of staff of a school and its performance.

A study by Keller and Andrews (1963) indicated strong statistical support to the hypothesis that leader behaviours of the principals was significantly related to the productivity of the schools. They reported that the weight of evidence supported the hypothesis that the morale of the staff of a school was related to productivity. A study was undertaken by Gerbine (1991) to explore the conditions under which teachers' level of involvement in decision-making process was associated positively with their satisfaction with decision-making process and job satisfaction in general. The results of the study, involving 300 teachers in 80 schools in upstate New York, indicated that majority of teachers did not experience true participatory decision-making. They preferred higher autonomy, earlier involvement and a great deal more influence.

Following the upstate New York studies, it was concluded that it is possible that teacher participation in shared decision-making had not yet reached a sufficient threshold where it could be expected to impact job satisfaction of teachers. It was recommended that involvement in managerial and not technical decisions might have the greatest potential for increasing job satisfaction of teachers. It is, indeed, as earlier pointed out, assumed, implicitly, that job satisfaction impacts positively on performance.

Robbinson (1975) involved a faculty and eight independent schools in studying the effects of authoritarianism, competition, reward and punishment on the psychological climate of schools. It was held that "climate" of a school is an important factor in an evaluation of the school's effectiveness. Roughly, akin to human personality, school climate is difficult to define and is often equated to such concepts as "openness" or "morale" or "Authenticity". It was found from the study that a "closed" climate correlated significantly with authoritarianism. High authoritariansm leads to high reward/punishment contingencies which in turn generate high competition. Results indicated that administrators tend to regard the organisational climate of their schools as more open than do their faculties.

It is possible, from these findings that administrators can persue authoritative and even autocratic tendencies leading to repressive climates if not checked. This will negatively affect the morale and job satisfaction of the school staff and hence the performance of the school. It can be argued that school administrators should be subjected to accountability with regard to classroom instruction. Grounlund (1974) points out that such accountability is limited to situations where the professional staff, the school board, and others responsible for the operations of the school are held directly accountable for the success of the school programme.

A study by Menconi (1991) to examine the relationship between school-community partnerships and the climate of an elementary school found that as the involvement of school – community partnership increased, faculty perceived the climate of the school to become more open and conducive to learning. It was concluded that the climate of the school could be enhanced through the use of community partnerships working in concert with the goals and objectives established by the school.

As powers et al (1984) aptly put it, the school is society's main point of enculturation and its desires should be reflected in the school. An open (participative) climate will enhance partnership between school and society/community in decision-making process. This position is shared by Kanjubi (1966) who points out that schools don't operate in vacuum and can't thus be divorced from the morals of the culture in which it is involved. Indeed, traditional societies/ communities highly valued group based decision-making. This is alluded to by Ingrid (1982) who points out that in the 1950s, there was widespread conviction that school administration was authoritarian, and was resistant to change and innovation. This triggered inquiry into the nature and practice of educational administration, leading to the quest for democracy in education.

According to Katz and Khan (1969), democratisation of organisations referes to the extent to which all members share in its accountability and administrative processes. In effect, this calls for leadership style that enhances an open (participative) and accessible administrative process to all its members.

Indeed, a study by Gibbon (1976) on the relationship between leadership style of principals and the organisational climate in secondary schools, in cape province of south Africa, found statistically significant relationships between leadership style of principals and the organisational climate in secondary schools. With regard to integration of individual needs and organisational needs, principals in schools with participative climates scored higher than principals in schools with authoritative climate.

The study found significant relationships between the selected principals' demographic variables and school climate, and between selected school variables and school climate. Schools with principals in the 30-39 year age group and 50-59 year age group were more participative (High organisational climate score) than schools with principals in the 40-49 year age group. Schools with male principals were more open (participative) than schools with female principals. With regard to school size, schools with enrolments of 601-800 were found to be more participative than schools with an enrolment of 401-600. Results of this study indicated significant differences in school organisational climate as a function of the age and sex of principals, and the size of school enrolment.

A study by Sisson (1979) to investigate the perceptions and the relationship between selected characteristics of principals, teachers and school relative to organisational climate, found significant differences between principals' and teachers' perceptions of school climates. Principals perceived the organisational climate of their schools to be significantly more open (participative) than teachers perceived it to be. The study found significant differences in school organisational climate as a function of the experience of principals. Principals in more open (participative) climate schools had significantly longer tenure (experience) in present schools than principals in less open (authoritative) climate schools.

A similar study on leadership behaviour and styles of secondary school principals in Nairobi province by Asunda (1983) reported significant differences in school organisational climate as a function of sex of principals and size of school enrolment. Schools with female principals were perceived to be autocratic (authoritative climate). Schools with large enrollments were perceived to be democratic (participative climate) while those with small enrolments were perceived to be autocratic (authoritative climate). These study findings tend to agree with previous results of a study by Gibbon (1976) on school climate as it relates to the principal's age and school size.

A study on teacher perceptions of the principals' role in establishing teacher morale by Khahil (1962), found significant factors in improving teachers' morale. These factors include: the personal qualities of the principal, effective communication to and from the teachers, teacher participation in policy formulation and decision-making and supportive behaviour on the part of the principal. Khahil points out that, it has been argued that the behaviour of the principal seemed crucial with respect to school climate, that the nature of school climate was a major responsibility of the principal and that principals are the major designers of the school organisational climate.

It has been emphasised from findings of these studies that the principal's major task is to create conditions within which the staff in the school can meet its organisational responsibilities while maximising personal development. This will provide teachers with an organisational environment that is personally enriching and satisfying, and at the same time, productive for the organisation.

Similar findings were reported by Stogdill (1974) who carried out an exhaustive survey of the theory on the relationship between leadership behaviour and productivity and reported that when teachers and principals are described high in consideration and initiation of structure, their students tend to make high scores on tests of school achievement. Indeed in a study reported by Halpin (1966) it was also observed that effective leadership is characterised by high initiation of structure and high consideration. He described initiating structure as referring to the leader's behaviour in delineating the relationship between himself and members of the work-group, and endeavouring to establish well defined patterns of organisation, channels of communication and methods of procedure. Consideration refers to behaviour indicative of friendship, mutual trust, respect and warmth in the relationship between the leader and members of staff.

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In a study on school organisation and management, English (1975) postulated that under a punitive value system, the organisational climate would be closed, hostile, suspicious, fear-laden and rule-oriented. A trusting, open, flexible climate would exist under humanistic value system.

It has indeed been argued that organisational climate influences the motivational tendencies of workers. The nature of school climate influences the motivation of school staff and manifests itself in student achievement. A study by Saha (1983) on social structure and teacher effects on academic achievement, found that teacher behaviour and attitudes were important variables in accounting for student achievement. Teacher expectations of students, teaching methods and the conditions surrounding the school and teachers were found to be important in accounting for variations in student achievement.

Emphasis on factors that influence organisational climate is thus crucial to school leadership. A study by Gauthier (1975) on the relationship between organisational structure, principal/leader behaviour, personality orientation and school climate, found a significant relationship between leader behaviour and school climate. Principals with high scores on behaviour sub-scales of integration, consideration and tolerance of freedom also had high scores in school climate. This was assumed to be indicative of greater motivation and performance.

In another study by Farber (1968), to examine the relationship between biographic characteristics of principals and teachers and school-community climate, no significant relationship between sex of teachers or principals and school climate was found. With regard to school size and student achievement, Stakelenburg (1991) examined the relationship between high school size and achievement and concluded that school size alone does not determine the student academic achievement. A similar study by Sorum (1973) indicated that with respect to school size, teachers in secondary schools with an enrolment of more than 500 students, perceived the climate to be more favourable than in other schools. A related study by Bidwell (1965) indicated that school size and organisational complexity tended to generate bureaucratic tendencies.

Although the foregoing study findings indicate that there is a complex set of factors which determine students' performance, there is overwhelming inclination, as pointed out by Torrington and Weightman (1989) towards participative style of implementation of decisions that creates a sense of ownership of the "how" of innovation even if there is no sense of ownership of the "what". This will cultivate an open climate characterised by responsibility, support and team spirit.

In a school situation, the principal should attempt to play a supportive role rather than an authoritative one so as to further the growth of the subordinate through increased competence, full acceptance of responsibility (self-direction and self-control), and ability to achieve integration between organisational requirements and own personal goals. By so doing, the subordinate is encouraged to take responsibility for his own performance. Indeed, teachers will own the outcome of performance results.

However, as pointed out by Bateman (1991), though groups are powerful forces in organisational affairs, whatever the group's talents, its ultimate contributions will be largely determined by its leadership. Leadership fine-tunes group structure and transforms the potential energy of a cohesive group into the kinetic energy of a dynamic constructive force. Leadership can thus be utilised to nurture school climate that facilitates science teaching - learning process; one that establishes teacher morale, encourages subordinate ownership of innovation and facilitates creativity and discovery learning.

A study by Heyneman (1979) compared results from Uganda and more industrialised countries and found that school and teacher variables are more important in explaining variations in student achievement in developing countries. It was found that the more developed or industrialised a society is, the more school achievement is apt to be affected by students' socio-economic environment and other out-of-school influences.

In a report by Hussein; Saha and Noonan (1978), for the world bank, on teacher training and student achievement in less developed countries and on school-teacher variables in less developed countries, it was indicated that the overall pattern of relationships suggest that teacher variables exert positive effects on student achievement. Indeed, study findings tend to suggest that teacher variables are crucial in student achievement. In particular, achievement in sciences is influenced by the motivational tendencies of both teachers and students.

In a study by Kelly (1978) on sex differences in science achievement, it was observed that student motivational orientation is a product of social-psychological influences in the home and school environments and is associated to science achievement. Science experiences of students is a function of the home and the school environments. The home environment is influenced by the exposure to science related experiences and the extent of family encouragement. The school environment is influenced by the science teaching resources and effectiveness of the teacher in using such resources, and in active participation in extra-curricular science activities such as science clubs and societies.

The study findings indicate that third world homes have low educational motivation and the school influence overweighs the home influence in this respect. This brings to focus the nature of school environments and their ability to facilitate the science teaching-learning process. This is against the background that education in third world remains traditionalist, academic, severely hierarchical, highly formalised and examination oriented. This structure fits in well with Likert's management system I (Exploitative-authoritative) and may inhibit creativity and innovation that is significant in science teaching-learning process.

As Bowers (1969) points out, studies of individual companies over several years show that as the management system shifts from a lower to a higher number, performance of the organisation improves. Specifically, system 4 (participative group) appears to be consistently associated with more effective performance, and System 1 with less effective performance. System 4 management may accommodate a contention by Hurd (1969), that contemporary science educators have expressed the view that students should be provided with the opportunity to engage in processes of investigation and inquiry, and, therein lies the uniqueness of the laboratory.

A research on science teaching by Shulman and Tamir (1973) indicates that due to the stress on the process of science and the emphasis on the development of higher cognitive skills, the laboratory acquired a central role, not just as a place for demonstration and confirmation, but as a core of the science learning process. They have proposed a classification of goals for laboratory instruction in science education thus: (a) to arouse and maintain interest, attitude, satisfaction, open mindedness and curiosity in sciences (b) to develop creative thinking and problem solving ability (c) to promote aspects of scientific thinking and the scientific method such as formulating hypotheses and making assumptions (d) to develop the practical abilities such as designing and executing investigations, observations, recording data and analysing and interpreting results (e) to develop conceptual understanding and intellectual ability.

Several factors may affect the realisation of laboratory goals, such as teaching behaviour and availability of resources such as apparatus, materials and laboratory manuals. According to Ausubel (1968), the laboratory gives the students appreciation of the spirit and method of science; promotes problem solving, analytic and generalisation ability; and provides students with some understanding of the nature of science. Since research findings indicate significant relationships between teacher and school variables and science achievement, school leadership should focus on the nature of school climate that enhances teacher morale and encourages deductive-oriented teachers who can teach practical work authoritatively.

Indeed, a research carried out by Steinkamp and Maehr (1983) on science achievement indicated that science achievement and motivational orientation towards science are most directly affected by teacher characteristics and behaviour and by student science experiences acquired from out-of-school and within-school conditions. The study observed that in traditional learning, it is the teacher characteristics and behaviour that influence student science experiences, not vice versa, particularly in school settings where the teacher is at the centre of most science activities, both in class and during extra curricular activities. Since experiential learning is a composite term that is used to indicate instructional methods that employ the use of activities, concrete manipulation or other forms of direct sensory experience to facilitate instruction, it follows that conducive classroom environment supplements effectiveness of most instructional methods.

With regard to the science teaching-learning process, many research studies have been conducted, comparing effectiveness of laboratory centred learning and other methods of instruction. A research on ability and science learning by Boulanger (1981) found that it was systematic innovations in instructions which was found to produce positive improvements over the norm or traditional practice. The study points out that teaching techniques in third world is mainly fact-giving, emphasising rot learning and minimal student activity. The research findings indicate that the effectiveness of instructional system is modeled to a significant degree by teacher variables such as teacher convictions, use of pre-instructional strategies, instructional techniques and conducive classroom environment. It was concluded that the most consistent finding was that teachers who used more of the conventional instructional approaches as a blend with experiential components experienced superior performance than those who used either method alone. The organizational climate of a school, thus, largely determines the required conducive environment for the science teaching-learning process.

In presenting a paper on differential access to education in Kenya, Achola (1978) points out that considering the school science teaching-learning process, the laboratory has for long been given a central and distinctive role in education. He however pointed out that most of these research studies showed no significant differences between the instructional methods as measured by the standard paper-and-pen tests in student achievement, attitude, critical thinking and in knowledge of the process of science.

Research on the role of the laboratory in secondary school science progress by Bates (1978) indicated that many studies comparing the effects of laboratory learning with more conventional forms of instruction have resulted in non significant differences. Some science educators have thus been prompted to question the value of the laboratory. In arguing their case against extensive student laboratory work, they point out that: some teachers in secondary school are incompetent in effective laboratory use; too much emphasis on laboratory activity leads to a narrow perception of science; many experiments performed in school laboratories are trivial and that laboratory work in schools is often remote and unrelated to the capabilities and interests of the student.

Indeed, these study findings and observations tend to give credence to findings by Boulanger (1981) indicating that a blend between conventional and experiential approaches, under conducive classroom environment, experiences superior performance than either method used alone.

Given that teacher and student motivation is crucial in the science teaching-learning process, emphasis should be placed on the organisational participative style of implementation of educational changes that creates a sense of teacher and student ownership of innovation in the science teaching-learning process.

This is reported in a study by Dickson (1975) which compared student achievement and attitude change toward science, resulting from three different teaching approaches, namely: lecture only; lecture-laboratory and lecture-recitation. Results from the study suggested that students benefit when they experience a personal involvement. It was concluded from the study findings that students achieve more and indicate a more favourable change attitude toward science upon completion of the lecture-laboratory course than do students completing the lecture only course or lecture-citation course.

Teachers who are motivated and inclined towards the lecture-laboratory approach may thus enable students achieve maximum benefit from the experience in the science teaching- learning process. Indeed the school principal has been cited as most influential in motivating teachers through encouraging conducive school teaching – learning climate that can supplement effective instructional method that is required particularly in science teaching – learning process.

## Conceptual framework

The conceptual framework of this study is based on the effect of (i) the principal's demographic variables and (ii) the school variables on school organisational climate and its influence on the performance in sciences in public secondary schools as presented in Table 2.

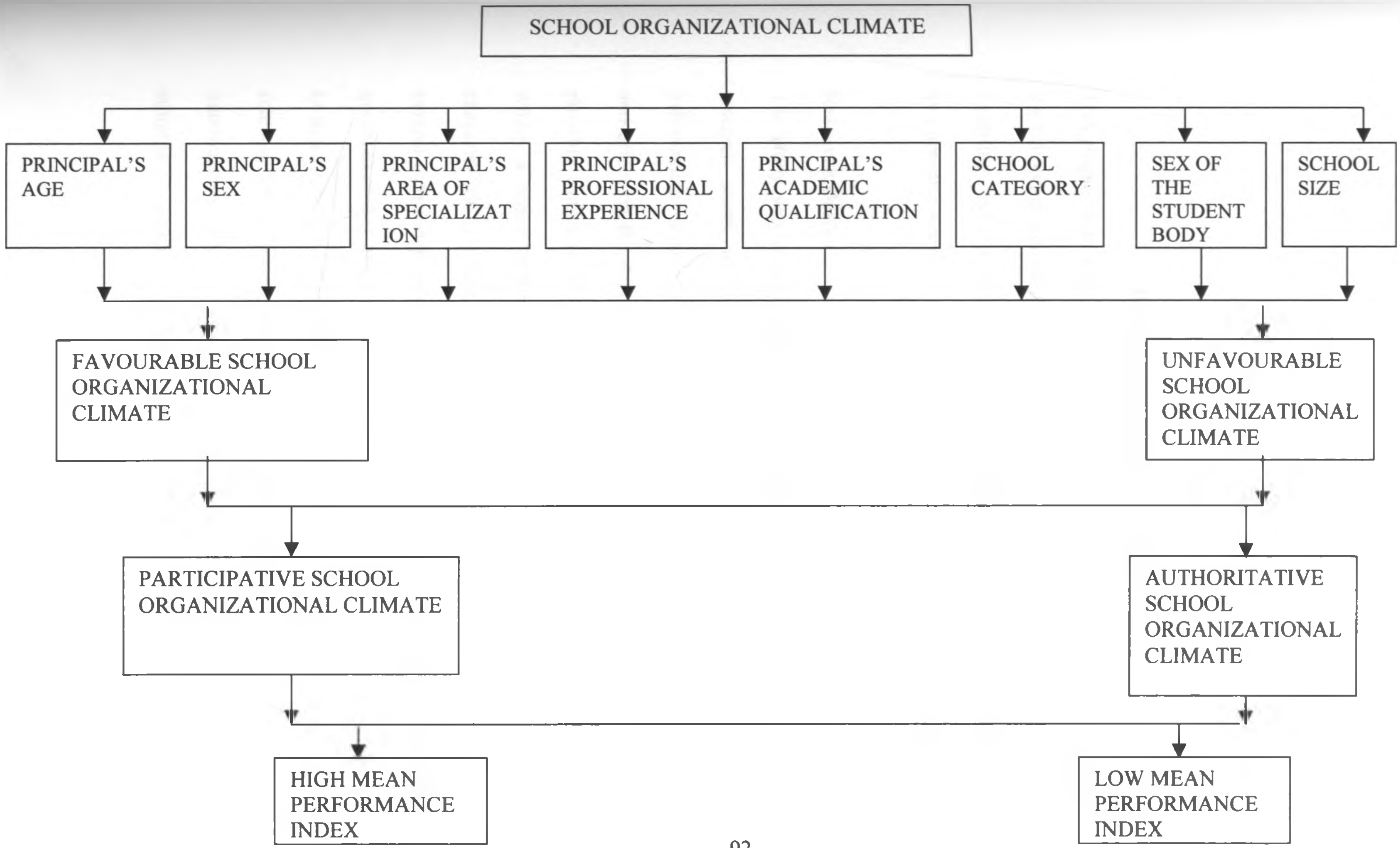
The principal's selected demographic variables are:

(a) age
(b) sex
(c) area of specialization
(d) professional experience and
(e) academic qualification.

The school selected variables are:

(a) category
(b) sex of the student body
(c) size.

Table 2: Conceptual framework on the effect of school organizational climate on the performance in sciences in public secondary schools in Nairobi Province.


SCHOOL ORGANIZATIONAL CLIMATE
PRINCIPAL'S AGE
PRINCIPAL'S SEX
PRINCIPAL'S AREA OF SPECIALIZATION
PRINCIPAL'S PROFESSIONAL EXPERIENCE
PRINCIPAL'S ACADEMIC QUALIFICATION
SCHOOL CATEGORY
SEX OF THE STUDENT BODY
SCHOOL SIZE
FAVOURABLE SCHOOL ORGANIZATIONAL CLIMATE
UNFAVOURABLE SCHOOL ORGANIZATIONAL CLIMATE
PARTICIPATIVE SCHOOL ORGANIZATIONAL CLIMATE
AUTHORITATIVE SCHOOL ORGANIZATIONAL CLIMATE
HIGH MEAN PERFORMANCE INDEX
LOW MEAN PERFORMANCE INDEX

# CHAPTER THREE

## RESEARCH METHODOLOGY

This chapter outlines the methodology used in the study and is organised along the following sub-headings: Research design; Target population; Sample and sampling procedure; Research instruments; Pre-testing the Research instruments; Administration of instruments and Data analysis techniques.

### Research Design

The study was conducted using an Ex Post Facto design. In this design, research starts with observation of dependent variables and then the independent variables are studied in retrospect for their possible relationship to and effect on the dependent variables. The design attempts to discover the possible causes of the phenomenon under study by comparing subjects in whom a characteristic is present with those similar ones in whom the characteristic is absent or is to a lesser degree. The researcher has no direct control over independent variables because their manifestations have already occurred or they are not manipulable, Kerlinger (1973).

In this study, school organisational climate and student performance index in sciences have already occurred and demographic variables are not manipulable. The Ex post facto design has been recommended as the most suitable in educational and social science research since many research problems in social and educational research do not lend themselves to experimental inquiry.

### Target population

The population of the study, according to the Ministry of Education (2002) statistics consists of 47 public secondary schools, comprising: 35 day schools, 11 boarding schools and 1 boarding and day school in Nairobi Province. There were 47 principals, compromising 27 females and 20 males, and 2437 teachers targeted in the study.

### Sample and sampling procedure

Sample size was determined using Krejcie and Morgan (1970) table for determining sample size from a given population. 40 public secondary schools were selected for study.

There were 8 schools selected for pilot study and did not participate in the main study, as follows: 1 boarding and day school, 4 day schools and 3 boarding schools. Stratified random sampling was used to select schools for study comprising 26 day schools and 6 boarding schools. There were 8 teachers from each participating school randomly selected to respond to the Teachers' Questionnaire. This was considered an appropriate number to reflect the perceived mean Organisational climate of a school.

Teachers and principals who had served for less that 1 year in a school were considered not eligible for participation in the study, as they were considered to have insufficient exposure in their schools. For instance, 2 of the principals who had been considered eligible for study in the main study were cross transferred during the research. They were thus considered not eligible to participate in their new schools. There were thus 30 principals that were considered eligible to participate in the main study compromising 17 female and 13 male principals. The number of teachers selected to participate in the main study was 240 compromising 178 female and 62 male.

### Research Instruments

A questionnaire was selected as the instrument of the study. Sax (1968) has described a questionnaire as a means of eliciting the feelings, beliefs, experiences or attitudes of some sample of individuals. In preferring the questionnaire to the interview, an economy in time and expenditure was effected.

Two instruments were used in the study: The Principals' Questionnaire (PQ) and the Teachers' Questionnaire (TQ). The Principals' Questionnaire had two parts. Part I had five items on the principals' demographic variables of age, sex, area of specialization, professional experience, academic qualifications, and three items on school variables of category, sex of the student body and size. Part II consisted of two structured open-ended questions to elicit responses from the principal on organizational problems encountered and their resolutions.

The Teachers' Questionnaire consisted of three parts. Part I consisted of five items on the teachers' demographic variables of age, sex, area of specialization, professional experience and academic qualifications. Part II consisted of a 30-item profile of a school questionnaire used to report the teachers' perceptions of the organisational climate of the school in which they served. The profile was developed by Rensis Likert and his wife and was derived from instruments initially designed for use in industry and commerce (Likert, 1967).

The 30-items comprised five items for each of the six organisational processes measured as sub-scales, namely: Leadership, Motivation, Communication, Interaction, Decision making and Goal setting. A four point Likert type scale, based on Likert's profile of a school questionnaire was adopted.

The responses to 15 items ranged from the Authoritative system 1 management type through the participative system 4 management type. The responses to 15 other items were given in reverse order and ranged from the participative system 4 to the Authoritative System I management type (see Appendix C). This was to ensure respondents did not develop a fixed response pattern. Respondents were to select one of the four responses for each item that best described their school. The mean performance index (MPI) in sciences over a five year period (1996-2000) was obtained from the Kenya National Examinations Council (KNEC).

**Pre-testing the Research Instruments.**

Mulusa (1988) points out that the purpose of pre-testing is to assess the clarity of the instrument items, their validity and reliability as well as the suitability of the language used. During pilot study each questionnaire item was discussed with respondents to ensure that all items were correctly worded and were not subjected to misinterpretation before being administered in the main study.

Instrument validity refers to the degree to which the instrument measures the construct under investigation. Validity of research instruments was supported by results of previous studies. The manual for use of this instrument, namely, the Likert profile of a school: Manual for questionnaire use (Ann Arbor, Michigan: Rensis Likert Associates, (1972) pp VI-2 to 10, included reports of fourteen studies that yielded results supportive of the validity of various forms of the school profile.

Instrument reliability refers to the degree to which the test measures what it is supposed to measure consistently. The performance index of all public secondary schools is based on a standard test, set and administered at the same time by the Kenya National Examinations Council. The KCSE performance data was obtained from the Kenya National Examinations Council and was thus considered reliable. Split-half technique was used to determine instrument reliability during the pilot study. Roscoe (1969) points out that split-half technique involves splitting items into halves (odd and even items) and then calculating the correlation coefficient (r) between the scores. This measures the degree of association between the scores of the two halves of the test. To obtain the reliability coefficient of the instrument (Re), spearman Brown prophecy formula was used.

The pearson product moment coefficient of correlation (r) is given by:

$$r = \frac{n\Sigma XY - \Sigma X \Sigma Y}{\sqrt{[n\Sigma X^2 - (\Sigma X)^2][n\Sigma Y^2 - (\Sigma Y)^2]}}$$

Where:

$\Sigma X$= **Sum of even scores**

$\Sigma Y$= **Sum of odd scores**

Spearman Brown prophecy formula is given by:

$$Re = \frac{2r}{1+r}$$

Where:

**Re** shows the extent to which the two halves of the test are equivalent or consistent in terms of its items. Split-half corrected reliability coefficient (Re) was found to be 0.92. Reliability coefficient varies from 0.00 to 1.00, with 0.00 showing no consistence and 1.00 showing perfect consistence. Reliability coefficients above 0.86 generally reflect a good consistence, Likert (1967).

### Administration of instruments

Research permit for the study was sought and approved by the Permanent Secretary, Ministry of Education, and the Nairobi Provincial Director of Education. The list of names of schools and their location was provided by the Nairobi Provincial Director of Education. The administration of instruments was done in two stages: the pilot study and the main study. The researcher visited the selected schools for the study and requested the principals and randomly selected teachers to participate in the study.

The researcher assured respondents of confidentiality by ensuring that at no point would the names of schools or participants appear anywhere in the administration of the instrument or in the final report on the study.

The researcher collected completed questionnaires in sealed envelopes in a weeks time. A caution emphasized in the Likert profile of a school manual points out that the accuracy of the measurements with the Likert profile Questionnaire is dependent upon strictly observed assurances of anonymity of the respondents.

The KCSE performance index in sciences utilized in the study was obtained from the Kenya National Examinations Council.

### Data analysis techniques

The main techniques utilized in the analysis of data to determine whether or not to accept or reject each null hypothesis were: Pearson Correlation analysis, Analysis of variance and student's t-tests. The null hypotheses were analysed using the Statistical Package for Social Sciences (SPSS) programme. The level of significance for the study was set at 0.05 level of confidence.

It is established that 'means' are the most stable measures of central tendency. The means were thus used to compute correlation tests, standard deviations and t-tests. The mean organisational climate for each school, which represented the score for individual principals, and the mean for all schools that participated in the study, which represented the population score, were computed. The mean KCSE performance index in sciences for each school and for all schools that participated in the study was computed, based on a five year period, from 1996 to 2000.

Pearson product moment correlation coefficients were utilized to test the strength of association between the variables. Correlation coefficients range from +1.00 to - 1.00. A coefficient of +1.00 indicates a perfect positive correlation between two variables; a coefficient of -1.00 indicates a perfect negative correlation between two variables and 0.00 correlation indicates the absence of any relationship, positive or negative, between the variables.

The statistical significance of the difference between sample group means with respect to a specific variable was tested by one way Analysis of Variance (ANOVA) and student's two tailed t-tests.

If the t-values computed in these tests were greater than the critical t-value, the null hypothesis was rejected and the alternative hypothesis accepted. Where the F-ratios obtained in (ANOVA) tests were greater than appropriate F-ratio table values, the null hypothesis was rejected and alternative hypothesis accepted. One-way analysis of variance (ANOVA) was used to test hypotheses 1(a), 1(c), 1(d), 1(e), 2(b), 2(c) and 3(b). Student's t-test was used to test hypotheses 1(b), 2(a) and 3(a). To test hypothesis (4), Pearson product moment correlation coefficient was utilized.

## CHAPTER FOUR

## DATA ANALYSIS

This Chapter presents the analysis of data collected for the study. Statistical inferences based on results of the analysis were made as to whether or not there were significant relationships between the dependent and independent variables utilized in the study.

There are two sections in this Chapter. The first section gives the questionnaire return rate, the demographic data of respondents, the school descriptive data and the mean performance index. The section that follows presents a statement of the analysis technique utilized, the analysis of data with respect to the hypotheses and a summary of the data analysis findings.

### The Questionnaire return rate:

Out of the 240 questionnaires administered to the teachers, 232 questionnaires were collected. The Teachers' Questionnaire return rate was therefore 96.7 %. All the 30 questionnaires administered to the Principals were collected. The principals' questionnaire return rate was therefore 100%.

### Demographic data of respondents and the school descriptive data

The demographic data of teachers who participated in the study was summarised on the basis of the percentage of the sample represented in each group with regard to their: age, sex, marital status, professional experience, academic qualification and area of specialization as presented in Table 3.

**Table 3: Demographic Data of Teachers**

| Variable | Group | F | % |
|---|---|---|---|
| Age(years) | 20-29 | 21 | 9.1 |
| | 30-39 | 153 | 65.9 |
| | 40-49 | 49 | 21.1 |
| | >49 | 9 | 3.9 |
| Sex | Female | 173 | 74.6 |
| | Male | 59 | 25.4 |
| Marital Status | Married | 199 | 85.8 |
| | Single | 27 | 11.6 |
| | Divorced | 2 | 0.9 |
| | Separated | 4 | 1.7 |
| Experience(years) | 0-5 | 26 | 11.2 |
| | 6-10 | 63 | 27.2 |
| | 11-15 | 94 | 40.5 |
| | 16-20 | 26 | 11.2 |
| | >20 | 23 | 9.9 |
| Academic qualification | DIP/ED | 63 | 27.2 |
| | BA/BSC/-PGDE | 32 | 13.8 |
| | BED | 128 | 55.2 |
| | MED | 8 | 3.4 |
| | MA/MSC | 1 | 0.4 |
| Area of specialization | Sciences | 89 | 38.4 |
| | Non-sciences | 143 | 61.6 |

**N= 232 Teachers**

It is significant to note that most teachers (61.6%), specialize in non-sciences and only 38.4% in sciences. In a school setting, the majority non-science teachers may, by their sheer numbers, make it difficult for the science teachers to influence school leadership and contribute effectively to decision making. This may be demotivating especially if decisions affect the science teaching-learning process and may have a negative effect on the performance in sciences.

Data shows that most teachers were married (85.8%) and that most of them were female (74.6%). Indeed, the teachers' employer, the Teacher's Service Commission, provides for married, female teachers to join their husbands at their stations of work. The province is endowed with competent trained teachers, with the majority (69%) being University graduates and 27.2% being Diploma in Education (DIPED) holders. Most teachers (65.9%) were at the 30-39 years age group. With retirement at 55 years, most teachers still had 16 to 25 potential years of service. Data indicates that most teachers (67.7%) had a professional experience within the 6-15 years bracket.

The Principals responded to Questionnaire questions with regard to their: age, sex, academic qualification, area of specialization, in-service training, professional experience and with regard to their school size, sex of the student body and category. These data were summarised on the basis of the percentage of the sample represented in each subgroup as presented in Table 4 and Table 5 respectively.

**Table 4: Demographic Data of Principals.**

| Variable | Group | F | % |
|---|---|---|---|
| Age (Years) | 20-29 | 0 | 0.0 |
| | 30-39 | 3 | 10.0 |
| | 40-49 | 18 | 60.0 |
| | > 49 | 9 | 30.0 |
| Sex | Female | 17 | 56.7 |
| | Male | 13 | 43.3 |
| Academic qualification | DIPED | 6 | 20.0 |
| | BED | 18 | 60.0 |
| | BA/BSC-PGDE | 4 | 13.3 |
| | MED | 0 | 0.0 |
| | MA/MSC | 2 | 6.7 |
| Area of specialization | Science Education | 14 | 46.7 |
| | Administration | 1 | 3.3 |
| | Non-science | 16 | 50.0 |
| Administrative exposure | In-serviced | 23 | 76.7 |
| | Not in-Serviced | 7 | 23.3 |
| Professional experience (years) | 0-5 | 12 | 40.0 |
| | 6-10 | 8 | 26.7 |
| | 11-15 | 2 | 6.7 |
| | 16-20 | 4 | 13.3 |
| | >20 | 4 | 13.3 |

**N = 30 Principals**

The demographic data of principals that participated in the study, as presented in Table 4, shows that the proportion of principals specializing in sciences (46.7%) are fairly balanced with those specializing in non-sciences 53.3%. This is despite indications that majority of teachers specialize in non-sciences. This balancing act may be significant in view of possible disparity in popularity between sciences and non-sciences. The proportion of female principals and male principals is comparable, at 56.7% female and 43.3% male. It is significant that the distribution of principals on the basis of area of specialization and sex is fairly balanced. Data indicates that majority of principals, (73.3%), are university graduates and 20% Diploma in Education (DIPED) holders. Thus, in terms of certification and training, the province has adequate personnel. The data flow shows that most principals, (60%), are in the 40-49 years age group, and 30% at the 50 and above years age group.

With mandatory retirement at 55 years and optional retirement at 50 years, the 30% of the principals above 50 years are at the retirement bracket and may be reluctant to embrace change. They may resist attempts to break away from what they regard as the tried and true methods of the past in favour of new and bold unproven procedures. This may fundamentally influence the nature of school organizational climate and thus the level of performance in sciences. Most principals, (76.7%), participated in in-service courses organized by the Teachers' Service Commission (TSC), Ministry of Education or the Kenya Headteachers Association. Most in-service centres are located within Nairobi Province and may explain the high response.

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**Table 5: School Descriptive Data**

| Variable | Group | F | % |
|---|---|---|---|
| School Student Size | 201-400 | 13 | 43.3 |
| | 401-600 | 8 | 26.7 |
| | 601-800 | 9 | 30.0 |
| School Student Sex | Male | 15 | 50.0 |
| | Mixed | 7 | 23.3 |
| | Female | 8 | 26.7 |
| School Category | Day | 24 | 80.0 |
| | Boarding | 6 | 20.0 |

**N= 30 Schools**

The school descriptive data, as presented in Table 5, shows that majority of schools that participated in the study, at 80%, were day schools while 20% were boarding schools. Most day schools lacked space and learning facilities and were congested within the estates and the city centre with no playing grounds, often under intense noise from traffic vehicles and a general environment not conducive for the teaching – learning process. Most boarding schools were in the outskirts of the city in secure compounds, away from traffic noise and with adequate learning and extra curricular facilities, and had a general atmosphere conducive for the teaching – learning process. The sex of the student body of majority of schools was male, at 50%, with female and mixed schools nearly equal at 26.7% and 23.3% respectively. Indeed there were more male students than female students in secondary schools though the population of secondary school going age girls may surpass that of boys. The student size of majority of schools was in the 201-400 students bracket, at 43.3%. Schools of size 401-600 student and 601-800 students were near equal at 26.7% and 30% respectively. No schools of student size above 800 or below 200 was reported. Most schools with low enrolment were day schools which did not have room for expansion and were expected to maintain their size. Most schools with large enrolment were boarding schools which, unlike day schools, provided accommodation facilities for students and teachers.

### Mean Performance Index for Sciences

The Mean Performance Index (MPI) for each school and the Population Mean Performance Index (PMPI) was computed as presented in Table 6. The sum of candidature for each of the science options (Physics, Chemistry, Biology) represents the candidature (N) in sciences.

The performance at KCSE in sciences of each school that participated in the study was based on the school mean grade (MG) and scored as school performance index (PI). The lowest performance index is 1.00 and the highest is 12.00. The performance Index for each school over a period of five years is presented in appendix D.

**Table 6: School KCSE Mean Performance Index in sciences in Nairobi Province**

| School | N | MPI | School | N | MPI |
|---|---|---|---|---|---|
| AI | 169 | 2.75 | H2 | 147 | 3.10 |
| A2 | 369 | 8.03 | I1 | 207 | 2.90 |
| B1 | 618 | 7.54 | I2 | 399 | 5.44 |
| B2 | 196 | 4.41 | J1 | 268 | 6.67 |
| C1 | 456 | 6.09 | J2 | 143 | 4.39 |
| C2 | 214 | 2.40 | K1 | 131 | 3.48 |
| D1 | 275 | 3.49 | K2 | 560 | 10.40 |
| D2 | 165 | 4.44 | L1 | 229 | 2.81 |
| E1 | 150 | 2.80 | L2 | 275 | 6.96 |
| E2 | 395 | 4.61 | M1 | 202 | 10.42 |
| F1 | 244 | 4.38 | M2 | 533 | 4.65 |
| F2 | 256 | 3.70 | N1 | 155 | 4.15 |
| G1 | 329 | 4.39 | N2 | 140 | 2.60 |
| G2 | 304 | 5.05 | P1 | 201 | 5.79 |
| H1 | 147 | 3.12 | P2 | 142 | 3.01 |

**N: Candidature**
**MPI: Mean Performance Index**
**PMPI: Population Mean Performance Index = 4.8**
**SOURCE: KNEC, (1996 – 2000)**

### Performance data by School

The KCSE Science performance data of schools that participated in the study is presented in Table 7. Admission into science based courses and faculties is dependent on the performance in sciences besides meeting the minimum mean grade admission requirements. Though the minimum university entry requirement is a mean grade of C (plus), competitive admission on cluster point basis requires a high performance in sciences to qualify for admission into science based faculties. This requirement gives added significance to the need for high performance in sciences at K.C.S.E. The school performance data indicates a low performance in sciences, with 86.7% of the schools scoring a mean grade below C (plus) and only 6.7% of the schools scoring a mean grade of B (plus) and above. A school mean grade score of B (plus) and above in sciences ensures that a significant portion of the candidature qualifies for admission into science based faculties. A low school mean grade in sciences in a majority of schools as indicated by the school science performance data means that most students do not qualify for admission into science related courses and faculties in colleges and universities. The importance of encouraging high enrolment in sciences at advanced levels, lies in the need to advance in technology as a basis for industrialization. The performance data of schools as presented in table 7 is reflected in the distribution of grades scored as presented in Table 8.

**Table 7: KCSE Science Performance Data by Schools in Nairobi Province**

| MG | MPI | N | % |
|---|---|---|---|
| E - D | 1 - 3.99 | 12 | 40.0 |
| D+ - C | 4 - 6.99 | 14 | 46.7 |
| C+ - B | 7 - 9.99 | 2 | 6.7 |
| B+ - A | 10 - 12 | 2 | 6.7 |
| **TOTAL** | | 30 | 100.0 |

**MG: Mean Grade**
**MPI: Mean Performance Index**
**N : Number of Schools**
**Source: KNEC(1996-2000)**

### Performance data by Grade counts

The KCSE Science performance data by grade counts as presented in table 8 shows that only 9.5% of the total candidature in sciences scored B (Plus) and above. The number of candidates in sciences who scored below grade C (Plus) represented 78.2% of the total candidature in Sciences. Grade counts in Sciences is the sum of specific grades scored in Physics, Chemistry and Biology. It is significant to note that the number of candidates who scored grades B (Plus) and above in sciences and therefore qualified for admission into science based faculties in public universities were only 9.5% of the total candidature in sciences from only 6.7% of the schools that participated in the study. The majority of candidates from most schools failed to qualify for admission into science based faculties in public universities. These data indications reflect the low level of performance in sciences in public secondary schools in Nairobi Province. Indeed the population mean performance index in sciences for public secondary schools in Nairobi Province that participated in the study was a low 4.80, placed at pass grade D (Plus).

**Table 8: KCSE Science Performance Data by Grade Counts in Nairobi Province**

| MG | MPI | N | % |
|---|---|---|---|
| E - D | 1 - 3.99 | 2207 | 27.5 |
| D+ - C | 4 - 6.99 | 4063 | 50.7 |
| C+ - B | 7 - 9.99 | 987 | 12.3 |
| B+ - A | 10-12.00 | 762 | 9.5 |
| TOTAL | | 8019 | 100.0 |

**MG: Mean Grade**
**MPI: Mean Performance Index**
**N: Grade Counts**
**Source: KNEC (1996-2000)**

## Profile of a School

Likert's system 1 through system 4 authoritative participative continuum was utilized in scoring responses on the profile of a school questionnaire as described in Chapter Three. It was necessary to condense data by organising it into frequency distributions and percentages. The mean climate score for each of the six organisational processes in each school that participated in the study was computed. The total score for each respondent in a school in the sample was computed. This enabled the computation of the mean score for each school in the sample, which represented the school's mean organisational climate (Moc) score. This also enabled the computation of the mean score for all the schools that participated in the study.

The minimum and maximum mean scores for each of the six organisational processes in a school is 1 and 4 respectively, while the minimum and maximum scores for the school mean organisational climate (Moc) is 30 and 120 respectively. The distribution of the mean climate scores for each school is represented in appendix E. The mean climate scores were used to compute standard deviations, correlation tests, t-test and analysis of variance. The performance index for each school over a period of five years (1996 – 2000) was computed, as presented in appendix D. The Mean Performance Index (MPI) for each school was then computed. This enabled the computation of the Population Mean Performance Index (PMPI) for all schools that participated in the study. The minimum and maximum scores for the mean performance index (MPI) is 1 and 12 respectively. The standard deviation for all schools in the study sample was computed. The three main techniques described in Chapter Three were utilized in the analysis of data to determine whether or not to accept or reject the null hypotheses. The techniques utilized were pearson product moment correlation coefficient, student's t-test and one-way analysis of variance. All the hypotheses were tested at the 0.05 level of confidence. If the computed value is less than the critical table value, then the null hypothesis is rejected, otherwise it is accepted.

## HYPOTHESES TESTING

The hypotheses were stated in null form for purposes of analysis. The relevant data were analyzed to determine whether to accept or reject each hypothesis.

HYPOTHESIS (1a) was stated as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's age.

The data analysis is presented in Table 9.

**Table 9: Analysis of variance for differences in school organizational climate by principal's age.**

| Age group(years) | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| 30-39 | 3 | 86.4 | 2.83 | 2.40 | 0.109 |
| 40-49 | 18 | 80.6 | 8.73 | | |
| 50 & above | 9 | 75.5 | 7.03 | | |

**N =30 Principals**

The F-ratio value (2.40) obtained was less than the critical value (2.43). Since the p-value (0.109) is greater than chosen α – levels (0.05), there was no evidence for a significant difference between school organizational climate and the principal's age. The null hypothesis was thus accepted. However, the mean organizational climate scores seemed to decrease with increasing age. A high mean organizational climate score is perceived to imply participative climate while a low mean organizational climate score is perceived to represent authoritative climate.

HYPOTHESIS (1b) was stated as follows:

There is no significant relationship between school organizational climate as perceived by teachers and the principal's sex.

The data analysis is presented in Table 10.

**Table10: Analysis for differences in school organizational climate by principal's sex.**

| Sex | F | Mean | SD | SE | P-value | T-value |
|---|---|---|---|---|---|---|
| Male | 17 | 80.1 | 7.71 | 1.9 | 0.752 | 0.32 |
| Female | 13 | 79.1 | 9.37 | 2.6 | | |

**N =30 Principals**

The T- value obtained (0.32) was less than the critical T-value. Since the P-value (0.752) was greater than the chosen α – levels (0.05), there was no evidence for a significant difference in school organizational climate as a function of sex. The null hypothesis was thus accepted.

HYPOTHESIS (1c) was stated as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's area of specialization.

The data analysis is presented in Table 11.

**Table 11: Analysis of Variance for differences in school organizational climate by principal's area of specialization.**

| Area of specialization | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Science | 14 | 79.3 | 9.46 | 0.17 | 0.841 |
| Non-Science | 15 | 80.2 | 7.65 | | |
| Educational Administration | 1 | 75.3 | 0.00 | | |

**N = 30 Principals**

The F-ratio value (0.17) obtained was less than the critical value (2.03). Since the P-value (0.841) is greater than the chosen α-levels (0.05), there was no evidence for a significant difference between school organizational climate as perceived by teachers and the principal's area of specialization. The null hypothesis was thus accepted.

HYPOTHESIS (1d) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's professional experience.

The data analysis is presented in Table 12.

**Table 12: Analysis of Variance for differences is school organizational climate by principal's professional experience.**

| Experience (Years) | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| 0-5 | 12 | 76.5 | 9.59 | 1.13 | 0.364 |
| 6-10 | 8 | 83.0 | 7.29 | | |
| 11-15 | 2 | 85.7 | 8.70 | | |
| 16-20 | 4 | 77.5 | 6.61 | | |
| 21 & above | 4 | 81.3 | 6.10 | | |

**N =30 Principals**

The F-ratio (1.13) obtained was less than the critical value (2.34). Since the P-value (0.364) was greater than the chosen α-levels (0.05), there was no sufficient evidence for a significant difference between school organizational climate as perceived by teachers and the principal's professional experience. The null hypothesis was thus accepted. It was however found that schools whose principals had a professional experience of 6-10 years and those with twenty years and above tended to be more participative (high organizational climate score) than schools whose principals had a professional experience of 0-5 years and 16-20 years.

HYPOTHESIS (1e) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's highest academic qualification

The data analysis is presented in Table 13.

**Table 13: Analysis of Variance for differences in school organizational climate by principals' highest academic qualification**

| Academic qualification | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| BIPED | 6 | 80.8 | 10.12 | 0.94 | 0.472 |
| BED | 18 | 81.0 | 7.71 | | |
| BA with PGDE | 3 | 77.7 | 8.88 | | |
| BSC with PGDE | 1 | 70.8 | 0.00 | | |
| MA | 1 | 75.3 | 0.00 | | |
| MSC | 1 | 66.3 | 0.00 | | |

**N = 30 principles**

The F-ratio value (0.94) obtained was less than the critical value (2.46). The P-value (0.472) was greater than the chosen α-levels (0.05) and indicates absence of sufficient evidence for a significant relationship between school organizational climate as perceived by teachers and the principal's highest academic qualification. The null hypothesis was thus accepted. It was however found that organizational climate in schools with principals having BED and DIPED as their highest academic qualification, tended to be more participative (high organizational climate scores) than in schools with principals having MA/MSC or BA/BSC (PGDE) as their highest academic qualification. The presentation of principals with MA/MSC and BA/BSC (PGDE) academic qualifications in the sample was however small (20%). The majority of principals (50%) were found to hold a BED qualification while 20% of the principals in the sample had DIPED as their highest academic qualification. None of the principals in the sample were found to hold a MED academic qualification.

HYPOTHESIS (2a) states as follows:

There are no significant differences between school organizational climate as perceived by teachers and the school's category.

The data analysis is presented in Table 14.

**Table 14: T-test for differences in school organizational climate by school category.**

| School category | F | Mean | SD | SE | P-value | T-value |
|---|---|---|---|---|---|---|
| Day | 24 | 79.2 | 8.06 | 1.6 | 0.635 | -0.50 |
| Boarding | 6 | 81.4 | 9.92 | 4.1 | | |

**N =30 of schools**

The T value (-0.50) obtained was less than the critical value. Since the P-value (0.635) was greater than the chosen α-levels (0.05), there was no evidence for a significant difference between school organizational climate as perceived by teachers and the school's category. The null hypothesis was thus accepted. Boarding school representation in the sample was however small (20%) compared to day school representation (80%).

HYPOTHESIS (2b) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the school's student sex.

The data analysis is presented in Table 15:

**Table 15: Analysis of Variance for differences in school organizational climate by school students' sex.**

| School Student Sex | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Male | 15 | 81.0 | 7.12 | 0.64 | 0.535 |
| Female | 8 | 79.5 | 11.88 | | |
| Mixed | 7 | 76.7 | 6.07 | | |

**N = 30 Schools**

The F-ratio (0.64) obtained was less than the critical value (2.02). Since the P-value (0.535) was greater than the chosen α-levels (0.05), there was no evidence for a significant difference between school organizational climate and school students' sex. The null hypothesis was thus accepted. Representation of mixed sex schools in the sample was however small (23.3%).

HYPOTHESIS (2c) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the school's size.

The data analysis is presented in Table 16.

**Table 16:Analysis of Variance for differences in school organizational climate by school size.**

| School Student Size | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| 201-400 | 13 | 80.1 | 8.61 | 0.43 | 0.658 |
| 401-600 | 8 | 77.4 | 9.44 | | |
| 601-800 | 9 | 81.0 | 7.38 | | |

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**N = 30 Schools**

The F-ratio value (0.43) obtained was less than the critical value (2.01). Since the P-value (0.658) is greater than the chosen α-levels (0.050), there was no sufficient evidence for a significant difference between school organizational climate as perceived by teachers and school size. The null hypothesis was thus accepted. Schools with an enrollment of 401-600, however, tended to have lower organizational climate scores (more authoritative) than schools with an enrollment of 201- 400 and those with and enrollment of 601-800. Representation of schools with an enrollment of 401 – 601 was however small (26.7%).

HYPOTHESIS (3a) states as follows:

There is no significant difference between school performance in sciences and the school's category.

The data analysis is presented in Table 17.

**Table 17: T-test for differences in performance in sciences by school category.**

| School category | F | Mean | SD | SE | P-value | T-value |
|---|---|---|---|---|---|---|
| Day | 24 | 4.10 | 1.65 | 0.34 | 0.001 | -4.98 |
| Boarding | 6 | 7.61 | 1.52 | 0.62 | | |

**N =30 Principals**

A T- value (–4.98) obtained was above the critical T-value. Since the P-value (0.001) was less than the chosen α-levels (0.05), there was evidence for a significant difference between performance in sciences and school category. The null hypothesis was therefore rejected. Boarding secondary schools were found to have a significantly higher mean performance index in sciences than day secondary schools. Representation of day secondary schools was however large (80%).

HYPOTHESIS (3b) states as follows:

There is no significant difference between performance in sciences and the school's student sex.

The data analysis is presented in Table 18.

**Table 18:Analysis of Variance for differences in performance in sciences by school Students' sex.**

| School Student Sex | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Male | 15 | 5.28 | 2.43 | 1.64 | 0.212 |
| Female | 8 | 4.99 | 1.35 | | |
| Mixed | 7 | 3.56 | 1.98 | | |

**N =30 Schools**

The computed F-ratio value (1.64) was less than the critical value (2.02). Since the P-value (0.212) was greater than the chosen α-levels (0.05), there was no evidence for a significant difference between performance in sciences and school students' sex. The null hypothesis was thus accepted.

It was however found that the mean performance index for mixed schools was lower than that for single sex schools. Representation of schools with male students in the sample was large (50%) compared to schools with female students (26.7%) and schools with mixed students (23.3%).

HYPOTHESIS (4) states as follows:

There is no significant relationship between school organizational climate as perceived by teachers and performance in sciences.

A pearson product moment correlation coefficient was computed to examine the relationship between school organizational climate as perceived by teachers and performance in sciences.

A correlation coefficient of -0.004 significant at p=0.05 level and beyond was obtained. The null hypothesis was thus accepted.

A test for any significant differences in school organizational climate scores between one third of the schools with the highest climate scores (MPC) and one third of the schools with the lowest climate scores (MAC) was taken.

The data analysis is presented in Table 19:

**Table 19: Analysis for differences in school organizational climate scores by climate type.**

| Type of climate | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Participative | 10 | 88.67 | 3.96 | 112.33 | 0.000 |
| Authoritative | 10 | 70.26 | 3.81 | | |

**N =20 Schools**

The P-value (0.000) obtained indicates sufficient evidence to claim that there are significant differences in organizational climate scores on the basis of climate type. It was thus concluded that there exists significant differences in organisational climate scores between the group of ten schools with the lowest organisational climate scores, comprising one third of the schools in the sample, and the group of ten schools with the highest organisational climate scores, comprising one third of the schools in the sample. Since high organizational climate scores represents participative climate and low organizational climate scores represents authoritative climate, a significant difference between the two types of climates implies a clear distinction between them.

## Summary of data analysis findings

This chapter presented the statistical data analysis with respect to the relationship between organizational climate as a single construct and performance in sciences in public secondary schools in Nairobi province. Differences between the means of schools in which organizational climate tended towards the opposite ends of the authoritative-participative climate continuum were also analyzed to determine any significant differences in organizational climate scores between the two extreme groups in the sample representing the most authoritative climate (MAC) and the most participative climate (MPC). The eleven null hypotheses were analyzed at the p=0.05 level of significance as a basis for their rejection or acceptance. The following were findings of hypotheses analysis.

The principal's selected demographic variables of (i) Age (ii) Sex (iii) Area of specialization (iv) Professional experience and (v) Academic qualification had no significant influence on the school organisational climate. It was also observed from the findings that school selected variables of (i) Category (ii) Sex of the student body and (iii) Size had no significant influence on the school organizational climate. It was however observed that the school category had a significant effect on performance in sciences.

Indeed, boarding schools had a significantly higher mean performance index (MPI) than day schools. It was observed that boarding school teachers and students were more participative and more positive in their satisfaction tendencies than their day school counterparts. Indeed, boarding school teachers, unlike their day school counterparts tended to perceive their school organisational climate as friendly and supportive. This may have explained the disparity in performance in sciences.

# CHAPTER FIVE

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter consists of a summary of the study, conclusions, recommendations from findings of the study and suggestions for further research.

### Summary of the study

The incoherent view of the concept, organizational climate, is apparent in contributions by scholars and practitioners. Attempts at devising a reliable measure and drawing a boundary for the concept remains controversial.

Despite the elusiveness of the concept, its effect on the motivational performance of individual workers and, thus, its significance in influencing organizational performance is largely acknowledged.

The main purpose of the study was to investigate whether or not there was a relationship between school organizational climate, as perceived by teachers, and performance in sciences in public secondary schools in Nairobi Province.

The other purpose of the study was to investigate if there were significant differences in school organizational climate as a function of (a) the principal's individual characteristics of (i) age (ii) sex (iii) area of specialization (iv) professional experience and (v) academic qualifications and (b) the school variables of (i) category (ii) sex of the student body and (iii) size.

Indeed, the inability to achieve desired high performance levels in sciences, in public secondary schools, over the years, has caused considerable concern to society as tax payers and to stakeholders who pay for the provision of education. The government shares in this concern partly because the school is its main source of qualified manpower and partly due to its high budgetary allocation to educational institutions.

This shared concern can be justified by the level of the performance index in sciences. Indeed, the performance index, in sciences, in public secondary schools in Nairobi Province, over a five year period (1996 – 2000), was a low 4.8.

The study used Expost Facto design and thus had no control over factors that may have influenced the performance in sciences such as a student's (a) past experience (b) mental ability (c) instructional resources (d) performance effort and (e) self-concept.

The study sample comprised 320 teachers from a population of 2437 teachers and 40 principals and schools from a population of 47 principals and schools in Nairobi Province. Teachers and principals who had served for less than 1 year were however exempted from the study. The study, which was located in a cosmopolitan setting, focused on the performance at KCSE and ignored continuous assessment performance.

It was assumed that the measures of the construct, organizational climate, approached an interval scale of measurement and were closely related to the perceived behavior of principals and teachers.

A review of literature shows that the desire to improve organizational climate led to the development of organizational theory, traced through three movements, namely: The Scientific Management movement, The Human Relations movement and The Behavioral movement. The focus was to discourage authoritative organizational tendencies and embrace participative organizational practice. It was an attempt to integrate organizational and individual needs, at the work place, thereby giving workers a greater sense of ownership of the objectives of the organization.

It became evident that neither the Human Relations movement nor the Scientific Management movement represented a complete view of human behaviour at the work place. The integration of the two movements, within an organizational system, was the focus of Modern or Behavioural movement. It held the view that it is the task of organizational leadership to make use of the full human potential through provision of opportunities to realize one's self-fulfillment in one's work. This brought to focus the nature of organizational climate that enhanced the satisfaction of both human and organizational needs with a promise to improve performance.

Behavioural theorists' attempts to explain human behaviour however remains controversial. Indeed not all findings may be universally accepted. Human Behaviour thus remains complex due to complexities of human needs and motivation. Although Maslow's needs hierarchy theory is, for instance, reputed to be more influential than any other in the area of organizational behaviour, his theory is not controversy free. Such controversy is apparent in influential motivation theories such as Herzeberg's Motivation – Hygiene theory and McGregor's philosophical point of view about the nature of man.

The significance of their contributions towards the development of work motivation and its possible positive effect on organizational climate and performance can not however be overemphasized.

The conceptual framework of the study is based on the effects of the Principal's demographic variables and the school variables on organizational climate and their influence on the performance in sciences in public secondary schools in Nairobi Province.

The techniques utilized in the analysis of data to determine whether or not to accept or reject the hypotheses were, Pearson correlation analysis, analysis of variance and student's t-test. The questionnaire return rates were 96.7% for teachers and 100% for principals who participated in the study.

The data analysis findings indicated that:

(a) There were no significant differences in school organizational climate as perceived by teachers as a function of the principal's (i) age (ii) sex (iii) area of specialization (iv) professional experience and (v) academic qualification.

(b) There was no significant relationship between school organizational climate as perceived by teachers and the school (i) category (ii) student sex (iii)size.

(c) There were significant differences between performance in sciences and school category.

(d) There were no significant differences between performance in sciences and school students' sex.

(e) A Pearson product moment correlation coefficient test found no significant relationship between school organizational climate as perceived by teachers and performance in sciences.

## Conclusions of the Study

From the description of the development of organization theory, it is important to note that concerns central to the understanding of organizational climate were the achievement of organizational goals and the fulfillment of personal needs. The central concept in organizational climate was the integration of these concerns. These foci were identical in the literature on organizations. Although research studies with respect to performance and organizational climate were carried out prior to this study, it is apparent from the review of literature that there was a paucity of research findings with regard to the relationship between these variables in secondary schools and other social settings.

Findings of the study indicated that school organizational climate was not significantly influenced by the experience of the principal. It was however observed that newly appointed principals (below 5 years) and principals with long experience (above 16 years) were less participative in their school organizational climate tendencies. This was probably because newly appointed principals may have been more cautious and suspicious in their school relationships while principals with long experience may have become less accommodative to change or alternative approach, thereby creating school organizational climates with authoritative tendencies.

An important observation in this study was that authoritative tendencies increased with the age of the school principal. The older principals tended to be conservative and held onto the rigid forms of organization that embraced indirect participation. The representation in the study sample of principals below 40 years of age was small (10%) although majority of teachers (75%) were below 40. This tended to suggest systems of appointment that tended to limit chances of younger principals ascending to school leadership.

Findings of this study indicated that performance in sciences was neither significantly influenced by the perceived school organizational climate, nor by the students' sex but by the school category. It was observed that day school teachers and students, unlike their boarding school counterparts, were more likely to be withdrawn to relative docility, be compliant and even indifferent to administrative inadequacies. They were more preoccupied with managing the high cost of housing and transport and venturing into alternative supplementary sources of income. This indifference may have manifested itself in the perceptions of their schools' organizational climate. They displayed tendencies that accommodate the existing organizational climate despite expressing dissatisfaction for its lack of participative space in decision – making, and despite acknowledging that the existing school climate tended towards the authoritative end of Likerts's authoritative – participative continuum. Indeed, findings of this study indicated that teachers' perceptions of their schools' organizational climate were not significantly different.

Day school teachers were subjected to a relatively closed organizational climate and were more likely to be demotivated than their boarding school counterparts. Findings of this study indicated that the performance in Sciences in boarding schools was significantly higher than that in day schools. It was observed that boarding school teachers and students were more participative, were less exhausted, less overburdened and more positive in their job satisfaction tendencies. Indeed, the prevailing school climate in most boarding schools, unlike in most day schools, was perceived by teachers as friendly, supportive and met individual needs. This may have explained the higher performance in boarding schools. Indeed, it is the motivated teacher who is more likely to use adequate instructional strategy required in the teaching – learning process in sciences. This observation tends to suggest that unfavourable school climate de-motivates employees who may then lose focus on the objectives of the organization and profoundly affect its performance.

It was observed from the study findings that the school organizational climate was neither significantly influenced by the sex of the principal nor by the area of specialization of the principal. Representation of principals by sex and by specialization in the study sample was not significantly different.

Despite the poor performance in sciences, observations tend to suggest that the majority of the teaching staff in Nairobi Province were reluctant to transfer to alternative working stations away from their city life family attachments. School principals should thus encourage supportive school organizational climate that enables their staff to participate in decision-making and thereby take responsibility for the performance of their schools. An expression of confidence in their potentiality can boost their motivation and enhance their performance.

The extent of teacher participation in decision-making is alluded to by Strauss (1963) who however cautions that participation raises certain dangers such as members expecting to be consulted on every problem that arises. This happens when members become more involved in group processes thereby increasing cohesion in the organization. School stakeholders should thus be cautioned that whereas participative school organizational climate entails collective decision making, the ultimate responsibility for the decisions still resides with the school principal.

Findings of this study indicated that there was no significant relationship between school climate and the principals' qualifications. The level of qualification of the principals was thus found not to be a significant factor in determining the nature of organizational climate in their schools.

Findings of the study however tend to suggest that school principals play a crucial role in the process of determining organizational climate in schools. They should thus be given training and in-service opportunities to reflect upon their role in relation to the enhancement of participative values and performance in sciences.

### Recommendations of the study

Study findings tended to suggest that participative school climate systems were indicative of better and more effective schools in their performance index in sciences than were authoritative school systems. Institutional devices should thus be put in place, at the school and national levels, to encourage and enhance widespread participation in the general educational decision-making and policy formulation. In particular, the Ministry of Education should encourage participative school climates through legislations that will be reflected in Education Acts.

It is defective of the current Education Act to provide that the school Board of Governors (BOG), which has a small stakeholder representation, has a legal voice on school management issues such as decision and policy making, to the exclusion of the Parents Teachers Association (PTA) which has a widespread representation of school stakeholders. The lack of legal representation at the school level through PTA makes it “toothless” and inconsequential in enforcing decision-making. This discourages participative school climates in favour of authoritative school climates. It is thus encouraging that the latest proposals on management of educational institutions seek to address this anomaly.

Deliberate efforts should be put in place to ensure stakeholders’ real commitment to the ownership of school initiatives and programs. School leadership should, in particular, institutionalize stakeholder ownership of educational decisions and innovations through administrative nurturing of open climates. This provides for participative style of implementation, responsibility, support and team spirit.

The importance of participative organizational climate in school science performance can be enhanced at national level. The Kenya Institute of Education (KIE) can, for instance, give it adequate attention and emphasis in the content of the curriculum for secondary schools and teacher training institutions and encourage educators through in-service courses, workshops, seminars and Head teachers' manuals.

It was observed that a majority of school teachers (75%) were below 40 years of age, yet only 10% of the school principals were below 40 years of age. The Teachers Service Commission (TSC), should adopt a less bureaucratic system that encourages more youthful teachers to ascend to positions of school principals. This may stimulate desirable changes in schools' organizational climate that appeals to the majority of teachers.

Boarding schools reported significantly higher performance in sciences than day schools. It was, indeed, observed that boarding school teachers perceived the organizational climate of their schools to be supportive and friendly and were more positive in their job satisfaction tendencies. The Ministry of Education should thus ensure provision of basic programmes that may affect performance in sciences such as transport, housing, food, library and laboratory services to teachers and students in both boarding and day schools. This might create a supportive school climate that enhances the general teaching and learning process in sciences.

## Suggestions for further study

Findings of the study were based on teacher perceptions which could be influenced by many factors such as the demographic variables of teachers. To reduce on the limitation associated with generalization, replication of this research is suggested, drawing participants from other provinces, rural settings and urban-suburban settings.

Further research may enable practitioners understand and apply the relationship between organizational climate and performance in sciences towards meeting challenges in modern organizations in trying to create an organizational climate conducive to human growth. A potential focus for further research is on attempts to identify variables, other than those utilized in this study, that significantly relate to organizational climate. Such variables as (a) students' perceptions and (b) Board of Governors' (i) sex (ii) academic qualification and (iii) age might be found to significantly influence organizational climate and performance in sciences.

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# APPENDIX A

## LETTER OF INTRODUCTION TO THE PRINCIPALS

University of Nairobi,
Faculty of Education,
P.O. Box 30197,
Nairobi.

The Principal,
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-----------------
-----------------
Dear Sir/Madam;

You have been chosen to participate in the study on the relationship between organizational climate and performance in sciences at KCSE in public secondary schools in Nairobi Province.

The information you give is confidential and will be used for research purposes only. Do not write your name or the name of your school in the questionnaire.

Please respond to all items in the questionnaire as correctly and as honestly as possible. Return the filled questionnaire into the addressed envelope. Hand over the sealed envelope to the secretary.

Thank you for your cooperation.

Sincerely,
Nyaanga Zachary, K.S.
Post graduate student,
University of Nairobi.

## APPENDIX B

## PRINCIPAL'S QUESTIONNAIRE

The questionnaire is designed to gather information for study to determine the relationship between organizational climate and performance in sciences at KCSE in public secondary schools in Nairobi province. You are assured that the information you give will be kept confidential and will be used for research purposes only. Therefore, do not write your name or that of your school in the questionnaire.

Please respond to all items in the questionnaire as correctly and honestly as possible by putting a tick ( ✓ ) against one of the options. For the open ended questions please use the blanks provided.

**Part I**

1. Please indicate your chronological age in years
   a) 20 – 29 ( )
   b) 30 – 39 ( )
   c) 40 – 49 ( )
   d) above 49 ( )

2. Please indicate your sex
   a) Female ( )
   b) Male ( )

3. Please indicate your marital status
   a) Married ( )
   b) Single ( )
   c) Divorced ( )
   d) Separated ( )
   e) Other, please specify ....................................................

4. Please indicate the number of years you have served since your first appointment as Principal.
   a) 0 – 5 ( )
   b) 16 – 20 ( )
   c) Above 20 ( )

5. How many years have you served as Principal in your present school?
   a) Less than 1 ( )
   b) 0 - 5 ( )
   c) 6 - 10 ( )
   d) 11 - 15 ( )
   e) Above 15 ( )

6. What is your highest educational qualification?

   a) DIP ED ( )
   b) BA/BSC (with PGDE) ( )
   c) B ED ( )
   d) M ED ( )
   e) MA/MSC ( )

7. What is the sex of the student body?
   a) Female ( )
   b) Male ( )
   c) Mixed ( )

8. Please indicate the population of the student body.
   a) Below 200 ( )
   b) 210 – 400 ( )
   c) 401 – 600 ( )
   d) 601 – 800 ( )
   e) Above 800 ( )

9. What is the category of your school?
   a) Day ( )
   b) Boarding ( )
   c) Day and Boarding ( )

10. Which is your area of specialization?
    a) Science ( )
    b) Arts ( )
    c) Arts and Sciences ( )
    d) Others, please specify---------------------------------------

11. Which of the following sessions in Educational Administration have you attended?

a) In - service training ( )
b) Seminar ( )
c) Workshop ( )
d) Non of the above ( )

12. Which body organised the above Session (s)?

a) Teachers Services Commission ( )
b) Ministry of Education ( )
c) Kenya Headteachers Association ( )
d) Any other (s), please specify--------------------------------------

**Part II**

Please answer the questions below in the spaces provided.

1. In your opinion, what are some of the difficulties you encounter in carrying out your administrative duties related to enhancing the freedom and willingness of (a) teachers (b) Students (c) parents/community: to actively participate in seeking solutions towards achieving the desired performance levels of your school?

(a) Teachers:

(b) Students:

(c) Parents/Community:

2. In your opinion, what are the possible solutions to the problems you have stated above?

Thanks for your participation.

# APPENDIX C

## TEACHER'S QUESTIONNAIRE

You have been chosen to participate in a study on the relationship between organizational climate and performance in sciences at KCSE in public secondary schools in Nairobi Province.

This questionnaire is designed to explore how you perceive the organizational characteristics of your school.

The information you give is confidential and will be used for research purposes only. Do not, therefore, write your name or the name of your school in the questionnaire.

Please respond to each statement as correctly and as honestly as possible. Return the filled questionnaire into the addressed envelope and seal it. Hand over the sealed envelope to the secretary.

Thank you for your cooperation.

**Part I**

1. Please indicate your age in years
   a) 20 – 29 ( )
   b) 30 – 39 ( )
   c) 40 – 49 ( )
   d) 50 or above ( )

2. Please indicate your sex
   a) Female ( )
   b) Male ( )

3. What is your marital status?
   a) Married ( )
   b) Single ( )
   c) Divorced ( )
   d) Separated ( )
   e) Other, please specify ………………………………………………

4. Please indicate the number of years you have served since your first appointment as teacher.
a) 0 – 5 ( )
b) 6 – 10 ( )
c) 11 – 15 ( )
d) 16 – 20 ( )
e) Above 20 ( )

5. How many years have you served as teacher in your present school?
a) Less than 1 ( )
b) 1 -5 ( )
c) 6 -10 ( )
d) 11 -15 ( )
e) Above 15 ( )

6. What is your highest educational qualification?
a) DIP ED
b) BA/BSC (with PGDE) ( )
c) B ED ( )
d) M ED ( )
e) MA/MSC ( )
7. Which is your area of specialization?
a) Science ( )
b) Arts ( )
c) Arts and science ( )
d) Others, please specify-------------------------------------------------

8. a) Have you held any administrative position?
i) Yes ( )
ii) No ( )

b) If Yes indicate the position:
i) Deputy Principal ( )
ii) Senior teacher ( )
iii) Head of Department ( )
iv) Any other, please specify-------------------------------------------------

**Part II**

For the statements below, there are, no right or wrong answers. Some items may seem similar to others. However, each item is different, so please answer each one without regard to the others. Decide which **ONE** of the following four responses: A, B, C, and D; best applies to your school and place a tick ( ✓ ) against one of the responses.

------- 1.How frequent do you, as teachers, view the Principal's behaviour as friendly and supportive?

(A) Rarely ( )
(B) Sometimes ( )
(C) Often ( )
(D) Always ( )

--------2.How much confidence do you have in your Principal as a competent educational leader?

(A)Very little ( )
(B) Little ( )
(C) Substantial ( )
(D) A great deal ( )

---------3.In your opinion, how much confidence and trust does your Principal have in you as teachers?

(A) Very little ( )
(B) Little ( )
(C) Substantial ( )
(D) A great deal ( )

---------4.How free do you feel to express your opinions and feelings to the Principal?

(A)Not free ( )
(B) Somewhat free ( )
(C) Free ( )
(D) Very free ( )

---------5. How frequent does the Principal seek, discuss and use new ideas and information relating to educational issues from you?

(A)Rarely ( )
(B) Sometimes ( )
(C) Often ( )
(D) Always ( )

---------6. How, in your opinion, would you describe the direction of flow of information on academic issues in your school?

(A) Downward only: from Principal to teacher to Student ( )
(B) Mostly downward ( )

(C ) Downward and upward ( )
(D) Downward, upward and horizontal ( )

---------7. How, in your opinion, would you describe the direction of flow of information on non-academic issues in your school?

(A) Downward only: from Principal to teacher to Student ( )
(B) Mostly downward ( )
(C )Downward and upward ( )
(D)Downward, upward and horizontal ( )

---------8.How, in your opinion, would you describe the extent to which downward communication is accepted in your school?

(A) Almost always accepted ( )
(B) Usually accepted, sometimes cautiously ( )
(c ) Some accepted, some viewed with suspicion ( )
(D) Almost always viewed with great suspicion ( )

---------9. How would you rate the accuracy of upward communication in your school?

(A)Usually inaccurate ( )
(B) Often inaccurate ( )
(C) Fairly accurate ( )
(D) Accurate ( )

---------10. How would you describe the extent to which your Principal knows the problems faced by teachers in your school?

(A) Not well ( )
(B) Rather well ( )
(C) Quite well ( )
(D) Very well ( )

---------11. How frequent are you friendly and supportive to your Principal?

(A) Rarely (   )
(B) Sometimes (   )
(C) Often (   )
(D) Always (   )

---------12. How frequent are you friendly and supportive to other teachers?

(A) Rarely (   )
(B) Sometimes (   )
(C) Often (   )
(D) Always (   )

---------13. How, in your opinion, would you describe the nature of interaction between the Principal and teachers in your school?

(A)Very little; usually with fear and distrust (   )
(B)Little; Principal and teachers usually distant from one another (   )
(C )Moderate; often fair amount of confidence and trust (   )
(D) Extensive; friendly, high degree of confidence and trust (   )

---------14. How, in your opinion, would you describe the nature of interaction between teachers in your school?

(A) Very little; usually with fear and distrust (   )
(B) Little; teachers usually distant from one another (   )
(C ) Moderate; often fair amount of confidence and trust (   )
(D )Extensive; friendly, high degree of confidence and trust (   )

---------15. What is the extent of cooperative teamwork between the Principal, teachers and students in your school?

(A)Very little (   )
(B) Relatively little (   )
(C) Moderate amount (   )
(D) Very substantial (   )

---------16. How, in your opinion, would you describe the nature of discussions involving school policy and academic programmes in your school?

(A) Principal, teachers and students participate in decisions affecting them (   )

(B) Sometimes at top by principle; specific decisions by teachers ( )

(C ) Often at the top by Principal; specific decisions by teachers but approved by Principal before action. ( )

(D )Always at the top by Principal ( )

---------17.To what extent, in your opinion, is decision making in your school based on an individual or a group?

(A) Largely group ( )
(B) Both individual and group ( )
(C) Almost entirely individual ( )
(D) Individual only ( )

---------18. To what extent, in your opinion, does the nature of decision- making process in your school contribute to enhancing the performance of teachers and students in your school?

(A) Substantial contribution ( )
(B) Some contribution ( )
(C Relatively little ( )
(D) Not very much, often weakens it ( )

---------19. To what extent, in your opinion, are decision-makers in your school aware of teachers problems.

(A) Well aware ( )
(B) Moderately aware ( )
(C) Aware of some, unaware of others ( )
(D) Often unaware ( )

---------20. How often are teachers allowed the opportunity to participate appropriately in decisions related to their work?

(A) Fully involved in all decisions ( )
(B) Usually consulted ( )
(C ) Occasionally consulted ( )
(D) Not at all ( )

---------21. Who, in your opinion, feels responsible for setting high performance goals for your School?

(A) Principal, teachers, students, parents ( )
(B) Principal, most teachers, some students ( )
(C ) Principal and some teachers ( )
(D) Principal only ( )

---------22. Who, in your opinion, feels responsible for achieving high performance goals for your school?

(A) Principal, teachers, students, parents ( )
(B) Principal, most teachers, some students ( )
(C) Principal and some teachers ( )
(D) Principal only ( )

---------23.How, in your opinion, would you describe the extent of internal resistance to achieving high performance goal in your school?

(A) Little or no resistance and much cooperation. ( )
(B) Some resistance and some cooperation ( )
(C ) Moderate resistance ( )
(D) Strong resistance ( )

---------24. How would you describe the process of establishing performance goals in your school?

(A) Established through group discussion ( )
(B)Issued by Principal; often discussion with teachers ( )
(C) Issued by Principal; teachers may comment ( )
(D) Issued by Principal ( )

---------25. In your opinion, what level of performance goals, does your Principal seek to be achieved by your school?

(A) Below Average ( )
(B) Average ( )
(C) High ( )
(D) Very high ( )

---------26. What is the attitude of teachers towards your school in terms of really liking it and taking pride in it as a place to work?
(A) Strongly favourable ( )
(B) Usually favourable ( )
(C) Sometimes hostile, sometimes favourable ( )
(D) Hostile ( )

--------27. How, in your opinion, are teachers motivated in your school?
By use of:
(A) Rewards based on group participation and involvement ( )
(B) Rewards, occasional punishment and some involvement ( )
(C ) Rewards and some actual or potential punishment ( )
(D )Fear, threats, punishment and occasional rewards ( )

---------28. In your opinion, do motivational forces in your school conflict with one another or reinforce one another?
(A) Forces reinforce each other ( )
(B) Some conflict, often reinforcement of forces ( )
(C ) Conflict often exists with only occasional reinforcement of forces. ( )
(D) Marked conflict of forces ( )

---------29. How, in your opinion, would you describe the attitude of teachers in your school towards each other?
(A) High degree of confidence and trust ( )
(B) Some distrust and some cooperation ( )
(C) Some distrust ( )
(D) Frequent hostility ( )

---------30. How would you describe the extent of teachers' satisfaction derived from a visit to your school by school inspectors from the Ministry of Education?
(A) Usually dissatisfaction ( )
(B) Some dissatisfaction ( )
(C) Moderate satisfaction ( )
(D) High satisfaction ( )

**Part III**

Please answer the questions below in the blanks provided.

1. In your opinion, what aspects of the organizational characteristics of your school such as the nature of: decision making process; communication; interaction and motivational forces do you consider very positive?

2. In your opinion, what aspects of the organizational characteristics of your school such as the nature of: decision making process; communication; interaction and motivational forces do you consider very negative?

3. What suggestions can you give towards improving the organizational characteristics of your school?

Thank you for your participation.

## APPENDIX D

### SCHOOL KCSE SCIENCE PERFORMANCE INDEX

| SCHOOL | 1996 | | 1997 | | 1998 | | 1999 | | 2000 | | MPI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | PI | N | PI | N | PI | N | PI | N | PI | |
| AI | 152 | 2.50 | 150 | 2.50 | 206 | 2.50 | 156 | 3.00 | 182 | 3.26 | 2.75 |
| A2 | 350 | 6.45 | 383 | 8.32 | 397 | 7.88 | 368 | 9.27 | 347 | 8.25 | 8.03 |
| BI | 656 | 7.21 | 603 | 7.54 | 616 | 7.16 | 623 | 7.53 | 594 | 8.28 | 7.54 |
| B2 | 181 | 3.99 | 195 | 4.00 | 176 | 4.45 | 233 | 4.60 | 196 | 5.00 | 4.41 |
| CI | 473 | 5.60 | 459 | 6.20 | 456 | 5.90 | 460 | 6.18 | 432 | 6.59 | 6.09 |
| C2 | 192 | 2.00 | 206 | 2.50 | 222 | 2.50 | 220 | 3.00 | 230 | 2.00 | 2.40 |
| DI | 294 | 3.30 | 289 | 3.29 | 303 | 3.55 | 241 | 3.56 | 249 | 3.73 | 3.49 |
| D2 | 178 | 3.88 | 163 | 4.62 | 159 | 5.00 | 160 | 4.10 | 163 | 4.60 | 4.44 |
| EI | 138 | 3.00 | 150 | 2.50 | 154 | 3.00 | 152 | 2.50 | 154 | 3.00 | 2.80 |
| E2 | 545 | 3.35 | 428 | 4.35 | 327 | 4.63 | 349 | 5.09 | 326 | 5.65 | 4.61 |
| FI | 296 | 3.65 | 249 | 4.44 | 244 | 4.20 | 219 | 5.05 | 213 | 4.54 | 4.38 |
| F2 | 258 | 3.57 | 272 | 3.34 | 272 | 3.78 | 274 | 4.02 | 204 | 3.77 | 3.70 |
| GI | 315 | 3.88 | 357 | 4.55 | 321 | 4.35 | 326 | 5.00 | 328 | 4.16 | 4.39 |
| G2 | 295 | 5.00 | 316 | 5.61 | 292 | 5.29 | 316 | 4.36 | 303 | 5.00 | 5.05 |
| HI | 148 | 2.73 | 134 | 3.10 | 134 | 3.31 | 165 | 3.20 | 155 | 3.26 | 3.12 |
| H2 | 175 | 3.00 | 126 | 3.00 | 170 | 3.55 | 164 | 3.46 | 100 | 2.50 | 3.10 |
| I1 | 170 | 3.50 | 220 | 3.00 | 259 | 2.50 | 216 | 2.50 | 168 | 3.00 | 2.90 |
| I2 | 339 | 5.12 | 401 | 5.60 | 400 | 5.40 | 417 | 5.39 | 440 | 5.70 | 5.44 |
| J1 | 188 | 5.91 | 281 | 6.45 | 288 | 5.67 | 281 | 8.03 | 303 | 7.30 | 6.67 |
| J2 | 144 | 4.00 | 167 | 4.95 | 137 | 4.53 | 143 | 4.46 | 122 | 4.00 | 4.39 |
| K1 | 104 | 3.00 | 138 | 3.09 | 118 | 4.25 | 146 | 3.00 | 148 | 4.05 | 3.48 |
| K2 | 539 | 9.65 | 584 | 10.32 | 542 | 10.34 | 559 | 11.00 | 577 | 10.67 | 10.40 |
| L1 | 216 | 2.50 | 248 | 2.50 | 237 | 4.03 | 248 | 3.00 | 196 | 2.02 | 2.81 |
| L2 | 242 | 5.99 | 277 | 6.65 | 277 | 6.91 | 259 | 7.83 | 319 | 7.41 | 6.96 |
| M1 | - | - | - | - | 181 | 10.42 | 195 | 10.42 | 231 | 10.42 | 10.42 |
| M2 | 594 | 4.37 | 572 | 4.62 | 515 | 4.63 | 508 | 4.62 | 478 | 5.00 | 4.65 |
| N1 | 148 | 4.00 | 153 | 3.50 | 138 | 3.77 | 156 | 5.00 | 182 | 4.50 | 4.15 |
| N2 | 100 | 2.50 | 122 | 2.00 | 110 | 2.50 | 168 | 2.99 | 198 | 3.00 | 2.60 |
| P1 | 162 | 4.22 | 190 | 5.26 | 188 | 6.84 | 212 | 6.21 | 251 | 6.41 | 5.79 |
| P2 | 146 | 3.01 | 142 | 2.50 | 150 | 3.27 | 130 | 3.26 | 140 | 3.00 | 3.01 |

**N: CANDIDATURE** **PMPI = 4.80**
**PI: PERFORMANCE INDEX**
**PMPI: POPULATION MEAN PERFORMANCE INDEX**
**MPI: MEAN PERFORMANCE INDEX**

# APPENDIX E

## ORGANIZATIONAL CLIMATE MEAN SCORES FOR PUBLIC SCHOOLS BY TOTAL AND BY SEPARATE ORGANIZATIONAL PROCESSES

| SCHOOL | L | C | I | D | G | M | ITEM MEAN | MOC |
|---|---|---|---|---|---|---|---|---|
| A1 | 2.73 | 2.53 | 2.67 | 2.4 | 2.33 | 2.27 | 2.49 | 74.7 |
| A2 | 2.48 | 2.36 | 2.8 | 2.24 | 2.36 | 2.4 | 2.44 | 73.2 |
| B1 | 2.6 | 3.09 | 3.29 | 3.37 | 3.14 | 3.03 | 3.09 | 92.7 |
| B2 | 1.8 | 2.09 | 2.71 | 1.86 | 2.51 | 2.29 | 2.21 | 66.3 |
| CI | 3.2 | 2.4 | 2.32 | 3.28 | 3.08 | 2.68 | 2.99 | 89.7 |
| C2 | 2.75 | 2.5 | 3.05 | 2.78 | 2.73 | 2.83 | 2.77 | 83.1 |
| DI | 2.63 | 2.49 | 3 | 2.66 | 2.86 | 2.63 | 2.71 | 81.3 |
| D2 | 2.96 | 2.8 | 3.36 | 3.04 | 3.08 | 2.32 | 2.93 | 87.9 |
| E1 | 2.06 | 2.29 | 2.66 | 2.17 | 2.49 | 2.46 | 2.36 | 70.8 |
| E2 | 2.68 | 2.44 | 2.92 | 2.6 | 2.52 | 2.72 | 2.65 | 79.5 |
| F1 | 1.7 | 2.1 | 2.53 | 2.05 | 2.75 | 2.28 | 2.24 | 67.2 |
| F2 | 2.95 | 2.25 | 3.08 | 2.48 | 2.63 | 2.73 | 2.69 | 80.7 |
| G1 | 2.64 | 2.44 | 3 | 2.4 | 2.52 | 2.48 | 2.58 | 79.4 |
| G2 | 3.49 | 2.54 | 3.43 | 3.14 | 2.86 | 2.89 | 3.06 | 91.8 |
| H1 | 2.63 | 2.2 | 3.13 | 2.8 | 2.77 | 2.73 | 2.71 | 81.3 |
| H2 | 2.78 | 2.23 | 2.75 | 2.25 | 2.9 | 2.43 | 2.56 | 76.8 |
| I1 | 2.45 | 2.45 | 3.15 | 2.95 | 2.9 | 2.65 | 2.76 | 82.8 |
| I2 | 2.71 | 2.69 | 3.26 | 3 | 2.97 | 2.57 | 2.87 | 86.1 |
| J1 | 2.8 | 2.76 | 2.76 | 2.64 | 2.33 | 2.71 | 2.67 | 88.1 |
| J2 | 3.07 | 2.57 | 3.3 | 2.83 | 2.67 | 2.93 | 2.9 | 87 |
| K1 | 2.3 | 2.35 | 3.03 | 2.3 | 2.53 | 2.55 | 2.55 | 76.5 |
| K2 | 2.63 | 2.15 | 3.08 | 2.48 | 2.33 | 2.4 | 2.51 | 75.3 |
| L1 | 3.23 | 2.27 | 3.03 | 2.83 | 2.4 | 3.1 | 2.81 | 84.3 |
| L2 | 2.13 | 1.93 | 2.87 | 2.3 | 2.4 | 2.2 | 2.31 | 69.3 |
| M1 | 2.53 | 2.2 | 2.6 | 2.47 | 2.93 | 3.07 | 2.63 | 78.9 |
| M2 | 2.8 | 2.23 | 2.53 | 2.38 | 2.1 | 2.45 | 2.42 | 72.6 |
| N1 | 3.37 | 3.03 | 3.49 | 3.09 | 3.06 | 3.17 | 3.2 | 96 |
| N2 | 2.64 | 2.32 | 3.28 | 2.84 | 3 | 2.4 | 2.75 | 82.5 |
| P1 | 1.77 | 2.17 | 2.54 | 1.86 | 2.06 | 2.29 | 2.12 | 63.6 |
| P2 | 2.23 | 2.23 | 2.53 | 2.23 | 2.35 | 2.33 | 2.32 | 69.6 |
| **Population Mean** | **2.62** | **2.4** | **2.97** | **2.59** | **2.65** | **2.63** | **2.64** | **79.6** |

**L: LEADERSHIP I: INTERACTION G: GOAL SETTING**

**C: COMMUNICATION D: DECISION MAKING M: MOTIVATION**

**MOC: MEAN ORGANIZATIONAL CLIMATE**

# Organizational Climate and Performance in Sciences at Kenya Certificate of Secondary Education in Public Secondary Schools in Nairobi Province

By

UNIVERSITY OF NAIROBI
EAST AFRICANA COLLECTION

**Zachary K. S. Nyaanga**

**A Research Project submitted in Partial Fulfillment for the Requirements of the Degree of Master of Education in Educational Administration and Planning, University of Nairobi.**

**2004**

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# DECLARATION

This research project is my original work and has not been presented for a degree in any other university.

Zachary K. S. Nyaanga

This research project has been submitted for examination with my approval as University Supervisor.

Dr. Grace Nyagah

Lecturer,

Department of Educational Administration and Planning, University of Nairobi

# DEDICATION

This study is dedicated to my brothers, Samson and Daniel, my sister, Rachael and my wife and children. To my brothers and my sister, who, by their encouragement and support, made this undertaking possible and rewarding. To my wife, Janet, who, by her love and encouragement, made an extensive contribution to this undertaking. To my children Nyasuguta and Nyaanga, who, by their youthful enthusiasm and patience, enabled me to bring this undertaking to a conclusion.

UNIVERSITY OF NAIROBI
EAST AFRICANA COLLECTION

# ACKNOWLEDGEMENT

Sincere appreciation is expressed to the faculty of Education, Department of Educational Administration and Planning, University of Nairobi, for stimulating and enriching encounters during the period of this study. Special appreciation is extended to the Dean, Faculty of Education, Dr. G. N. Kimani; the Chairman, Department of Educational Administration and Planning, Dr. G. N. Reche, and the supervisor of the study, Dr. G. Nyagah. Their constructive criticism, warm friendship and encouragement were of great value to the completion of this study. Appreciation is also extended to principals and teachers under the Nairobi Provincial Directorate of Education, who, by their participation, made the study possible. An extensive contribution to this undertaking was made by friends and family members through their enthusiastic interest and encouragement. Their support is sincerely appreciated as is the assistance of Mrs Okumu who typed the text.

Finally, the strength received from the Almighty God during the period of the study is humbly acknowledged.

# ABSTRACT

The main purpose of the study was to investigate whether a significant relationship existed between organizational climate as perceived by teachers and performance in sciences at K.C.S.E in public secondary schools in Nairobi Province. The other purpose was to find out the significance of the relationships between selected principals' and schools' variables and organizational climate. The principals' demographic variables were; age, sex, area of specialization, professional experience and academic qualifications. The schools' variables were; category, sex of the student body and size.

The research design used was Ex Post Facto. The sample size comprised 40 principals and 320 teachers from a population of 47 principals and 2437 teachers. Random sampling was used to select 8 teachers from each of the participating schools.

Likerts profile of a school questionnaire was selected as the instrument of the study. The organizational climate score was used to describe the school's climate with respect to its position on Likert's authoritative-participative climate continuum. The techniques used to analyse data were pearson correlation analysis, Analysis of Variance (ANOVA) and t-tests.

Findings of the study indicated that there were no significant differences in school organizational climate as a function of the principal's (a) age (b) sex (c) area of specialization (d) professional experience and (e) academic qualification.

Additionally, there were no significant differences in school organizational climate as a function of (a) school category (b) sex of the student body and (c) school size.

However, there were significant differences in performance in sciences as a function of school category. The mean performance index (MPI) for boarding schools was significantly higher than for day schools. There were no significant differences in performance in sciences as a function of the sex of the student body, nor were there significant relationships between school organizational climate and performance in sciences.

It was found that in cases where there were significant differences, there was a small amount of variance in school organizational climate and performance in sciences accounted for by the variables utilized in this study.

As a recommendation, the Ministry of Education (MOE) should encourage, through legislation and education, widespread participation of stakeholders in school decision making and policy formulation. This will create an enabling school organizational climate for teachers and tempt them to improve performance in sciences.

The Parents Teachers Association (PTA), though not playing a significant role in school policy formulation, should be recognized through legislation and thus be empowered to manage schools. This will encourage parents and teachers to own the objectives of the school and be motivated to improve their performance.

The Kenya Institute of Education (KIE) can, for instance, play a pivotal role in emphasizing parent-teacher-student participative practice through incorporation into the content of the curriculum for educators and institutions of learning at pre-university level.

Replication of the research is suggested so as to draw participants from other provinces and rural settings. Focus should also be directed to identification of variables other than those utilized in this study that may significantly affect organizational climate and performance.

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# LIST OF ABBREVIATIONS

| | |
|---|---|
| BA: | Bachelor of Arts |
| BED: | Bachelor of Education |
| BOG: | Board of Governors |
| BSC: | Bachelor of Science |
| DipED: | Diploma in Education |
| F: | Frequency |
| KCSE: | Kenya Certificate of Secondary Education |
| MA: | Master of Arts |
| MED: | Master of Education |
| MS: | Mean of squares |
| N: | Number |
| PGDE: | Post Graduate Diploma in Education |
| PhD: | Doctor of Philosophy |
| PTA: | Parents Teachers Association |
| SD: | Standard Deviation |
| SE: | Standard Error |
| SS: | Sum of Squares |

# CHAPTER ONE

# INTRODUCTION

## Background to the study

Organisational climate remains an elusive subject despite many studies over the years to examine the concept with a view to coming up with a coherent position. There have been evident attempts at improving our understanding and measurement of organisational climate. Indeed, the concept has been widely researched and has attracted considerable attention and controversy. As James (1982) points out, a review of literature indicates that it is not possible to speak of the existence of climate without demonstrating a certain degree of agreement on it. Attempts at devising a reliable measure of climate have not been controversy free. For instance, a case study of a bank by Argyris (1958) showed that the concept, organisational climate, has attracted considerable attention and debate on how it might be satisfactorily measured.

The incoherent view of the concept is apparent in contributions by Rousseau (1988) who observes that the distinction between the concepts: organisational climate and organisational culture, remains ill-defined. He points out that the two concepts have been used interchangeably, often to the neglect of the existing body of research on organisational climate. Rousseau (1988) observes that the concept, organisational climate, has been taken up in a variety of ways leading to a lack of boundaries differentiating what climate is from what it is not.

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Rousseau (1988)observes that most writers on organisational climate see the concept as comprising the combined perceptions of organisational members describing the atmosphere in their organisations. Other writers such as Payne (1971) and Letwin and Stringer (1968), while pointing out that the concept has been widely researched over the past two decades, observe that organisational climate has been generally viewed as a variable, or a set of variables that represent the norms, feelings, and attitudes prevailing at a work place.

The expressed difficulty in measuring and drawing a boundary for organisational climate exposes the elusiveness of the concept. However, the significance of organisational climate in influencing organisational performance is emphasized by Hempton (1973) who alludes to the fact that, what is important about climate is that it can arouse or suppress the motivational tendencies of individuals. He points out that climates tend to mediate between the task requirements and the needs of the individual and that changes in certain climate properties could have profound and immediate effect on the motivational performance of all employees.

Culbert and Mc Donough (1985) view motivation, as a construct, in terms of helping another individual mobilise his/her unique talents and efforts in the service of an organisational cause that also has meaning to him/her. Motivation, then, has the effect of improving the performance level of organisation members.

Hempton (1973) holds that organisational climate influences the motivation of members. He points out that the capacity to influence organisational climate is perhaps the most powerful leverage point in the entire management system.

A study by Owens (1970) asserts that leaders or managers are critical determinants of organisational climate through their leadership styles. Similar findings were reported in a study by Gibbon (1976) involving secondary school principals, in which he observed a significant relationship between leadership styles and organisational climate.

It is thus upon management to initiate pragmatic effort to motivate workers through improvement of leadership and climate. To foster motivation, it is significant for workers to have a greater sense of participation. As Glaser (1973) points out, improvement in the work climate frequently leads to greater productivity as well as greater job satisfaction. He urges administrators to focus on ways that could improve and provide a work climate that would stimulate pleasurable ego involvement in the job, thereby bringing about increased productivity as a possible by-product.

This desire to improve the work climate probably influenced the development of organisational theory, traced through three phases, identified by Schein (1970) and Barnard (1964) as: the Scientific Management; the Human Relations and the Behavioural phases. The focus was to move away from the Authoritative Organisational concept that emphasised organisational needs, to the exclusion of individual needs, thereby denying workers a sense of involvement in the tasks they helped shape. Tendency was towards the participative organisational concept that emphasises the integration of organisational needs and individual needs and gives workers a greater sense of ownership of the objectives of the organisation through participatory decision-making. As Likert (1961) aptly puts it, the principle of supportive relationships, consequently, points to the necessity for an adequate degree of harmony between organisational objectives and the needs and desires of its individual members. He recommends group involvement in setting high performance goals and widespread participation in the decision making process.

The school, as an organization, would like to realize its objectives. Society has a claim of interest in the performance of the school arising from the realization that the school sources its human and material resources solely from society. According to Powers and Powers (1984), what society desires in its citizenry should be appropriately reflected in the school, its main point of enculturation. Indeed, society often holds school leadership responsible for performance levels. As Hersey and Blanchard (1969) aptly put it, the successful organisation has one major attribute that sets it apart from unsuccessful organisations; dynamic and effective leadership.

Indeed, Cobern, Salem and Mushkin (1972) point out that school inputs such as leadership, climate and various characteristics of school environment such as parents' aspirations, teachers' expectations and students' own self-concept were closely related to educational performance. While improvement of school inputs can influence school climate and performance, organisational leadership may lack the courage to change and disregard past authoritative tendencies in favour of participative practice that embraces inclusive decision making.

Drawing an analogy between results of a study carried out in Nigeria, Mbae (1994) points out that secondary school heads in Kenya, as those in Nigeria, were authoritarian and even autocratic in their administrative tendencies. He observes that although such documented evidence is lacking in Kenya, a casual review of literature reveals the situation to be very similar to that in Nigeria. He particularly abhors the top-bottom flow of communication and orders.

Lack of participative practice in schools may encourage existence of environments that are not conducive for the teaching-learning process. As Sergiovanni (1967) points out, the problem lies in providing teachers with an organisational environment that is personally enriching and satisfying, and at the same time, productive for the organisation. Indeed, according to Glass (1972), improving student learning calls for breaking away from the tried and true methods of the past and trying out new and bold unproven procedures.

### Statement of the Problem

There has been considerable concern over the years for the inability to achieve high performance outcomes in sciences in public secondary schools despite overwhelming commitment by the society in general and stakeholders in particular. The National Development Plan (1997 - 2001) has, for instance, indicated that about 40% of the National Budgetary allocations goes to the education sub-sector, out of which 16.2% is allocated to secondary school education. The introduction of cost sharing meant that taxpayers had to pay for the provision of education at market rates. Indeed, according to the National Development Plan (2002-2008), despite investment of significant resources in the education sub-sector by the government and other stakeholders over the years, the cost of education remains a main challenge to its expansion and improvement.

Despite concerted efforts to improve educational facilities like laboratories and workshops, performance in sciences has continued to decline, causing continued concern. Stakeholders have generally blamed administrators and teachers, demanding that they be held accountable for the poor performance in maths and sciences, citing poor school management and leadership (Daily Nation, 1995, March 1, p.1). The government's concern arises from its need for qualified manpower in areas such as engineering to enable it achieve its ambitious target of industrialisation by the year 2020.

A casual survey of public schools shows that the differential performance in sciences and non-science subjects persists despite efforts to address the disparity. The performance in sciences at K.C.S.E in Nairobi Province has been consistently poor. Indeed, the mean performance index for Nairobi Province over a five year period, between 1996 and 2000, was a low 4.8. Without doubt, science learning process calls for an inquisitive mind, creativity and coming up with solutions. This requires an enhancing learning environment, thereby bringing into focus the nature of school organizational climate. Is it, indeed, the case that school organisational climate affects both teachers and students in the teaching-learning process?

This study was set out to investigate the relationship between school organisational climate as perceived by teachers and performance in sciences at K.C.S.E in public secondary schools in Nairobi Province. The problem merits investigation in view of the fact that sciences are of crucial importance to technological development as a basis for industrial development.

### Purpose of the study

The primary purpose of the study was to investigate the relationship between school organisational climate, as perceived by teachers, and performance in sciences in public secondary schools in Nairobi Province. The secondary purpose of the study was to find out the nature of differences in school organisational climate as a function of the principals' individual characteristics of age, sex, area of specialisation, professional experience, academic qualification and the school variables of category, sex of the student body and size.

### Objectives of the Study

The objectives of the study were as follows:

1. To determine the relationship between school organisational climate as perceived by teachers and the principals' demographic variables of : (a) Age (b) Sex (c) Area of specialisation (d) Professional experience and (e) Academic qualification.
2. To determine the differences in school organisational climate as perceived by teachers between schools of different: (a) Category (b) Sex of

the student body (c) Size.

3. To identify the differences in science performance between schools of different:- (a) Category (b) Sex of the student body

4. To determine the relationship between school organisational climate as perceived by teachers and performance in sciences.

## Hypotheses of the Study

The hypotheses of the study were stated as follows:

**1.** There is no significant difference in school organisational climate as perceived by teachers between the principal's selected demographic variables of :-

(a) Age
(b) Sex
(c) Area of specialisation
(d) Professional experience
(e) Academic qualification

**2.** There is no significant difference in school organisational climate as perceived by teachers between schools of different:-

(a) Category
(b) Sex of the student body
(c) Size

**3.** There is no significant difference in science performance between schools of different:-

(a) Category

(b) Sex of the student body

**4.** There is no significant relationship between school organisational climate as perceived by teachers and performance in sciences.

**Significance of the study**

There is great concern to improve the continued poor performance in sciences in public secondary schools. This has generated a strong need to examine the nature of organisational climates and their possible effects on performance in sciences. Hence, data collected and conclusions from this study should enable educational administrators clearly understand the relationship between organisational climate in schools and performance in sciences and form a basis for improvement. It may also assist educational administrators to recognize the importance of establishing organisational climate that enables teachers to integrate achievement of school goals with fulfillment of personal needs.

Since societies are compelled to be in step with technological changes, the importance of science based manpower to developing countries, like Kenya, can't be overemphasized. Findings of this study may enable society and government appreciate the need for school organizational climate that ensures an environment fit for the science teaching-learning process in educational institutions. This will enhance the prospect of achieving high performance in sciences, thereby establishing a firm basis for technological advancement. Indeed high performance, as reflected by the school science performance index, is critical to both society and students. As Eshiwani (1983) points out, those who perform poorly cannot compete effectively for the few opportunities that exist in either higher education or employment. Findings of this study should enable students and society develop a positive perception towards scientific knowledge as a basis for technological development and industrialization.

### Limitations of the study

This study used Ex Post Facto design. Kerlinger (1973) identified the weakness in an Ex Post Facto research design as lacking in experimental control due to its inability to randomise and manipulate the independent variables. This weakness increases the danger of spurious interpretation.

The description of school organisational climate as perceived by teachers did not constitute an evaluation of effectiveness since the competence and motivation of randomly selected teacher respondents may have influenced results of the study. The performance in sciences may have been affected by other factors beyond researcher's control such as:- learners' past experience, learners' mental ability, school instructional resources, learners' personal effort and learners' self-concept. The findings of the study was thus an overall assessment of the interpersonal milieu of a school organisation expressed in terms of the principals' behaviour dimensions as perceived by teachers.

### Delimitations of the study

Teachers and principals who had served for less than one year in a school were excluded from the study. There was no information from non-participating public schools and all private schools in Nairobi Province. The critical possibility of their influence on the findings of the study was thus ignored.

Nairobi city, which forms the location of this study, is a cosmopolitan setting. Therefore, any generalisations of the findings of the study to public schools in rural settings and even other urban and suburban settings can only be done with caution. It is instructive to note that when dealing with inductive inferences from empirical data, generalisations will be appropriate only when made to populations in the study.

The study focused on performance at K.C.S.E to the exclusion of continuous performance, and utilised only five years' K.C.S.E results, from 1996 - 2000, to determine the performance index of individual schools.

### Basic Assumptions of the study

It was assumed, in this study, that organisational climate, as a construct, was closely related to the perceived behaviours of principals and teachers. It was also assumed that measures of this construct approaches an interval scale of measurement.

## Definitions of significant terms

**Influence** refers to the way a person affects the thoughts, attitudes, perceptions and behaviours of others.

**KCSE** refers to the examination taken at the end of a four-year course in Kenyan Secondary Schools.

**Leader** refers to a formally or informally appointed member of a group who carries out the management of its tasks through influencing the activities of the group members.

**Performance** refers to the level of achievement of organisational goals as measured by the performance index.

**Principal** refers to a formerly appointed leader of a school to carry out the management of its tasks through influencing the activities of members of the school.

**Public schools** refers to schools registered by the Ministry of Education and offering common courses as recommended by the Kenya Institute of Education. Teachers in public schools are provided and paid by the Government.

**Sciences** refers to the science subjects offered at K.C.S.E, namely :-Biology, Chemistry and Physics.

**School Category** refers to either boarding or day public secondary schools.

**School Student Sex** refers to girls, boys or mixed public secondary schools.

**School Size** refers to the number of students enrolled in public secondary schools.

**Teachers** refers to professionally trained persons assigned to specific secondary schools to impart knowledge according to specific rules and guidelines.

### Organisation of the Study

The study is organised into five chapters as follows:-

**Chapter One** comprises Background to the study; Statement of the problem; Purpose of the study; Objectives of the study; Hypotheses of the study; Significance of the study; Limitations of the study; Delimitations of the study; Basic assumptions of the study and Definition of significant terms.

**Chapter Two** comprises Literature review on Concept of an organisation; Development of organisational theory; Concept of organisational climate; Likert's Organisational systems of management; Studies and research findings related to the study and conceptual framework.

**Chapter Three** comprises Research Methodology covering Research design; Target population; Sample and Sampling procedure; Research instruments; Pre-testing the research instruments; Administration of instruments and Data analysis techniques.

**Chapter Four** comprises data analysis and findings.

**Chapter Five** comprises Summary of the study, Conclusions, Recommendations and suggestions for further research.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE

The review of literature is presented in two parts. The first part examines organisations and the development of organisational theory through three movements, namely: the scientific management movement; the human relations movement and the behavioural movement. The second part presents a review of theory and research findings related to organisational climate. The section also examines Likert's four organisational systems of management which describe human behaviour in an organisation.

## The Concept of an Organisation

Louis (1959), a classical theorist, defined an organisation as the structure of the relationship, power, objectives, roles, activities, communications and other factors that exist when persons work together. Indeed, classical theorists view organisations in terms of structure. Persons (1960), in his study of structure and process in modern sciences, defined organisations as social units (or human groupings) deliberately constructed and reconstructed to seek specific goals. Persons' view gives considerable attention not only to the organisational structure but also to the all-important purpose or goal for which the organisation exists.

This view of organisations through social structure and goal is reinforced by

Schein (1970) who defined an organisation as the rational co-ordination of the activities of a number of people for the achievement of some common explicit purpose or goal, through the division of labour and function, and through the hierarchy of authority and responsibility. According to Okumbe (1998), organisations consist of groups of people whose efforts are deliberately co-ordinated for the achievement of specific goals; while Barnard, in his earlier view, defined an organisation as a system of consciously co-ordinated activities of two or more persons. Later, in his study of the functions of the executive, Barhard (1964) defined an organisation as an impersonal system of co-ordinated human efforts with a common purpose as a unifying principle.

From the foregoing definitions, the school, as a social unit, can be regarded as an organisation. Indeed, according to Okumbe (1998), educational organisations such as schools, colleges, training institutions, and universities are a group of individuals in a given place, whose efforts are deliberately co-ordinated for the purpose of imparting knowledge, skills and attitudes to students or pupils in order to achieve predetermined educational objectives or goals. This is in agreement with the Modern Management theory definition of an organisation as a structured process in which individuals interact for objectives, Hicks (1972).

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## Development of Organizational theory

The development of Organisational theory can be traced through three movements. These are: the scientific management movement, the human relations movement and the behavioural movement (Schein (1970); Barnard (1964)).

## The Scientific Management Movement

According to Scott (1961), a set of concepts about organisations, now known as classical theory, began to be extensively developed in late 1800s. Gerth and Mills (1958) point out that classical theory developed in three streams at about the same period (1900-1950) by separate groups of writers working almost totally independent of each other. The three streams are:- Bureaucracy, Administrative theory and Scientific Management. It is observed that Bureaucracy was developed by sociologists who mainly took a relatively scholarly, detached and descriptive point of view for which Max Weber is credited the most important writer on Bureaucracy. Administrative theory and Scientific Management were developed by writers who took a prescriptive point of view. They prescribed principles and practices for better organisational performance. Administrative theorists focused on overall, relatively macro aspects of organisations while scientific management took a micro view point and emphasised the individual worker and the foreman, particularly in manufacturing activities. It also focused on such micro aspects as elemental units in the work process.

Louis (1959) observes that in the three streams of classical theory development, organisations have been seen in large measure as mechanistic structures. He points out that it is surprising that the three streams developed, to a large extent, independently. It is however evident that the three streams of classical theory are compatible and complimentary. They have a common view about man and his organisations. They all emphasise specialisation and organisational structure, based on hierarchical and functional criteria. The point of variation however is in the basic unit of analysis. Unlike Bureaucracy and administrative theory which emphasise the structure and process of human organisation (macro view point), scientific management focuses its unit of analysis on the physical activities of work (micro aspects).

Hicks (1972) has observed that scientific management has probably been an important factor in the creation of high standards of living in the United States and some other industrialised societies. He however points out that though scientific management movement contributes a significant component of widely accepted professional, modern management practice, some of its elements have nevertheless been severely criticised. Indeed Fredric Taylor, who is often regarded the father of Scientific management movement, has been severely criticised. He was one of the first persons to have systematically studied work and is a leading exponent of scientific management. Taylor (1911) focused attention on the structure of the organisation and maximum production. His work is criticised for having a narrow physiological focus and for ignoring the importance of psychological and sociological factors of a worker. Despite the criticism, it is evident that his inclination has nevertheless indicated an increase in efficiency and production.

Scientific management deals mainly with the relationship of a worker to his work. The emphasis is on the man-machine relationships with the object of improving performance of routine, repetitive production tasks. As pointed out, Taylor, the leading classical theorist, viewed the worker in terms of a machine. In his man-machine advocacy, emphasis was laid on specific definition of small components of a task. The workers, like machines, could be made to do work as systematically determined with increased production and efficiency.

This explains why scientific management advocates an inductive, empirical, detailed study of each job to determine how it could be done most efficiently. According to Etzion (1964), during the scientific management movement, organisations were viewed from a managerial point of view. The motivational basis for scientific movement was economic. It was assumed that the individual worked efficiently to achieve maximum production and thus material rewards could be earned with which to satisfy their economic needs.

Lawler (1971), in his study of pay and organisational effectiveness, observes that the scientific management approach assigns pay the primary role in motivating employees while modern management theory tend to ignore pay almost entirely or to see it as only one of a large number of possible influences on motivation. He found that Scientific management falls under the approach of autocratically tying pay to performance. In this approach, there is no room for employee participation in discussions about how pay should be administered. Indeed Taylor's work emphasizes the primary role of management in setting piece rates and tying pay to performance. Piece rate plans were developed within the context of scientific management and have typically been run in an authoritative manner. Traditionally, such plans have been established as a management control device.

Getzels; Lipham and Campbell (1968) described Taylor's management goals as the rational analysis of administrative procedures for exploiting human and material resources in order to attain the objectives of an organisation expeditiously. This resulted in preoccupation with organisational requirements to the neglect of the economic needs of the individual in the organisation. The view of man in terms of a machine is further enhanced by the human behaviour assumptions of scientific management as pointed out by Urwick (1956), who wrote thus:

(i) Scientific management is a whole-hearted attempt to deal with every question arising from the conduct of business, or indeed any human system of co-operation, in the temper and spirit of the scientist and by using tools of definition, analysis, measurement, experiment and proof. It is the substitution of inductive thinking (thinking based on facts), for the old deductive thinking (thinking based on theories or opinions) in all matters concerning the organisation of human groups.

(ii) There is a primary focus on work itself and not the particular person doing the work. The good worker is viewed as one who accepts orders but does not initiate actions. The worker is told how to do his job based on the scientific analysis of the job. Focus is at this basic work-worker level, typically in a production shop. Scientific management does not emphasise the integration and co-ordination of higher levels of the organisation.

(iii) Scientific management assumes rationality in the classical sense - each worker is assumed to be the classical "economic man," interested in maximising his monetary income. The organisation is seen as a rational instrument of production. The complicated motivational, emotional and social actions and reactions of persons in organisations is not emphasised.

The implications of these assumptions is that the scientific management approach strongly uphold the practice of close supervision of subordinates, subdivision of tasks into their elementary components that are most easily learnt and which require simple repetitive operations and a detailed standardised form of doing work as established by management. Indeed scientific management approach regards the worker as an important tool or machine in production whose behaviour can be regulated and controlled to the desired level of efficiency to increase production.

Child (1984), in his study of organisations, observed that many writers regard the main contribution of organisational design to be the means it provides for controlling the behaviour of employees. Control has been singled out as the greatest problem about management practice by critics of the system. Control was only one of the basic managerial activities that Henri Fayol, a scientific management proponent, identified in 1916. Child described control within organisations as aimed at ensuring that a predictable level and type of performance is attained and maintained. Indeed, Boot; Cowling and Stanworth (1977) have pointed out that the scientific management proponents emphasised the practice of rule of thumb based mainly on the division of labour and a belief in hierarchical structure.

The major contributors to the scientific management approach were prominent writers such as Taylor (1911), Gulick and Urwick (1937) and Fayol (1949). They came up with a set of general statements outlining how organisations "ought" to be set up and run. They have however come under criticism from sociologists and psychologists who question the behavioural assumptions of these approaches.

Boot et al (1977) has observed that these scientific management proponents emphasised:- (a) that employees should be formerly grouped and organised in specialist functional departments. (b) Hierarchical structure with top-down authority (c) Structure with lines depicting chain of command and proper channels for official communication (d) that employees should report to only one superior (e) that the span of control of subordinates by superiors should be limited to permit effective supervision (f) that job description and nature of duties should be prescribed preferably in writing (g) effective top-down control and communication (h) that authority should be commensurate with responsibility (i) categorization of departments as line or staff. From the foregoing, it's apparent that these authoritative requirements effectively controlled workers' behaviour.

Boot et al (1977) further observes that while in their time (up to and well into the twentieth century) these principles probably had some validity and helped a large number of managers and thus contributed to increased efficiency, by the nineteenth century, empirical evidence was already accumulating that questioned the basis of many of these principles. Monhan (1975) aptly put it thus: in classical theory, the conflict between man and the organisation was neatly settled in favour of the organisation. The only road to efficiency and productivity was to surrender man's needs to the service of the bloodless machine.

Advances in the social sciences led to criticism of the behavioural assumptions of these approaches, with psychologists suggesting that workers were influenced by many factors other than money while sociologists began to question assumptions about social order at the place of work. Mayo (1933) has criticised scientific management approach for its assumptions about human behaviour and has called its view the "rabble hypothesis" for assuming that workers behaved like a rabble of isolated individuals motivated chiefly by a desire to earn money. These behavioural assumptions were fertile ground for the establishment of authoritative organizational climate.

Indeed, schools, as organisations, were directly influenced by the scientific management movement. Seawell (1974), in his study on the organisation and people, observes that in the early twentieth century, educational organisations, particularly in the USA, (home to Taylor, the father of scientific management movement) were operated as classical bureaucracies with more emphasis upon the organisation than upon the human elements within the organisation.

**The Human relations movement**

The prevailing view of the worker in scientific management approach was that of "economic man" for whom any higher order needs were irrelevant, Boot (1977). It became evident that scientific management ideas about motivation proved inadequate in explaining all worker behaviour. This led to subsequent development of theories and emergency of empirical studies to compensate for the inadequacies in the underlying theories of worker motivation. The 1930s and 1940s saw the development of what became to be known as the "Human relations school of thought" as a reaction to the scientific management movement. It explained man's behaviour at work primarily in terms of his social needs, Blackler and Williams (1971).

Fredrick Winslow Taylor was regarded the father of scientific management movement and so was Elton Mayo regarded the father of the Human relations movement. Reactions to inadequacies of scientific management was registered by Mary Parker Follet in her thesis as reported by Metcalf and Urwick (1940) who studied collected papers of Mary Parker Follet. They observed that in a significant reaction to scientific management principles, parker argued that co-operation between managers and workers, mutual understanding, sharing ideas and integration of view points, that is, good human relations, were the Warp and Woof of society and of industry. A strong desire was indeed emerging – to replace the closed, authoritative organizational climate with an open, participative climate that listened to workers' needs.

Parker's thesis received strong empirical backing from findings of the Hawthorne studies, Mayo (1933). The Hawthorne studies were initiated by Elton Mayo and were carried out over a twelve-year period from 1927 at the Hawthorne works of the Western Electric company, Chicago. Roethlisberger and Dickson (1939) have described in detail the Hawthorne studies. The studies and subsequent theories were, ironically initiated by attempts to examine the effect of various aspects of the physical working conditions upon production.

The Human relations and the scientific management phases overlapped in the 1920s and 1930s. Boot (1977) has pointed out that by the 1920s, psychologists had began taking an active interest in what went on at the place of work. Indeed, during the 1930s and 1940s prominent writers and researchers had started putting great emphasis upon the significance of human relationships at the place of work and its impact upon productivity. They laid particular emphasis upon group behaviour, joint consultations and informal organisations.

Roethlisberger et al (1939) have pointed out thus: That a team of psychological researchers from Havard University carried out the famous investigations into the Hawthorne plant of Western Electric Company in Chicago. Two of the research investigations in the Hawthorne studies generated most interest. In the investigation, a small group of female operators whose task it was to assemble telephone relays, was transferred to a room all by themselves along with their equipment, and asked to continue with their test. This they did whilst the researchers made changes to their working conditions in order to see whether these had any appreciable effect upon output. The workers continued to be paid by the company on an individual incentive scheme. In one set of experiments the quality of lighting was improved in stages, and in another, rest periods and refreshments were introduced.

It was found that output increased significantly as compared to previously recorded levels as these improvements were made. But what was more startling was that it remained at this high level even after a return to the original conditions. Furthermore, sickness and absenteeism decreased. The workers themselves had no clear explanation as to why they worked so much faster, nor were they conscious of speed-up and increased productivity. In the second investigation, discreet observation was kept on male workers in the Bank Wiring room in the factory. Workers were also on individual incentive scheme. It was found, however, that instead of asserting maximum effort, they worked well below their real capacity. Individuals who showed signs of outpacing the rest were brought into the line and made to conform.

Roethlisberger et al (1939) have observed that the results of the Hawthorne and other studies were surprising, even puzzling. The output seemed to improve almost regardless of what variations were made to the working conditions. This seemed to question the primacy of economic motives in governing work behaviour. The findings of the studies led to a search for explanations outside the man-machine relationship and an emergence of sets of assumptions based on the view of man primarily as a social animal, gaining his basic sense of identity through relationships with others.

Contrary to expectations, findings indicated that production increases were related to social and psychological factors rather than to the working conditions. This was puzzling. Indeed Musaazi (1972) observes that the puzzling Hawthorne results showed that development of social groups with their own codes of behaviour was very important in the functioning of an organisation. The findings of the studies pointed to: the importance of social needs that influence the work behaviour; greater concern for creating good morale at work; fostering good relations at the place of work through group incentive schemes rather than individual incentive schemes under traditional authoritarian management; stress on better communication so as to pass on more information and thereby keep the employees informed and device strategies aimed at making the work place a source of social satisfaction.

As Organ (1991) points out, the Hawthorne studies had a major influence on management thought. The studies proposed that when people are given the opportunity they will spontaneously develop informal organisations that provide them with a satisfying sense of attachment or affliction and some sense of worth and personal identity. Informal organisations should therefore not be seen as a necessary evil for managers but should be accommodated by managers as being complementary to the formal organisation in serving constructive purposes such as promoting attendance, dealing with unforeseen problems at work, providing leadership, and passing on an accumulated store of knowledge and skills for enhancing working efficiency.

The significance of informal organizations is alluded to by Argyris (1964), a psychologist, in his writings on integrating the individual and the organization. He showed concern for the well being of people working in organisations. He points out that psychologically healthy individuals should work in formal organisations run on participative organizational management. He underlines the dangers inherent in situations where they work in organisations run on traditional and authoritarian management. He observes that psychologically healthy individuals will be predisposed toward relative independence, activeness, use of their important abilities and control over their immediate work world and are thus best suited in participative management organisations.

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An organization that embraces participatory decision-making is more likely to achieve high performance levels since members tend to own the outcome of their organization. Indeed, Boot (1977), in his study on Behavioural science for managers, noted that since increase in output seemed to require the active co-operation of employees, supervisors had to be trained to show greater consideration and a more democratic style of leadership. He points out that Human relations movement advocated a human face to capitalism, with the promise of pay-off to all concerned. As Argyris (1964) puts it, an approach that attempts to breakdown barriers between individuals and encourages frankness and an open exchange of views tempts us with the promise of both higher productivity and a more contented and satisfied work force.

The emphasis put on pay by the Scientific Movement approach was strongly discounted by the Human Relations advocates who emphasized the workers needs. Lawler (1971), in his study of pay and organisational effectiveness, pointed out that any attempt to relate pay to performance must deal with the issue of how this can be accomplished. The human relations approach advocates using democratic or participative management but not tying pay to performance. The approach stresses the involvement of workers in administrative decision making and relating their pay more to their needs than to their performance. Indeed, as Organ (1991) observes, the findings of the Hawthorne studies indicated that although economic need explained why people went to work, social needs accounted for what happened once people got there.

Whereas classical theorists were principally concerned with the structure and mechanics of organisations, the human relations theorists were more concerned with the human factor in organisations. Indeed, protagonists of the human relations approach emphasised co-operative goal attainment, group dynamics, participative decision-making, the existence of informal organisations and democratic leadership. A significant finding of the Hawthorne studies was the implication that what goes on inside the workman and between workmen is more significant for production than what goes on outside, even in the most rigorously job-analysed work situations.

It should, however be pointed out that Human relations approach is not a panacea; it certainly has limitations. Nevertheless, human relations movement can be powerful in improving the organisational climate and work performance. It however became evident that the human relations approach assumptions and views about motivation proved just as inadequate in explaining the variety of behaviour evidenced at the workplace as its predecessor, the scientific management approach to motivation.

As Argyris (1964) has pointed out the harsh fact of the matter is, however, that working groups seem to be becoming more militant or appear less satisfied with their working conditions inspite of several decades of human relations oriented organisation policies. He observes that, clearly, we need a wider analysis of the problem of organising people at work than that provided by the human relations school alone. Etzion (1964), in agreeing with this contention, wrote thus: Scientific management assumed that the most efficient organisation would also be the most satisfying one, since it would maximize both productivity and workers pay while the human relations approach assumed that the most satisfying organisation would be the most effective.

### The Behavioural movement

The inadequacy of the Human relations movement in explaining the variety of human behaviour evidenced at the work place led to the emergence of a group of theorists in the 1960s whose approach Schein (1972) referred to as the “self-actualising man” approach. Although sharing in the Human relations views in rejecting the scientific management ideas about motivation, the self-actualizing man approach claimed that the Human relations views were not only far from complete in understanding the nature of man but were no less manipulative than the scientific management approach to motivation.

The self-actualising man approach theorists held that the manager’s task is to make use of the full human potential of his subordinates by providing opportunities for them to achieve self-fulfillment in their work. Boot et al (1977) has pointed out that the emphasis upon the needs of the individual and the demands of the organisation, which was then referred to as Neo-human relations, was carried on during the 1950s and 1960s under the impetus of the American Behavioural Scientists such as Maslow (1954), Likert (1961), McGregor (1960), Argyris (1964) and Herzberg (1966).

Indeed, neither the scientific management movement nor the Human relations movement represented a complete view of human behaviour in a work organisation. The need to understand human behaviour before an integrated approach to management is contemplated became more apparent. This is alluded to by Barnard (1964) when he used a social science frame of reference in his definition of an organization. He stressed co-ordinated human effort, personal willingness, effectiveness and efficiency and deliberately distinguished effectiveness and efficiency as they relate to organisation thus: effectiveness referred to the extent to which organisational goals were achieved while efficiency referred to the degree to which the personal motives of individuals within the organisation are satisfied.

The interaction of the needs of the individual and the demands of the organization, within an organisational system, was the focal point of modern or Behavioural organisation theory, which, as previously noted, began to be recognised as such in the 1950s and 1960s. According to Boles and Davenport (1973), the behavioural organisational approach was based on "third force" psychology of which Maslow was the acknowledged father. In third force psychology, man was considered as having a proactive tendency in terms of which he expressed his need for growth, and influenced the very forces which compel him to react. Sergiovanni and Carvar (1975) observed that according to this view of behaviour, man was moved by the attraction of what is ahead; ... one's visions and goals, hopes and aspirations are the prime movers of man.

Indeed, modern or Behavioural organisation theorists concentrate their fire on building an organisation in which people will be motivated by intrinsic rewards such as a desire for growth and competence. As Lawler (1911) has stated, they are concerned with motivating ....... self-actualising man. He has pointed out that organisation theorists should think in terms of what he calls "complex man".

Such a view of man is necessary, particularly if we wish to integrate the scientific management and the Human relations approaches to motivation. The movement to integrate individual needs and task needs in an organisation was apparent in a formula Bakke (1953) referred to as "the fusion process". This was explained as the process of the individual using the organisation to fulfill his needs and simultaneously the organisation using the individual to achieve its demands. Indeed Boles et al (1973) pointed out that typically, Behavioural movement, which emphasises needs integration, comprised many disciplines which included McGregor's philosophical view point about the nature of man, Maslow's and Herzberg's motivational theories, Argyri's personality theory, and Bakke's and Likert's management theory. The complex behavior of man may be exemplified by observations by Cannon (1932), in explaining behavioural responses to internal disequillibrium. He coined the word homeostasis to refer to the physiological mechanisms set into action to restore the internal state of an organism to its normal and optimal condition of functioning whenever such a condition has been disturbed. An example is the automatic response of perspiration when the body temperature moves above its equilibrium state of 37°C. He explained behavioural responses to internal disequallibrium thus: We all have a number of basic physiological needs (for example food) which if not met will give rise to specific drives (such as hunger). These drives give rise to activity (such as the search for food) which is aimed at attaining some incentive, goal objective or state (for example food) which can satisfy the original need.

Cannon (1932) further points out that the concept of equilibrium underlies many approaches to the study of motivation. He observes that unfortunately the complexities of human motivation makes it impossible to make simple predictions as to which human needs will give rise to what work-related activities in response to what organisationally available goals or incentives. For instance, he points out: (a) the same goal may be reached by a number of different activities (b) a single activity may lead to the attainment of a number of different goals (c) attainment of a single goal could satisfy a number of different basic needs. Indeed Boot et al (1977), in apparent reference to the complexities of human motivation, caution that any attempt to draw up a list of basic human needs must of necessity be tentative and as yet is unlikely to be universally accepted.

The foregoing observations show the necessity to attempt to understand human behaviour so as to ensure organizational climates that will motivate workers into achieving high performance levels.

Murray and Maslow have compiled lists of basic human needs. Murray (1938) has listed forty human needs, divided into twelve physiological needs and twenty eight psychological needs while Maslow (1954) has compiled five ranked sets of human needs. Maslow (1943), in his papers on human motivation saw a human being as being a perpetually wanting animal. He maintained that nearly all individuals are motivated by the desire to satisfy certain specific needs which could be classified into five major groups.

Maslow's study was primarily based on clinical observations. Organ et al (1991) point out that Maslow's underlying premise is that human needs can be arranged in several distinctly different classes which can be related to each other in terms of prepotency, that is, one class of needs, until satisfied, takes priority over certain others. Upon realisation of need satisfaction, a different type of need becomes dominant in behaviour until it, too, is satisfied, paving the way for still other needs to direct behaviour.

Blunt and Jones (1992) noted three fundamental assumptions which form the basis of Maslow's theory in proposing the "need hierarchy" which captures the sequential arrangement of priorities in need categories. They list the assumptions thus:

1. People have needs which influence their behaviour. Only needs which have not been satisfied can act as motivators, that is, they dominate the individual and energy is directed at satisfying the need.
2. An individual's need are arranged in a hierarchy of importance, from the most basic needs such as food and shelter to more complex psychological needs such as the need for esteem and fulfilment of creative potential.
3. Needs at the upper levels of the hierarchy are only activated once needs at the lower levels have attained some minimally acceptable level of satisfaction.

Blunt et al (1992) observe that Maslow's theory is one of the most popular theories of motivation in the organisational theory and

> Behaviour literature. They argue that it has provided the basis for much research and writing by organisational theorists, and a readily interpretable framework for practitioners.

Ivancevich J. M; Szilagyi and Wallace, (1977) have outlined Maslow's need hierarchy as set out in Table 1. The table presents the levels of need in the hierarchy; the general factors associated with each level of need and the organisational factors associated with each level of needs.

The five levels of Maslow's need hierarchy are (a) Physiological needs (b) Safety and Security needs (c) Social needs (d) Ego, Status and Esteem needs and (e) Self-actualisation needs. The significance of the organisation in satisfying the individual worker's needs at the work place in accordance with Maslow's need hierarchy theory, as it relates to motivation to work, is discussed.

**Table1: Maslow's need Hierarchy**

| General factors associated with each level of needs | levels in the hierarchy | Organisational factors associated with each level of needs |
|---|---|---|
| 1.Growth<br>2.Achievement<br>3.Advancement | Self-actualisation | 1. Challenging job<br>2. Creative Opportunities<br>3. Advancement in the Organisation |
| 1. Recognition<br>2. Status<br>3. Self-esteem<br>4. Self- respect | Ego; status and esteem | 1. Job title<br>2. Merit pay increases<br>3. Peer/supervisory recognition<br>4. Work itself<br>5. Responsibility<br>6. Interactions with Supervisors and peers |
| 1. Companionship<br>2. Affection<br>3. Friendship | Social | 1. Quality of supervision<br>2. Compatible work group<br>3. Professional |
| 1. Safety<br>2. Security<br>3. Competence<br>4. Stability | Safety and security | 1. General Salary Increases<br>2. Job Security<br>3. Fringe benefits<br>4. Safety of working Conditions |
| 1. Air<br>2. Food<br>3. Shelter<br>4. Sex | Physiological | 1. Basic Salary<br>2. Canteen facilities<br>3. Working conditions |

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Source: Ivancevich, J. M.; Szilagyi, A. D. and Wallace, M. J. (1977)

### (a) Physiological needs

Physiological needs refer to the basic recurring needs of individuals such as air, food, water, sleep, shelter, avoidance of pain and waste elimination that are essential to their very survival. Indeed, inattention to physiological needs can, in some instances, result in death. Maslow (1954) included in this category other physiological needs which appear to be basic but which don't have an obvious survival function such as the need to have sex and sensory stimulation (touching, smelling e.t.c.). Physiological needs take initial priority and govern our behaviour until they are met. To the extent that they have been met, they will fade to the background of conscious behaviour. Thus, at the work place, such factors as salary level, working conditions (Heat, cold, noise e.t.c) and the distance to and from the place of work would feature prominently.

As Kiggundu (1988) points out, physiological needs in Africa are generally poorly catered for, unlike in the U.S.A, where it is estimated that eighty five in every hundred of the population have their physiological needs well catered for. As a consequence the physiological need category in Africa features prominently in people's motivational make-up.

### (b) Safety and Security needs

Having satisfied immediate physiological needs, an individual is concerned to ensure a relatively stable, safe, predictable, generally ordered environment. The individual here reacts to reduce uncertainties associated with "fear of and threat from" in a bid to restore security. Such fear and threat may arise from ominous forces, looming natural calamities, violence, loss of possessions, and breakdown of the social order. Thus, at the work place, safety and security needs are reflected in the worker's attitude toward the safety of his work, his job security and possibility of pay increases.

Indeed, Ankomah (1985) points out that most people in post independence Africa are not inspired to work, because they lack desire to accomplish something. The African bureaucrat is often motivated by material things he can gain from work. He engages in those activities of work that will result either in immediate financial gains or possess the potential of such.

### (c) Social needs

Social (or belongingness and love) needs take effect upon reasonable satisfaction of physiological and safety needs to an individual's acceptable degree. The individual is prepared for the need for affectionate relationship with others, a sense of belongingness and acceptance as a member of a group. Social needs is a reflection of man's social nature of wanting to give and receive affection in relationships with others. Indeed, as earlier observed, the Hawthorne studies showed that the informal structures arise in organisations to satisfy the needs that the formal structure often does not provide. The formal structure does not adequately cater for social needs.

As Maslow (1943) noted, a prolonged thwarting of one's love needs characterises the extreme cases of maladjustment and psychopathology: People who have given up even trying to get affection and whose behaviour is utterly indifferent to the harm it may inflict on others. He further observes that man's social nature of need for friendship and company of others is demonstrated by studies of prisoners of war which found that solitary confinement, even with the adequate food and physical comfort, predisposes even the bravest and most patriotic soldiers to seek communication with their captors, even at the risk of revealing strategic military information or denouncing their government.

Jones (1988), in his investigation of management thinking in Malawi, points out that one of the most important social relationships at work, has to do with the relationship between managers and workers. He indicates that this can be a difficult relationship to manage in Africa. Peil (1972) studied Ghanaian factory workers and noted that the nature of supervision at work can be the cause of frequent complaint. Workers, he observed, complained that the supervisor is too close, comes too often making them uneasy while working and is too enthusiastic.

A poor social relationship between managers and workers in Africa, as observed in these studies, may lead to inadequate satisfaction of the social needs of workers and thereby affect their motivational tendencies towards work. At the work place, organisational factors associated with social needs include quality of supervisors, compatible work group and professional friends.

### (d) Ego, Status and Esteem needs

Maslow (1943) argues that all people in our society have a need or desire for a stable, firmly based (usually) high evaluation of themselves, for self-respect or self-esteem. He observes that as one experiences some success in satisfying the social (Belongingnesss and love) needs, a set of needs centred around ego come to the fore. He points out that the term "ego" refers to a natural and healthy progression to reflect one's worth, adequacy and competence once a reasonable degree of "inclusiveness" with others have developed. There is a basic need for independence and confidence in the face of the world. This category of needs, thus incorporates the needs which people have for self-respect and respect for others, and needs associated with desire for self-confidence, attention, status and prestige. We seek and prefer attachments that provide a sense of respect from others and which eventually form a basis for our own self-respect.

Maslow points out that gaining acceptance alone does not suffice - we must be able to regard ourselves as capable of independent thought and action, deserving of respect, and confident in confronting our problems. Maslow sees a logical sequence in this category of needs: we first seek and secure relationships that provide affection on any basis and then strive for respect and affection as a foundation for deriving our own internal criteria for self regard, even at the expense of or in opposition to attaining status in the eyes of others. He, however, observes that only a minority ever become so completely confident of respect from others that they venture more than precariously into their own sense of self-esteem.

At the place of work, occupational preferences provide some indication of the degree to which different types of work are seen as satisfying esteem needs. Organisational factors associated with esteem needs include job title, the nature of work itself (high skilled, scientific, professional etc) and the amount of autonomy, power and responsibility associated with the job. Indeed, Morgan (1965), in his study of occupational prestige ratings by Nigerian students, found that the prestige ratings attached to various occupations, by a sample of University students, were very similar to western ratings: high ratings were given to occupations such as physician and accountant and the lowest ratings to manual work such as domestic servant. This was corroborated by findings of McQueen (1969) in his study on unemployment and future orientation of Nigerian school leavers. He found that sixty five per cent aspired to professional or white collar occupations and 5.6 per cent aspired to lower-level jobs such as farmer, trader and unskilled labour. These findings indicate that esteem needs are very strong and thus workers whose esteem needs are not adequately satisfied may not be motivated at the place of work.

### (e) Self-actualisation need

According to Maslow (1973), self actualisation refers to the individual's need for self-fulfilment, to become everything that one is capable of becoming, to realise one's full potential for doing or creating, that is, to strive not just to be good at something but to be as good as one is capable of being. It is the highest and final class of needs in Maslow's hierarchy of needs. It is only after all other needs have been relatively well satisfied that one becomes free to persue the ultimate need, which, Maslow refers to as the quest for self-actualisation. Self-actualisation entails a fundamental change in orientation, since, unlike in other lower needs, one measures oneself against one's own personal ideals of what constitutes the best of one's capabilities.

Maslow observes that in his study, he found only a few people (excluding himself) who had precariously ventured into this need. He noted that such people had little concern for conventional codes of morality and behaviour and were not radical or rebellious. He points out that such people had little concern for "self" since they were immersed in something larger than self. He noted that they were capable of being callous, if not cruel, toward those who loved them. Maslow awarded this type of need a special status of "growth" need and regarded the physiological, safety, social and esteem needs as "deficiency" needs. He noted that it is only when all of these "deficiency" needs have been satisfied that a person becomes psychologically healthy. Then, and only then, do the "growth" needs that define the search for self-actualisation take control.

In his study on farther reaches of Human Nature, Maslow indicates that only a tiny fraction of adults ever reach this point. At the place of work, organisational factors associated with self-actualisation need include the challenge of the job, the amount of creativity entailed, the degree of autonomy available, and the opportunity for recognition, achievement and advancement. Maslow's need hierarchy has aroused considerable interest and challenge to scholars and practitioners. What is of particular concern is the fundamental aspect of Maslow's theory in which he maintains that there is a set of priority in which the human needs become important to us. That is, they should be thought of as constituting a hierarchy-with physiological needs at the bottom and the need for self-actualisation at the top as represented in Table 1.

### Controversy over Maslow's need hierarchy theory

Boot et al (1977) point out that, this theory, which, as indicated before, was originally formulated in a clinical setting, has surprisingly attracted relatively little empirical research to test the relevancy of the theory in organisational settings. Organ et al (1991) however observes that certain ideas in the need hierarchy do lend themselves to empirical test. A review of relevant research by Wahba and Bridwell (1976) provides mixed support for the need hierarchy. They observed that data suggested a more parsimonious two-level need system, rather than five distinct categories. They point out that, studies suggest a clear separation between lower-order (physiological and safety) needs and various higher-order (love, esteem and self-actualisation) needs.

Indeed, research supports the inverse relationship between the degree of satisfying a need and its importance, but only for lower-order needs. Studies suggest that some degree of satisfying high-order needs renders them more important. These study suggestions, on high-order needs, viewed against the background of the consistency of the need hierarchy, appear to contradict Maslow's theory which holds that: Once needs have been satisfied, they cease to play an active role. This means that a satisfied need is not a motivator.

As Boot et al (1977) point out, this apparent contradiction is however accommodated by Maslow's latter formulation of theory in which he points out that, a satisfied high-order need does not necessarily cease to be a motivator. They, for instance, pointed out that, for self-actualisation needs, increased satisfaction leads to increased need strength.

Maslow's need hierarchy theory has also been subjected to continued attention, controversy and criticism. As organ et el (1991) points out, while much of what Maslow says is plausible and intuitively compelling, it has not been easy to test the theory with data. They point out that Maslow did not develop measures or what they call "operational definitions" of the need categories. This resulted into some of the need categories, in particular, self-actualising need, to present major difficulties to researchers trying to give the theory an honest and fair test.

The importance of utilising the need hierarchy theory to satisfy and motivate workers at the work place cannot however be overemphasised. To this end, the importance of cross-cultural stability with respect to Maslow's need hierarchy theory brings to focus the significance of social and cultural environments in designing organisational structures and administrative systems that will attribute a similar set of priority in which these human needs become important.

Blunt et al (1992) indicate that literature reveals some consistence with regard to cross-cultural stability. They point out that previous research has indicated that the importance ranking assigned to the various Maslowian need categories cut across the cultures. They have observed that the most impressive findings was the relative overall similarity among managers in different countries and cultures with regard to their evaluation of the importance of different needs. They thus inferred that these findings may indicate that what people want from their jobs is relatively unaffected by the cultural environment in which they operate. Indeed Maslow (1954, p.98) pointed out that the "findings" imply, in very general terms, that "irrespective of culture and local conditions, organisational structures and administrative and reward systems, should be designed to attribute the same priorities to, and therefore satisfy, a unitary set of managerial needs, arranged in the same, predetermined, hierarchical order". The assumption of cross-cultural stability that is used to justify Maslow's need-category is however contradicted in a study conducted by Blunt (1976) on management motivation in Kenya, among a group of Kenyan Managers. He found that they attached highest importance to security needs. A parallel study by Jones (1988), in Malawi, involving 105 managers produced similar results. He observed that the striking aspects of these findings was the data suggestion that Kenyan and Malawian managers exhibit a need-category dominance profile which contradicts the assumption of cross-cultural stability among managerial groups with respect to ordering of need categories.

It can be pointed out, notes Jones, that these findings, in which managers in the developing world exhibit need importance profiles which depart greatly from the expected range of scores, and differ significantly between themselves, add credence to the conclusion by Badawy (1980) that social and cultural environments need to be studied with care when designing organisational structures and management systems.

## Motivation theories

A significant contribution to work motivation theory is evident in Herzberg's two factor theory. Herzberg (1966) developed the motivation-Hygiene theory, based on extensive empirical research, in which he emphasised the avoidance and approach drives in man. The importance of Herzberg's theory in understanding the behaviour of workers at the work place is profound.

Herzberg's two factor theory, like Maslow's need-hierarchy theory, is a content theory of motivation, which evolved from Herzberg's efforts to explain controversies in research findings concerning job satisfaction. Hezberg's theory grew in an inductive manner from a study involving 200 accountants and engineers in Pittsburge, U.S.A. The theory, which is widely researched and published, was first published in 1959 and has since been a source of continuing attention and controversy among scholars and practitioners. The study required workers, in interview, to remember and describe in detail, in their own words, job experiences when they felt exceptionally good (satisfied, interested or enthusiastic) about their work and times when they felt exceptionally bad (dissatisfied, frustrated and unhappy) about their work.

Herzberg (1959) observes that the study findings indicate that workers seemed to be referring to quite different events and activities when they felt exceptionally good about their jobs from those they described when they felt exceptionally bad about their jobs. Findings from the study imply that positive reactions to work (job satisfaction) were associated with jobs which provided opportunity for achievement and advancement, scope for individual development, recognition of performance, responsibility and work itself (interesting and challenging work). These factors seemed to be relatively unimportant in connection with job dissatisfaction. Negative reactions (job dissatisfaction) seemed to be associated with jobs which were characterised by deficiencies in technical supervision, company policy and admnistration, job security, salary, fringe benefits, interpersonal relations and work conditions. These factors seemed to be rarely influential in job satisfaction.

From these study findings, Herzberg (1966) proposed that contrary to intuition, satisfaction and dissatisfaction are separate and distinct dimensions of man's nature, not opposites of each other. He notes that, while one dimension (satisfaction) is concerned with seeking personal growth, the other dimension (dissatisfaction) is primarily concerned with unpleasantness. According to Hezberg, satisfaction will be sought in aspects of job content (such as achievement, advancement and responsibility). These aspects provide opportunity for growth and Herzberg called them motivators. Their absence does not cause dissatisfaction but merely lack of positive satisfaction and their presence provides both satisfaction and renewable incentive to seek them further.

Avoidance of dissatisfaction will be sought in aspects of job context (such as company policies, working conditions and salary). Using a medical analogy, Herzberg referred to these aspects of work as Hygiene factors. He observes that we notice these aspects of work only when there is a problem and we feel discomfort and pain. However, when these aspects are effective, we take them for granted and do not think about them, hence the medical analogy used by Herzberg. The presence of Hygiene factors does not lead to positive satisfaction but simply to dissatisfaction. When hygiene factors are operating to a sufficient degree, they prevent dissatisfaction but they can not act as motivators.

It is apparent that high salary or good working environment alone are not sufficient to induce high levels of motivation or satisfaction. Similarly, irrespective of how interesting or how challenging a job might be (that is, intrinsically motivating) there will still be dissatisfaction if pay or working conditions are inadequate. In effect, while job content sets the limits for our capacity to experience positive satisfaction and the motivation for its renewal, job context determines the extent and severity of dissatisfaction. However it is evident that findings by Herzberg (1966) showed that the hygiene factors and the motivating factors indeed do overlap in practice.

Herzberg's theory has had considerable influence on the business community and, in particular, practising managers. The theory has generated heavy controversy and criticism from critics on a number of grounds. Herzberg, to an extent, much more than other motivation theorists, actively persued the implications of his theory and has proposed a "job enrichment" programme approach to motivate employees. Herzberg (1968) provided a neat recipe-like series of steps to job enrichment which are easy to understand and unequivocal. They are clear, definite proposals which many managers who are interested in improving their organisation's performance find difficult to resist. Managers and management trainers have indeed found the job enrichment proposals attractive for being straightforward and relatively easy to implement in work organisations.

As Hackman and Oldham (1980) put it: In sum, what Herzberg's theory does, and does well, is point attention directly to the considerable significance of the work itself as a factor in the ultimate motivation and satisfaction of employees. They pointed out that because the message of the theory is simple, persuasive and directly relevant to the design and evaluation of actual organisational changes, the theory continues to be widely known and generally used by managers.

The enormous influence exerted by Herzberg's ideas has compelled critics to carefully examine his work (both the theory and the methodology). It has been pointed out, though, that one of the major weakness of the theory is that it makes no allowances for the different meanings which individuals attach to work or their orientations. The theory assumes that all workers will respond in a similar manner to different conditions of work.

Vroom (1964) is critical of Herzberg's research methodology. He suggests that the findings reported by Herzberg are likely to be a function of the critical incident story telling method used. Vroom wrote thus: It is possible that obtained differences between stated sources of satisfaction and dissatisfaction stem from defensive processes within the individual respondent. Persons may be more likely to attribute causes of satisfaction to their own achievements and accomplishments on the job. On the other hand, they may be more likely to attribute their dissatisfaction not to personal indecencies or deficiencies but to factors in the work environment.

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Wall and Stephenson (1970), in controversy to Herzberg's ideas, stated that their own studies suggested that the results upon which Herzberg's theory is based are a function of "social desirability". They noted that consequently, as a description of the structure of job attitudes of the determinants of satisfaction and dissatisfaction, the two factor theory is not tenable. Indeed, critics have pointed out that conceptually, Herzberg's original theory seemed amenable to differing, even contradictory interpretations and prediction. Methodologically, critics observed that Herzberg's story telling technique is open to charges of bias due to the "social desirability" effect. People tend to attribute negative events to what is around them (job context), but take credit for the positive events as things they did themselves (job content).

Ewen (1964), in dismissing Herzberg's theory, claims that since Herzberg's study contains no measure of overall satisfaction, there is no basis of assuming that the so called motivators and hygiene factors contribute to overall satisfaction or dissatisfaction as claimed. Critics have further questioned the methodology Herzberg employed in his study. They point out that the original results obtained by Herzberg et al (1959) and by other studies which have replicated their findings, may have been partly a function of the data collection methods employed rather than being an accurate reflection of what motivated the individuals concerned.

Critics have cast doubt on the validity of responses from people on why they feel satisfied or dissatisfied. They point out that, when asked to explain why they feel happy or satisfied, people tend to explain in terms of their own behaviours (take credit) and when asked to explain why they feel dissatisfied, people tend to lay blame elsewhere (on extrinsic factors associated with the environment). Vroom (1966) aptly put it thus: people tend to take the credit when things go well, and enhance their own feelings of self-worth, but protect their self-concept when things go poorly by blaming their failure on the environment.

Herzberg's theory has been criticised on the grounds that certain job characteristics can cause job dissatisfaction for one person and job satisfaction for another, or vice versa. A study by Lahiri and Scrivastva (1966,p.263) puts the same point. The study, involving 93 Indian middle managers found that "both intrinsic and extrinsic job factors caused feelings of satisfaction and dissatisfaction towards the job". They concluded that the respondents in this study endorsed job factors differently from what the motivation-hygiene theory would have predicted. Critics of Herzberg's theory found further support in a study by Jibowo (1977) on the effects of job performance of motivators and hygiene factors among a group of 75 agricultural extension workers in Nigeria. The findings corroborated those by Vroom (1966). There was evidence from the study to suggest that hygiene factors such as poor working conditions, low levels of pay and poor supervision depressed productivity and performance in general, thus contradicting Herzberg's theory. It was found that hygiene factors such as pay, supervision and working conditions acted as motivators among the Nigerian workers involved in the study.

Criticism has also been directed at the research population sample. It has been noted that much of the research on Herzberg's theory has been conducted on workers in interesting jobs, such as engineers and accountants, and that workers in the humdrum, boring, repetitive jobs that so many do in formal organisations seems to have escaped the attention of these researchers. Indeed, Jones (1988) has pointed out that Herzberg's theoretical edifice was built on conversations with people in interesting, rewarding jobs. He pointed out that this did not prevent Herzberg from generalising the whole of mankind. It has been pointed out that tests of the two factor theory, using different methods, have usually led to results other than those Herzberg himself found.

Despite controversy and criticism, Herzberg's theory has been influential. The development of work motivation theory has not been the same since Herzberg's contribution. While Herzberg's entire framework may not be accepted, it is significant that organisational behaviour theorists have been greatly influenced by certain themes Herzberg boldly underlined. For instance, Herzberg's job enrichment approach to employee motivation may be used to assess the presence of factors which have been proposed by various theorists as major determinants of motivation at work in the work setting.

Hackman et al (1986) however observe that job enrichment has been found to have a number of flaws and is thus no panacea to employee motivation. Nevertheless, Herzberg's theory, like Maslow's theory, has contributed enormously to our attempt to understand motivation at work by turning attention to the potential significance of intrinsic characteristics of work. Employee motivation previously took the carrot and stick approach to motivation, in terms of rewards and punishments relating mainly to extrinsic factors such as pay, fringe benefits, working conditions and tight supervisory controls associated with the scientific management approach.

Parallel to the above theories of motivation, McGregor (1960) conceptualised a set of managerial assumptions about human nature and work which he labelled Theory X and Theory Y. These assumptions were illustrative of the behavioural approach to organisational theory. In his Theory X assumptions, McGregor argued that the dominant needs people seek to satisfy through work are those pertaining to economics and security. Theory X assumptions hold that: (i) the average human being found work inherently distasteful and will avoid it if external pressures are weak (ii ) Because of this human characteristic of dislike for work, most people must be coerced, controlled, directed and threatened with punishment to get them to put forth adequate effort toward the achievement of organisational objectives (iii) Further more, the average human being, prefers to be treated this way because they lacked ambition and had no desire for responsibility but want, above all, security. Indeed the views of schools of management thought before the 1940s was that people sought work that minimises labour and discomfort and maximises material gain. People were viewed in terms of striving to keep their jobs but no more than that and would avoid hard work if they can.

Elton Mayo (1933) referred to this view of the rank-and-file as the "rabble hypothesis". He points out that McGregor believed that Theory X continued to influence the thinking of many of those who manage work organisations. McGregor criticised Taylor's scientific management approach and labelled it Theory X. He observed that if managers try to regulate our behaviour, limiting us to only the most physically and mentally onerous tasks, much of our work-relevant motivation will revolve around maximising the discomfort of the work, and taking whatever advantage we can, thereby inviting more stringent controls from managers. McGregor's preference was the integration of the individual and organisational goals based on the assumptions he labelled Theory Y.

Morse and Lorsch (1970) observe that Theory Y assumptions focus on the integration of goals which emphasise the average person's intrinsic interest in his work, his desire to be self-directing rather than the need for external control, his desire to seek and accept responsibility and his capacity to be creative in solving organisation problems. He endorsed Theory Y as a valid and workable theory for administering work organisations, and as a way of getting out of the trap of the self-fulfilling prophesies of Theory X. McGregor pointed out that if management suppresses these Theory Y tendencies by continuing practices derived from Theory X assumptions, then, consistent with frustration-regression hypothesis, people will revert to the more punitive stages of psychological development.

McGregor described the assumptions of Theory Y thus: (i) There is no inherent dislike of work. The expenditure of physical and mental effort in work is as natural as play or rest. (ii) External control and the threat of punishment are not the only means for bringing about effort toward organisational objectives. Man will exercise self-direction and self-control in the service of objectives to which he is committed. (iii) The degree of commitment to objectives is a function of the rewards associated with their achievement. In this context, the most significant rewards are the satisfaction of higher order needs. Such rewards are intrinsic to work but not externally mediated. (iv) If the conditions are right, the average human being learns to not only accept but seek responsibility. (v) The capacity to exercise a relatively high degree of imagination, ingenuity and creativity in solving organisational problems is widely, not narrowly, distributed, in the population. (vi) Industrialisation has meant that the intellectual potentialities of the average human being are under-utilised.

According to McGregor, work organisations compatible with Theory Y framework: would emphasise broad and substantive forms of participation by all employees in matters that significantly affect them; would redesign jobs to tap the ego needs for self-esteem and increased competence and would encourage supervision that stressed teaching and coaching rather than controlling. Theory Y assumptions imply that if employees appear lazy, indifferent or uncooperative, the causes lie in management's methods of organisation and control.

McGregor however holds that the essential task of management is to arrange organisational conditions and methods of operation so that people can achieve their own goals best by directing their own efforts towards organisational objectives. He implies that if a manager can get high performance targets and get his/her subordinates to accept them as their own, he/she is not likely to worry about discipline. This position is in agreement with advocates of Management by objectives as opposed to management by control. While Theory Y has produced good results in some situations, it has not always done so.

Indeed, studies by Lawrence and Lorsch (1967) indicate that there is not one best organisational approach; rather the best approach depends on the nature of the work to be done. They point out that organisations with highly predictable tasks perform better in highly formalised procedures and management hierarchies of the classical approach. Highly uncertain tasks that require more extensive problem solving, on the other hand, are more effective in less formalised procedures that emphasise self-control and member participation in decision-making.

The foregoing imply that managers must design and develop organisations so that the organisational characteristics fit the nature of the task to be done. The question thus put focuses on which of the above two organisations provides a high level of motivation for its members.

Morse et al (1970) carried out case studies involving a set of managers in highly formalised and in less formalised organisational settings. The study yielded paradoxes in McGregor's Theory X and Theory Y assumptions. Case I study involved managers who worked in a highly formalised organisational setting with relatively little participation in decision making, yet they were found to be highly motivated. According to Theory X, people would work hard in such a setting only if they were coerced to do so. According to Theory Y, they should have been involved in decision-making and been self-directed to feel motivated. These results indicate that neither of these sets of assumptions was valid. Case II study involved managers who worked in a less formalised organisational setting with more participation in decision-making and yet they were not as highly motivated as in Case I. Theory Y assumptions would suggest that they should have been more motivated than in Case I.

In a study into questions arising from these paradoxes in McGregor's Theory X and Theory Y assumptions, Woodward (1965) suggests a new set of basic assumptions which move beyond Theory Y, into what is referred to as Contingency Theory, to establish a fit between task, organisation and people. These theoretical assumptions emphasise that the appropriate pattern of organisation is contingent on the nature of the work to be done and on the particular needs of the people involved.

Indeed Mcgregor has pointed out that changes without real confidence in positive human responses to work, were bound to lack in real substance and doomed to be short lived. This is manifest in a curious case scenario witnessed by McGregor in 1960, involving a small but growing electric company. The company made a conscious attempt to put into practice, what McGregor described as derivative of Theory Y. For a few years, the company confirmed growth and showed improvement in productivity, customer relations, product quality and reliability. However, in 1965, the firm experienced financial problems, and the management promptly associated it with Theory Y framework management and called off its more radical attempts at decentralised, participative management approach. Sceptics argue that this behaviour confuses cause and effect, pointing out that the financial troubles could have been due to other reasons. They pointed out that the abandonment of such practices indicates that management never really accepted Theory Y. As Strauss (1963) aptly puts it, it appears that managerial concepts of work motivation are more tentative and flexible than suggested by Theory X and Theory Y, tending toward one or the other depending on the context and the people in question. In similar approach to that of McGregor, another dimension of the Behavioural approach to organisational theory is evident in interviews expressed by Argyris (1957). He concentrated on the very nature of psychological growth and human development. He emphasised the conflict between organisational demands and personal needs and argued that organisational structures are predominantly founded on Theory X concepts of human nature. He observed that Theory X concepts narrowly defined jobs thereby blocking further development of one's repertoire of competence and inhibits deep involvement in tasks. He pointed out that people still want to grow, but work organisations militate against it, leading to frustration.

Argyris believed that the eventual response to frustration is "regression" - people simply stop trying to grow and indeed revert to an earlier stage of psychological development. He argued that as the individual developed from childhood to adulthood, he experienced different personality needs. He outlined childhood characteristics as being: passive dependency on others, restricted behaviour patterns, erratic and shallow interests, short time perspective, subordinate results and little self-awareness. He pointed out that adulthood personality features included: Relative independence, variable behaviour patterns, boarder time perspectives, deeper interests, equal or superior status in respect of others, self-awareness and self-control. Argyris observed that the needs of the adult or mature personality clashed with the structures imposed on the individual by a formal organisation. He believed that the needs of healthy individuals tend to be incongruent with the maximum expression of the demands of the formal organisation.

Argyris (1960), a psychologist, in his writings showed concern for the well being of people working in organisations. He emphasised the concept of an ideal type of psychologically healthy individual. Such an individual predisposed toward relative independence, activeness, and use of their important abilities and control of their immediate work world. He criticised formal organisations run on traditional lines and emphasised that healthy organisations need healthy people and healthy people need healthy organisations, if they have to mature psychologically.

Argyris points out that organisational structures need to be modified and traditional hierarchies broken down in order to permit self-actualisation by individuals at their work place. These will pay-off in ensuring more responsible and psychologically healthier individuals. Argyris points out that such an approach attempts to break down barriers between individuals and encourages frankness and an open exchange of views thereby tempting us with the prospect of both higher productivity and a more contented and satisfied work force.

Indeed, Argyris (1964) claims that there is an inevitable compatibility between the way organisations have developed in the service of limited economic goals, and the natural development of a psychologically healthy individual, that is, there are severe human costs which outweigh the advantages of organisation structures designed for technical efficiency. It is evident that Argyris was doing more than sketching a theory of psychological growth; he was issuing a trenchant criticism of work organisations. Such criticism is apparent in contributions by Likert Lensis on the need to integrate organizational and individual needs to enhence performance.

Likert Lensis, a management theorist of the behavioural school, used extensive empirical research in business to develop a new pattern of management. Likert (1961) claims that with effective management, reliance is not placed solely or fundamentally on the economic motive of buying man's time and using control and authority as the organising and co-ordinating principle. He formulated the principle of supportive relationships which specified that all human interactions within the organisation should be supportive, and should build the individual's ego. He pointed out that highly motivated, co-operative orientation towards the organisation and its objectives is achieved by harnessing effectively all the major motivational forces.

In contradiction to Argyris, Likert was of the opinion that organisational objectives and personal needs of individuals were compatible. Likert's claims were based on similar basic assumptions about the nature of man as those of McGregor. He stated that the principle of supportive relationships, consequently, points to the necessity for an adequate degree of harmony between organisational objectives and the needs and desires of its individual members. Likert recommends group involvement in setting high performance goals and wide-spread participation in the decision making process.

It is significant to this study to note the emphasis on individual needs and organisational goals evident throughout the literature review of the Behavioural phase theorists. Though such approaches seem to have considerable appeal to the practicing manager, they still seem to rely on an over-generalised view of man. By assuming common motivational responses to management initiatives, they have failed to address themselves to the problem of explaining individual differences in the effort and performance between employees, for instance, in the same department.

In the review of literature, it is apparent that a set of relationships emerged. One set of relationship was observed between Maslow's higher order needs; McGregor's Theory Y assumptions; Herzberg's motivational factors; Argyris adult personality needs; tenets of Human relations theories of organisation and Likert's management principle of supportive relationships. A second set of relationship emerged between Maslow's lower level needs; McGregor's Theory X assumptions; Herzberg's hygiene factors; characteristics of Argyris' childhood personality type and classical elements of management.

This section of review of relevant literature examined the development of organisational theory through three phases: the scientific management, the Human relations and the Behavioural phases. It was suggested that emphasis was on the organisational objectives and the individual needs. These emphases were considered to be consistent with systems theory and were thus expected to characterise organisational climate, the subject of our next review of literature.

## The Concept of Organisational Climate

Drexler (1977) observes that, since first discussed in the late 1950s, the overall climate concept has been much scrutinised. Climate has tended to be employed as a descriptive concept unlike culture which has a prescriptive or normative slant. He points out that there has been a widespread lack of agreement emerging on the status of climate in overall models of organisations, or how the concept climate should be operationalized and measured. Dastmalchian; Blyton and Admson (1991) noted that designing a reliable measure of climate and charting its influence within diverse work contexts has proved complicated and time-consuming.

Indeed, Rousseau (1988) points out that one of the problems in the past has been the potential breadth of the climate concept, resulting in a lack of precision both in the concept itself and in the instruments used to measure it. Payne (1971 pp.143-4) stressed that, "far from obvious is the differentiation of climate from other common terms referring to what surrounds the individual such as environment, ecology, milieu, culture, atmosphere, situation, behaviour setting and conditions. What the term provides is a synthetic, molar concept instead of middle range theory".

The other problem, with regard to the concept, organisational climate, as pointed out by Glick (1985), is the controversial aggregating of individual perceptions of the concept which, they point out, lies at the heart of methodological debates on the future direction of research on organisational climate.

The problem of an adequate climate measure manifested itself in a study by Katz et al (1983), involving examination of the introduction of quality of work life (QWL) programme on Industrial Relations and Economic Performance in eighteen plants in a division of General Motors (GM) in the United States. They cite the problem of using information collected by management, namely, the tendency of supervisors and other managers to report an exaggerated positive climate.

Schneider; Parkinson and Buxton (1980), in a study on employee and customer perception of services in banks, pointed out that over the years, the organisational climate concept has been refined and as part of this a number of studies have investigated the validity of viewing organisations not as characterised by a single, all encompassing, but rather as several distinct climates attaching to different aspects of the organisation. Roberts; Hulin and Roussea (1988) argue that the use of aggregate data and concepts makes it more likely that interpreters will be confused and information lost. Indeed, James; Joyce and Slocum (1988) point out that aggregate concepts such as perceived organisational climate, by definition, have a degree of ambiguity attached to them.

However, Glick (1985), writing on conceptualising and measuring organisational and psychological climate, observes that there are clearly two well established positions by researchers with regard to organisational climate. He points out that they chose to subscribe to one of the perceived positions which holds that organisational climate is an aggregate concept and an organisational phenomena.

Drexler (1977) argued that an acceptable measure of climate is only obtainable where there is a relatively high level of agreement between the individual respondents. He observes that several writers on the subject do agree that the concept, climate, can be viewed as an intervening variable between organisational inputs and constraints on the one hand and individual behaviour on the other. This is qualified by Rousseau (1988) who emphasises that the impact of organisation and the characteristics on individual responses is mediated by individual perceptions of the situation.

However, according to Payne (1971), climate, by definition, has to be the perception and the cognitive interpretation of the individual in question, not a score taken from the perception of others and then regarded as an individual property. He points out that the climate score derived can only be used as an organisational property if convincing evidence is provided that shows some degree of shared perception between the respondents in each organisation.

The foregoing implies that there could be almost as many definitions of organisational climate as there are researchers in its study. An examination of typical examples of definitions may suffice.

As Rousseau (1988) points out, most writers see the concept, organisational climate, as a description of the general atmosphere prevailing in a workplace as perceived by organisational members. According to Owen (1970), the term climate is used to describe characteristics of the general administrative environment in which members of an organisation operated. This environment was created as a result of the policy and practices of the leaders and managers in the organisation.

Howard (1974), in a study on school climate improvement, defined climate as the aggregate of social and cultural conditions which influence individual behaviour in the school. However Hempton (1973) holds that the organisational climate in which employees work refers to the subjective perceptions held by individuals of such objective organisational realities as structure, standards, leadership and rules.

Wiggins and Lonsdale defined organisational climate from a behavioural point of view. Their definitions were consistent with, and directly relevant to, the emphasis on organisational goals and individuals needs. Wiggins (1969), in a paper he presented at the annual meeting of the American Educational Research Association, held that conceptually, organisational climate is that state of the organisation that results from the interaction that takes place between the organisation members as they fulfil their prescribed roles while satisfying their individual needs.

The concept of integration of organisational demands and personal needs is apparent in views presented by Lonsdale (1964). Referring to two dimensions that are synonymous with the nomothetic and idiographic dimensions, he defined organisational climate as the global assessment of the interaction between the task achievement dimension and the needs satisfaction dimension within the organisation, or, in other words, the extent of the task-needs integration.

As Dastmalchian et al (1991) aptly puts it, pursuing climate and its relationships has given us the opportunity to re-examine the notion of climate and its implications for organisational change and human resource management, and to contribute to the current theoretical debates on climate and related subjects such as organisational culture. To this end, James (1982) holds that to improve our understanding and measurement of the climate variable, it would be necessary to adopt a more systematic approach to concepts construction. Indeed the foregoing illustrates the significance of developing an instrument to measure organisational climate to enhance research into the nature and influence of organisational systems on management.

## Likert's Organisational Systems of Management

Owens (1970) points out that in the late 1950s and early 1960s, research on organisational climate was given impetus by the development of two instruments designed to measure climate, namely, Halpin and Croft's organisational climate description questionnaire (OCDQ) and Stern and Steinhoff's Organisational Climate Index (OCI). The OCDQ, developed by Halpin and Croft (1963) was used to describe an organisation's climate by locating it on an open-closed continuum, comprising six climates ranked sequentially; thus: open, autonomous, controlled, familiar, paternal and closed. Stern (1963) developed two questionnaires, in an attempt to assess the climate of colleges, which were used to measure the "needs" of individuals and the "press" of the organisation. Steinhoff and stern adopted the instruments in order to develop the Organisational Climate Index (OCI).

Steinhoff (1965) identified two dimensions of organisational climate, namely, development press and control press. Development press was described as the capacity of an organisational environment to support, satisfy, or reward self-actualising behaviour. Control press was described as those characteristics of the environmental press which inhibit or restrict personal expressiveness. Stern (1963) points out that OCDQ was designed for elementary schools. Doubt was cast on its validity with respect to utilising it in secondary schools, and, in particular, in large secondary schools.

An effective instrument to measure organisational behaviour in schools, the profile of a school questionnaire, was developed by Likert and his wife, in 1968. The profile was designed to measure perceived individual behaviour in an organisational setting. The organisational profile of a school is a topological description of the organisational process in a specific school as reflected by the mean score for each process measured in the profile of a school questionnaire. It was formulated on the basis of Likert's management system model in which the concepts of social systems theory, of the behavioural approach to organisations, and of the interaction-behavioural theory of leadership were interwoven.

Likert designed the profile of a school questionnaire to locate an organisation in a continuum in which four systems of management have been arranged sequentially, thus: Exploitive-authoritative (System 1) through Benevolent-authoritative (System 2) and consultative (System 3) to participative group (System 4). Gauthier (1975) described the chararistics of each of the four climates or systems as follows: System 1 (Exploitive-Authoritative): Formal Hierarchical structure, pressure to conform, decisions made at top, people must be forced to work, punitive climate, communication flows downwards.

System 2 (Benevolent-authoritative): Hierarchical structure, a little less coercion than in System 1, persons allowed to make token decisions, paternal leadership, basic needs of workers concerning economic and safety needs are met, communication mostly downwards. System 3 (Consultative): Structure less pyramidal, members are consulted but don't have final authority, some attempts made to satisfy higher needs of workers related to autonomy and self-esteem, communication both downward and upward. System 4 (participtive group): Organic structure, interaction.... every attempt made to integrate the needs of the individual with those of the organisation, individuals involved in important decisions and policy making, attempts to satisfy higher and emotional needs of esteem and self-actualisation, communication flows freely in all directions allowing systems to adapt quickly.

Likert's organisational system of management can be used to describe the organisational climate of a school and locate the school on an authoritative-participate continuum. Likert emphasised that on the basis of studies in a number of schools, system 4 (participate group) is as effective in educational institutions as it is in business organisations.

In a study of organisational relationships in two select secondary schools, Ferris (1965) found that in the few schools recognised as excellent, administrative systems of system 4 (participate group) type were practised. In a study on co-operative decision making, Lepkowski (1970) found that teachers perceived decision-making and communication to be better in schools in which principals behaved supportively than in schools in which less supportive behaviour was displayed.

Though Likert's approaches to organisational management seem to have had considerable appeal to the practising manager of the sixties, they still seem to rely on an over-generalised view of man. By assuming common motivational responses to management initiatives, they, too, have failed to address themselves to the problem of explaining individual differences in effort and performance between employees in the same department and are certainly inadequate to explain the results of the Luton studies of Goldthorpe et al (1968).

Gauthier (1975) described Likert's theory as an interaction-influence theory which is primarily concerned with interacting human needs with those of the organisation. According to Likert's theory, the human organisation should be an integrated, internally consistent management system, based on a structure of overlapping work groups. Likert sought to assess an organisation in terms of organisational processes which constituted the six dimensions or processes measured in the profile of a school questionnaire. The six organisational processes are: Leadership, Communication, Interaction, Decision-making, Goal setting and Motivation. Likert described the ideal organisation in terms of the six organisational processes, thus:

### 1. Leadership:

Leadership within an organisation should be based on the principle of supportive relationships. This requires the leadership and other processes of organisation to ensure certainty that in all interactions and relationships with the organisation, each member will view the experience as supportive and one which builds and maintains his/her sense of personal worth and importance. Likert holds that the application of the principal of supportive relationships enables individuals to feel valued and respected, leading to the fostering of mutual confidence and trust.

### 2. Communication

Likert holds that vertical and horizontal channels should be employed to permit a free initiation and movement of relevant information in all directions and levels as a result of which accurate data are available at all levels in the organisation as a basis for effective decision making.

### 3. Interaction

Interaction between individuals and groups in the organisation should be friendly and supportive. Likert points out that through such interaction, individuals express a high degree of confidence and mutual trust and feel that they are able to exercise control and influence. Groups and individuals are not isolated but are mutually interdependent and continuously interact with each other.

### 4. Decision making

Decisions should be made at all levels by members in the organisation on a group basis. Likert observes that this leads to the integration of contributions by members of overlapping work groups and ensures that co-operation is fostered and motivation is increased.

### 5. Goal setting

According to Likert, individuals in work groups should work together in establishing goals which are fully accepted by members of the organisation. He argues that this leads to a strong commitment towards the achievement of organisational goals.

### 6. Motivation

When members of the organisation belong to a workgroup, interacts with others on a friendly basis, are involved in decision-making and goal setting and receive support and encouragement from leaders, they experience a sense of satisfaction and self-actualisation. Likert observes that such members commit themselves enthusiastically to their tasks and in the process find fulfillment of their personal needs.

## Studies and Research findings related to the study

While pointing out that leadership in Kenyan and Nigerian secondary schools was authoritative and even autocratic in their administrative tendencies, Mbae (1994) abhores top-bottom unidirectional flow of communication, pointing out that lack of participative practice in schools may encourage environments that are not conducive for the teaching learning process. McCormick (1980) points out that the participatory decision-making theory postulates that in an organizational setting, it is the group, more than an individual that is of real use to the administration of the organization. The theory advocates the humanization of working conditions in an organization and calls for the replacement of authority with the concept of acceptance and the replacement of power with persuasion and participation.

In support of participative organizational practice, Blackmore (1989) argues for leadership that would involve a move away from notions of power and control over others towards a leadership defined as the ability to act with others. Blackmore points out that leadership should be at the center of a group rather than at a hierarchical distance from it. This would encourage caring and reciprocal relations to be at the heart of organizational culture, and hold out the possibility that schools might become fully human communities. He points out that the cultural practice of hierarchical and autocratic leadership and of management as the imposition of social control is an impediment to the realization of the ideal type of school leadership; one with established democratic forms of decision making in which the hierarchical position of the headteacher was minimized.

In supporting participative organizational practice in schools, Caldwell and Spinks (1988) argue that the most effective schools, like the most successful business corporations, involve the use of collaborative styles of management, which provide for the appropriate involvement of teachers, parents and students in an on-going management process of goal-setting, need identification, policy making, planning, budgeting, implementing and evaluating. The focus is on programmes for students and the effective and efficient allocation of resources to support learning and teaching. This approach is likely to motivate teachers and students and tempt them into achieving high performance levels.

In distinguishing the characteristics of Likert's four systems or climates of management, Gauthier (1975) observes that Likert favours system 4 (participate group), which is an organic structure that recommends group involvement in setting high performance goals and widespread participation in the decision making and policy-making processes. The system emphasises integration of individual and organizational needs, satisfaction of higher and emotional needs of esteem and self-actualization and free flow of communication in all directions.

The significance of organizational leadership and organizational climate on performance is underscored by Owens (1970) and Hempton(1973). Owens (1970) points out that organizational leadership is a critical determinant of organizational climate while Hempton (1973) observes that organizational climate influences worker motivation; which has the effect of improving the performance level of organizational members. Indeed, Group involvement and wide-spread participation in decision-making and policy-making processes enhances the motivation of members of the organization. Bacharach and Mitchell (1983) hold the position that the quality of work life should be maintained or improved because it is important in its own right and because there is an implicit assumption that satisfied workers will perform better than dissatisfied workers.

Indeed, a study by Benson (1983) shows that on the basis of the kind of leadership adopted by the principal, faculty members who perceive their schools to be bureaucratically run were more disastisfied and willing to leave, than those who perceived their schools to be less bureaucratic. In another study by Calvery (1975), to investigate the relationship between the degree of bureaucratic structure and organizational climate of selected public elementary schools, in the state of Mississippi, it was found that there were significant relationships between the degree of bureaucratic structure and the organizational climate of the schools. The degree of bureaucratic organization significantly predicts the degree of closedness (authoritative climate) of a school. Closed climates affect the Morale and job satisfaction of employees and their subsequent performance.

Study findings by Weiser (974) to investigate the relationship between organizational climate and teacher morale in four secondary schools in Louisiana, also revealed a significant relationship between climate and teacher morale. The study indicated that teachers who perceived the climate to be open (participative) scored high on teacher morale and those who perceived the climate to be closed (authoritative) scored low on teacher morale.

In another study, Craig (1979) sought to investigate the possible relationships of organizational climate, leader behavior and job satisfaction. It was found that teachers in open (participative) climates had higher mean scores for teacher job satisfaction than did the teachers identified in schools of closed (authoritative) climates. Teachers in open (participative) climates identified creativity, moral values and social service as important aspects of job satisfaction while teachers in closed (authoritative) climates identified ability, social service and moral values as important aspects of job satisfaction.

The relationship between performance and climate at the work place is apparent in a study by Indick; Georgopoulos and Seashore (1961) on superior – Subordinate relationships and performance. It was reported that high levels of group performance were associated with participative climate which emphasized supervisor's supportiveness, open communication, mutual understanding and worker autonomy on the job.

Although these studies were carried out in different cultural settings, the question of transferability of cross-cultural issues was addressed by Barrett and Bass (1976) who concluded that despite the difficulties in adapting and using westernized tests on other cultures, the evidence is clear that these tests can be used effectively for selection and prediction – even in underdeveloped countries. Indeed, Morris (1956), in a cross cultural study spanning six national cultures, reported that intricate but direct relationships were found between the values and institutional structure and behaviours.

Studies indicate that schools that are characterised by authoritative climates don't experience true participatory decision-making and free flow of communication in all directions as a prerequisite for integrating individual and organisational needs. Langston (1978) however points out that school administrators can indeed use participation as an instrument to achieve their own ends other than improving performance in sciences.

The kind of repressive climates that can be experienced in schools are best depicted in a study by Johnson (1970) in which he equates them to prisons and mental hospitals in the sense that sub-groups of the population lack voluntary and uncoaxed commitment to the institution. In this case study, Principals were found to be out of touch, insensitive to individual needs and resentful to any encroachment on the power from which they have traditionally operated. Such repressive climates tend to affect the morale of staff of a school and its performance.

A study by Keller and Andrews (1963) indicated strong statistical support to the hypothesis that leader behaviours of the principals was significantly related to the productivity of the schools. They reported that the weight of evidence supported the hypothesis that the morale of the staff of a school was related to productivity. A study was undertaken by Gerbine (1991) to explore the conditions under which teachers' level of involvement in decision-making process was associated positively with their satisfaction with decision-making process and job satisfaction in general. The results of the study, involving 300 teachers in 80 schools in upstate New York, indicated that majority of teachers did not experience true participatory decision-making. They preferred higher autonomy, earlier involvement and a great deal more influence.

Following the upstate New York studies, it was concluded that it is possible that teacher participation in shared decision-making had not yet reached a sufficient threshold where it could be expected to impact job satisfaction of teachers. It was recommended that involvement in managerial and not technical decisions might have the greatest potential for increasing job satisfaction of teachers. It is, indeed, as earlier pointed out, assumed, implicitly, that job satisfaction impacts positively on performance.

Robbinson (1975) involved a faculty and eight independent schools in studying the effects of authoritarianism, competition, reward and punishment on the psychological climate of schools. It was held that "climate" of a school is an important factor in an evaluation of the school's effectiveness. Roughly, akin to human personality, school climate is difficult to define and is often equated to such concepts as "openness" or "morale" or "Authenticity". It was found from the study that a "closed" climate correlated significantly with authoritarianism. High authoritariansm leads to high reward/punishment contingencies which in turn generate high competition. Results indicated that administrators tend to regard the organisational climate of their schools as more open than do their faculties.

It is possible, from these findings that administrators can persue authoritative and even autocratic tendencies leading to repressive climates if not checked. This will negatively affect the morale and job satisfaction of the school staff and hence the performance of the school. It can be argued that school administrators should be subjected to accountability with regard to classroom instruction. Grounlund (1974) points out that such accountability is limited to situations where the professional staff, the school board, and others responsible for the operations of the school are held directly accountable for the success of the school programme.

A study by Menconi (1991) to examine the relationship between school-community partnerships and the climate of an elementary school found that as the involvement of school – community partnership increased, faculty perceived the climate of the school to become more open and conducive to learning. It was concluded that the climate of the school could be enhanced through the use of community partnerships working in concert with the goals and objectives established by the school.

As powers et al (1984) aptly put it, the school is society's main point of enculturation and its desires should be reflected in the school. An open (participative) climate will enhance partnership between school and society/community in decision-making process. This position is shared by Kanjubi (1966) who points out that schools don't operate in vacuum and can't thus be divorced from the morals of the culture in which it is involved. Indeed, traditional societies/ communities highly valued group based decision-making. This is alluded to by Ingrid (1982) who points out that in the 1950s, there was widespread conviction that school administration was authoritarian, and was resistant to change and innovation. This triggered inquiry into the nature and practice of educational administration, leading to the quest for democracy in education.

According to Katz and Khan (1969), democratisation of organisations referes to the extent to which all members share in its accountability and administrative processes. In effect, this calls for leadership style that enhances an open (participative) and accessible administrative process to all its members.

Indeed, a study by Gibbon (1976) on the relationship between leadership style of principals and the organisational climate in secondary schools, in cape province of south Africa, found statistically significant relationships between leadership style of principals and the organisational climate in secondary schools. With regard to integration of individual needs and organisational needs, principals in schools with participative climates scored higher than principals in schools with authoritative climate.

The study found significant relationships between the selected principals' demographic variables and school climate, and between selected school variables and school climate. Schools with principals in the 30-39 year age group and 50-59 year age group were more participative (High organisational climate score) than schools with principals in the 40-49 year age group. Schools with male principals were more open (participative) than schools with female principals. With regard to school size, schools with enrolments of 601-800 were found to be more participative than schools with an enrolment of 401-600. Results of this study indicated significant differences in school organisational climate as a function of the age and sex of principals, and the size of school enrolment.

A study by Sisson (1979) to investigate the perceptions and the relationship between selected characteristics of principals, teachers and school relative to organisational climate, found significant differences between principals' and teachers' perceptions of school climates. Principals perceived the organisational climate of their schools to be significantly more open (participative) than teachers perceived it to be. The study found significant differences in school organisational climate as a function of the experience of principals. Principals in more open (participative) climate schools had significantly longer tenure (experience) in present schools than principals in less open (authoritative) climate schools.

A similar study on leadership behaviour and styles of secondary school principals in Nairobi province by Asunda (1983) reported significant differences in school organisational climate as a function of sex of principals and size of school enrolment. Schools with female principals were perceived to be autocratic (authoritative climate). Schools with large enrollments were perceived to be democratic (participative climate) while those with small enrolments were perceived to be autocratic (authoritative climate). These study findings tend to agree with previous results of a study by Gibbon (1976) on school climate as it relates to the principal's age and school size.

A study on teacher perceptions of the principals' role in establishing teacher morale by Khahil (1962), found significant factors in improving teachers' morale. These factors include: the personal qualities of the principal, effective communication to and from the teachers, teacher participation in policy formulation and decision-making and supportive behaviour on the part of the principal. Khahil points out that, it has been argued that the behaviour of the principal seemed crucial with respect to school climate, that the nature of school climate was a major responsibility of the principal and that principals are the major designers of the school organisational climate.

It has been emphasised from findings of these studies that the principal's major task is to create conditions within which the staff in the school can meet its organisational responsibilities while maximising personal development. This will provide teachers with an organisational environment that is personally enriching and satisfying, and at the same time, productive for the organisation.

Similar findings were reported by Stogdill (1974) who carried out an exhaustive survey of the theory on the relationship between leadership behaviour and productivity and reported that when teachers and principals are described high in consideration and initiation of structure, their students tend to make high scores on tests of school achievement. Indeed in a study reported by Halpin (1966) it was also observed that effective leadership is characterised by high initiation of structure and high consideration. He described initiating structure as referring to the leader's behaviour in delineating the relationship between himself and members of the work-group, and endeavouring to establish well defined patterns of organisation, channels of communication and methods of procedure. Consideration refers to behaviour indicative of friendship, mutual trust, respect and warmth in the relationship between the leader and members of staff.

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In a study on school organisation and management, English (1975) postulated that under a punitive value system, the organisational climate would be closed, hostile, suspicious, fear-laden and rule-oriented. A trusting, open, flexible climate would exist under humanistic value system.

It has indeed been argued that organisational climate influences the motivational tendencies of workers. The nature of school climate influences the motivation of school staff and manifests itself in student achievement. A study by Saha (1983) on social structure and teacher effects on academic achievement, found that teacher behaviour and attitudes were important variables in accounting for student achievement. Teacher expectations of students, teaching methods and the conditions surrounding the school and teachers were found to be important in accounting for variations in student achievement.

Emphasis on factors that influence organisational climate is thus crucial to school leadership. A study by Gauthier (1975) on the relationship between organisational structure, principal/leader behaviour, personality orientation and school climate, found a significant relationship between leader behaviour and school climate. Principals with high scores on behaviour sub-scales of integration, consideration and tolerance of freedom also had high scores in school climate. This was assumed to be indicative of greater motivation and performance.

In another study by Farber (1968), to examine the relationship between biographic characteristics of principals and teachers and school-community climate, no significant relationship between sex of teachers or principals and school climate was found. With regard to school size and student achievement, Stakelenburg (1991) examined the relationship between high school size and achievement and concluded that school size alone does not determine the student academic achievement. A similar study by Sorum (1973) indicated that with respect to school size, teachers in secondary schools with an enrolment of more than 500 students, perceived the climate to be more favourable than in other schools. A related study by Bidwell (1965) indicated that school size and organisational complexity tended to generate bureaucratic tendencies.

Although the foregoing study findings indicate that there is a complex set of factors which determine students' performance, there is overwhelming inclination, as pointed out by Torrington and Weightman (1989) towards participative style of implementation of decisions that creates a sense of ownership of the "how" of innovation even if there is no sense of ownership of the "what". This will cultivate an open climate characterised by responsibility, support and team spirit.

In a school situation, the principal should attempt to play a supportive role rather than an authoritative one so as to further the growth of the subordinate through increased competence, full acceptance of responsibility (self-direction and self-control), and ability to achieve integration between organisational requirements and own personal goals. By so doing, the subordinate is encouraged to take responsibility for his own performance. Indeed, teachers will own the outcome of performance results.

However, as pointed out by Bateman (1991), though groups are powerful forces in organisational affairs, whatever the group's talents, its ultimate contributions will be largely determined by its leadership. Leadership fine-tunes group structure and transforms the potential energy of a cohesive group into the kinetic energy of a dynamic constructive force. Leadership can thus be utilised to nurture school climate that facilitates science teaching - learning process; one that establishes teacher morale, encourages subordinate ownership of innovation and facilitates creativity and discovery learning.

A study by Heyneman (1979) compared results from Uganda and more industrialised countries and found that school and teacher variables are more important in explaining variations in student achievement in developing countries. It was found that the more developed or industrialised a society is, the more school achievement is apt to be affected by students' socio-economic environment and other out-of-school influences.

In a report by Hussein; Saha and Noonan (1978), for the world bank, on teacher training and student achievement in less developed countries and on school-teacher variables in less developed countries, it was indicated that the overall pattern of relationships suggest that teacher variables exert positive effects on student achievement. Indeed, study findings tend to suggest that teacher variables are crucial in student achievement. In particular, achievement in sciences is influenced by the motivational tendencies of both teachers and students.

In a study by Kelly (1978) on sex differences in science achievement, it was observed that student motivational orientation is a product of social-psychological influences in the home and school environments and is associated to science achievement. Science experiences of students is a function of the home and the school environments. The home environment is influenced by the exposure to science related experiences and the extent of family encouragement. The school environment is influenced by the science teaching resources and effectiveness of the teacher in using such resources, and in active participation in extra-curricular science activities such as science clubs and societies.

The study findings indicate that third world homes have low educational motivation and the school influence overweighs the home influence in this respect. This brings to focus the nature of school environments and their ability to facilitate the science teaching-learning process. This is against the background that education in third world remains traditionalist, academic, severely hierarchical, highly formalised and examination oriented. This structure fits in well with Likert's management system I (Exploitative-authoritative) and may inhibit creativity and innovation that is significant in science teaching-learning process.

As Bowers (1969) points out, studies of individual companies over several years show that as the management system shifts from a lower to a higher number, performance of the organisation improves. Specifically, system 4 (participative group) appears to be consistently associated with more effective performance, and System 1 with less effective performance. System 4 management may accommodate a contention by Hurd (1969), that contemporary science educators have expressed the view that students should be provided with the opportunity to engage in processes of investigation and inquiry, and, therein lies the uniqueness of the laboratory.

A research on science teaching by Shulman and Tamir (1973) indicates that due to the stress on the process of science and the emphasis on the development of higher cognitive skills, the laboratory acquired a central role, not just as a place for demonstration and confirmation, but as a core of the science learning process. They have proposed a classification of goals for laboratory instruction in science education thus: (a) to arouse and maintain interest, attitude, satisfaction, open mindedness and curiosity in sciences (b) to develop creative thinking and problem solving ability (c) to promote aspects of scientific thinking and the scientific method such as formulating hypotheses and making assumptions (d) to develop the practical abilities such as designing and executing investigations, observations, recording data and analysing and interpreting results (e) to develop conceptual understanding and intellectual ability.

Several factors may affect the realisation of laboratory goals, such as teaching behaviour and availability of resources such as apparatus, materials and laboratory manuals. According to Ausubel (1968), the laboratory gives the students appreciation of the spirit and method of science; promotes problem solving, analytic and generalisation ability; and provides students with some understanding of the nature of science. Since research findings indicate significant relationships between teacher and school variables and science achievement, school leadership should focus on the nature of school climate that enhances teacher morale and encourages deductive-oriented teachers who can teach practical work authoritatively.

Indeed, a research carried out by Steinkamp and Maehr (1983) on science achievement indicated that science achievement and motivational orientation towards science are most directly affected by teacher characteristics and behaviour and by student science experiences acquired from out-of-school and within-school conditions. The study observed that in traditional learning, it is the teacher characteristics and behaviour that influence student science experiences, not vice versa, particularly in school settings where the teacher is at the centre of most science activities, both in class and during extra curricular activities. Since experiential learning is a composite term that is used to indicate instructional methods that employ the use of activities, concrete manipulation or other forms of direct sensory experience to facilitate instruction, it follows that conducive classroom environment supplements effectiveness of most instructional methods.

With regard to the science teaching-learning process, many research studies have been conducted, comparing effectiveness of laboratory centred learning and other methods of instruction. A research on ability and science learning by Boulanger (1981) found that it was systematic innovations in instructions which was found to produce positive improvements over the norm or traditional practice. The study points out that teaching techniques in third world is mainly fact-giving, emphasising rot learning and minimal student activity. The research findings indicate that the effectiveness of instructional system is modeled to a significant degree by teacher variables such as teacher convictions, use of pre-instructional strategies, instructional techniques and conducive classroom environment. It was concluded that the most consistent finding was that teachers who used more of the conventional instructional approaches as a blend with experiential components experienced superior performance than those who used either method alone. The organizational climate of a school, thus, largely determines the required conducive environment for the science teaching-learning process.

In presenting a paper on differential access to education in Kenya, Achola (1978) points out that considering the school science teaching-learning process, the laboratory has for long been given a central and distinctive role in education. He however pointed out that most of these research studies showed no significant differences between the instructional methods as measured by the standard paper-and-pen tests in student achievement, attitude, critical thinking and in knowledge of the process of science.

Research on the role of the laboratory in secondary school science progress by Bates (1978) indicated that many studies comparing the effects of laboratory learning with more conventional forms of instruction have resulted in non significant differences. Some science educators have thus been prompted to question the value of the laboratory. In arguing their case against extensive student laboratory work, they point out that: some teachers in secondary school are incompetent in effective laboratory use; too much emphasis on laboratory activity leads to a narrow perception of science; many experiments performed in school laboratories are trivial and that laboratory work in schools is often remote and unrelated to the capabilities and interests of the student.

Indeed, these study findings and observations tend to give credence to findings by Boulanger (1981) indicating that a blend between conventional and experiential approaches, under conducive classroom environment, experiences superior performance than either method used alone.

Given that teacher and student motivation is crucial in the science teaching-learning process, emphasis should be placed on the organisational participative style of implementation of educational changes that creates a sense of teacher and student ownership of innovation in the science teaching-learning process.

This is reported in a study by Dickson (1975) which compared student achievement and attitude change toward science, resulting from three different teaching approaches, namely: lecture only; lecture-laboratory and lecture-recitation. Results from the study suggested that students benefit when they experience a personal involvement. It was concluded from the study findings that students achieve more and indicate a more favourable change attitude toward science upon completion of the lecture-laboratory course than do students completing the lecture only course or lecture-citation course.

Teachers who are motivated and inclined towards the lecture-laboratory approach may thus enable students achieve maximum benefit from the experience in the science teaching- learning process. Indeed the school principal has been cited as most influential in motivating teachers through encouraging conducive school teaching – learning climate that can supplement effective instructional method that is required particularly in science teaching – learning process.

## Conceptual framework

The conceptual framework of this study is based on the effect of (i) the principal's demographic variables and (ii) the school variables on school organisational climate and its influence on the performance in sciences in public secondary schools as presented in Table 2.

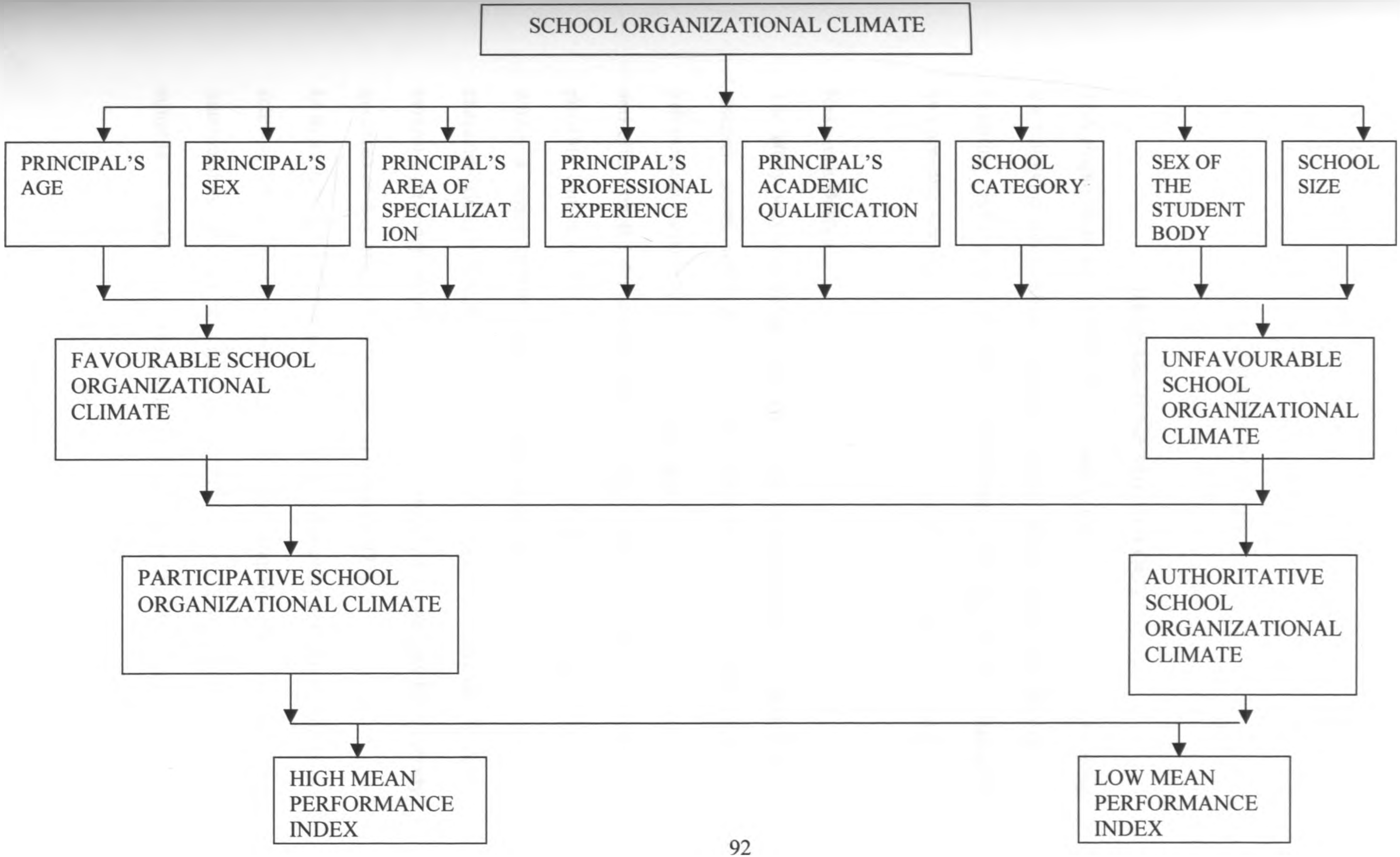
The principal's selected demographic variables are:

(a) age
(b) sex
(c) area of specialization
(d) professional experience and
(e) academic qualification.

The school selected variables are:

(a) category
(b) sex of the student body
(c) size.

Table 2: Conceptual framework on the effect of school organizational climate on the performance in sciences in public secondary schools in Nairobi Province.


SCHOOL ORGANIZATIONAL CLIMATE
PRINCIPAL'S AGE
PRINCIPAL'S SEX
PRINCIPAL'S AREA OF SPECIALIZATION
PRINCIPAL'S PROFESSIONAL EXPERIENCE
PRINCIPAL'S ACADEMIC QUALIFICATION
SCHOOL CATEGORY
SEX OF THE STUDENT BODY
SCHOOL SIZE
FAVOURABLE SCHOOL ORGANIZATIONAL CLIMATE
UNFAVOURABLE SCHOOL ORGANIZATIONAL CLIMATE
PARTICIPATIVE SCHOOL ORGANIZATIONAL CLIMATE
AUTHORITATIVE SCHOOL ORGANIZATIONAL CLIMATE
HIGH MEAN PERFORMANCE INDEX
LOW MEAN PERFORMANCE INDEX

# CHAPTER THREE

## RESEARCH METHODOLOGY

This chapter outlines the methodology used in the study and is organised along the following sub-headings: Research design; Target population; Sample and sampling procedure; Research instruments; Pre-testing the Research instruments; Administration of instruments and Data analysis techniques.

### Research Design

The study was conducted using an Ex Post Facto design. In this design, research starts with observation of dependent variables and then the independent variables are studied in retrospect for their possible relationship to and effect on the dependent variables. The design attempts to discover the possible causes of the phenomenon under study by comparing subjects in whom a characteristic is present with those similar ones in whom the characteristic is absent or is to a lesser degree. The researcher has no direct control over independent variables because their manifestations have already occurred or they are not manipulable, Kerlinger (1973).

In this study, school organisational climate and student performance index in sciences have already occurred and demographic variables are not manipulable. The Ex post facto design has been recommended as the most suitable in educational and social science research since many research problems in social and educational research do not lend themselves to experimental inquiry.

### Target population

The population of the study, according to the Ministry of Education (2002) statistics consists of 47 public secondary schools, comprising: 35 day schools, 11 boarding schools and 1 boarding and day school in Nairobi Province. There were 47 principals, compromising 27 females and 20 males, and 2437 teachers targeted in the study.

### Sample and sampling procedure

Sample size was determined using Krejcie and Morgan (1970) table for determining sample size from a given population. 40 public secondary schools were selected for study.

There were 8 schools selected for pilot study and did not participate in the main study, as follows: 1 boarding and day school, 4 day schools and 3 boarding schools. Stratified random sampling was used to select schools for study comprising 26 day schools and 6 boarding schools. There were 8 teachers from each participating school randomly selected to respond to the Teachers' Questionnaire. This was considered an appropriate number to reflect the perceived mean Organisational climate of a school.

Teachers and principals who had served for less that 1 year in a school were considered not eligible for participation in the study, as they were considered to have insufficient exposure in their schools. For instance, 2 of the principals who had been considered eligible for study in the main study were cross transferred during the research. They were thus considered not eligible to participate in their new schools. There were thus 30 principals that were considered eligible to participate in the main study compromising 17 female and 13 male principals. The number of teachers selected to participate in the main study was 240 compromising 178 female and 62 male.

## Research Instruments

A questionnaire was selected as the instrument of the study. Sax (1968) has described a questionnaire as a means of eliciting the feelings, beliefs, experiences or attitudes of some sample of individuals. In preferring the questionnaire to the interview, an economy in time and expenditure was effected.

Two instruments were used in the study: The Principals' Questionnaire (PQ) and the Teachers' Questionnaire (TQ). The Principals' Questionnaire had two parts. Part I had five items on the principals' demographic variables of age, sex, area of specialization, professional experience, academic qualifications, and three items on school variables of category, sex of the student body and size. Part II consisted of two structured open-ended questions to elicit responses from the principal on organizational problems encountered and their resolutions.

The Teachers' Questionnaire consisted of three parts. Part I consisted of five items on the teachers' demographic variables of age, sex, area of specialization, professional experience and academic qualifications. Part II consisted of a 30-item profile of a school questionnaire used to report the teachers' perceptions of the organisational climate of the school in which they served. The profile was developed by Rensis Likert and his wife and was derived from instruments initially designed for use in industry and commerce (Likert, 1967).

The 30-items comprised five items for each of the six organisational processes measured as sub-scales, namely: Leadership, Motivation, Communication, Interaction, Decision making and Goal setting. A four point Likert type scale, based on Likert's profile of a school questionnaire was adopted.

The responses to 15 items ranged from the Authoritative system 1 management type through the participative system 4 management type. The responses to 15 other items were given in reverse order and ranged from the participative system 4 to the Authoritative System I management type (see Appendix C). This was to ensure respondents did not develop a fixed response pattern. Respondents were to select one of the four responses for each item that best described their school. The mean performance index (MPI) in sciences over a five year period (1996-2000) was obtained from the Kenya National Examinations Council (KNEC).

## Pre-testing the Research Instruments.

Mulusa (1988) points out that the purpose of pre-testing is to assess the clarity of the instrument items, their validity and reliability as well as the suitability of the language used. During pilot study each questionnaire item was discussed with respondents to ensure that all items were correctly worded and were not subjected to misinterpretation before being administered in the main study.

Instrument validity refers to the degree to which the instrument measures the construct under investigation. Validity of research instruments was supported by results of previous studies. The manual for use of this instrument, namely, the Likert profile of a school: Manual for questionnaire use (Ann Arbor, Michigan: Rensis Likert Associates, (1972) pp VI-2 to 10, included reports of fourteen studies that yielded results supportive of the validity of various forms of the school profile.

Instrument reliability refers to the degree to which the test measures what it is supposed to measure consistently. The performance index of all public secondary schools is based on a standard test, set and administered at the same time by the Kenya National Examinations Council. The KCSE performance data was obtained from the Kenya National Examinations Council and was thus considered reliable. Split-half technique was used to determine instrument reliability during the pilot study. Roscoe (1969) points out that split-half technique involves splitting items into halves (odd and even items) and then calculating the correlation coefficient (r) between the scores. This measures the degree of association between the scores of the two halves of the test. To obtain the reliability coefficient of the instrument (Re), spearman Brown prophecy formula was used.

The pearson product moment coefficient of correlation (r) is given by:

$$\mathbf{r} = \frac{\mathbf{n\Sigma XY - \Sigma X\Sigma Y}}{\sqrt{[\mathbf{n\Sigma X^2 - (\Sigma X)^2}][\mathbf{n\Sigma Y^2 - (\Sigma Y)^2}]}}$$

Where:

**$\Sigma X$= Sum of even scores**

**$\Sigma Y$= Sum of odd scores**

Spearman Brown prophecy formula is given by:

$$\mathbf{Re} = \frac{\mathbf{2r}}{\mathbf{1+r}}$$

Where:

**Re** shows the extent to which the two halves of the test are equivalent or consistent in terms of its items. Split-half corrected reliability coefficient (Re) was found to be 0.92. Reliability coefficient varies from 0.00 to 1.00, with 0.00 showing no consistence and 1.00 showing perfect consistence. Reliability coefficients above 0.86 generally reflect a good consistence, Likert (1967).

### Administration of instruments

Research permit for the study was sought and approved by the Permanent Secretary, Ministry of Education, and the Nairobi Provincial Director of Education. The list of names of schools and their location was provided by the Nairobi Provincial Director of Education. The administration of instruments was done in two stages: the pilot study and the main study. The researcher visited the selected schools for the study and requested the principals and randomly selected teachers to participate in the study.

The researcher assured respondents of confidentiality by ensuring that at no point would the names of schools or participants appear anywhere in the administration of the instrument or in the final report on the study.

The researcher collected completed questionnaires in sealed envelopes in a weeks time. A caution emphasized in the Likert profile of a school manual points out that the accuracy of the measurements with the Likert profile Questionnaire is dependent upon strictly observed assurances of anonymity of the respondents.

The KCSE performance index in sciences utilized in the study was obtained from the Kenya National Examinations Council.

### Data analysis techniques

The main techniques utilized in the analysis of data to determine whether or not to accept or reject each null hypothesis were: Pearson Correlation analysis, Analysis of variance and student's t-tests. The null hypotheses were analysed using the Statistical Package for Social Sciences (SPSS) programme. The level of significance for the study was set at 0.05 level of confidence.

It is established that 'means' are the most stable measures of central tendency. The means were thus used to compute correlation tests, standard deviations and t-tests. The mean organisational climate for each school, which represented the score for individual principals, and the mean for all schools that participated in the study, which represented the population score, were computed. The mean KCSE performance index in sciences for each school and for all schools that participated in the study was computed, based on a five year period, from 1996 to 2000.

Pearson product moment correlation coefficients were utilized to test the strength of association between the variables. Correlation coefficients range from +1.00 to - 1.00. A coefficient of +1.00 indicates a perfect positive correlation between two variables; a coefficient of -1.00 indicates a perfect negative correlation between two variables and 0.00 correlation indicates the absence of any relationship, positive or negative, between the variables.

The statistical significance of the difference between sample group means with respect to a specific variable was tested by one way Analysis of Variance (ANOVA) and student's two tailed t-tests.

If the t-values computed in these tests were greater than the critical t-value, the null hypothesis was rejected and the alternative hypothesis accepted. Where the F-ratios obtained in (ANOVA) tests were greater than appropriate F-ratio table values, the null hypothesis was rejected and alternative hypothesis accepted. One-way analysis of variance (ANOVA) was used to test hypotheses 1(a), 1(c), 1(d), 1(e), 2(b), 2(c) and 3(b). Student's t-test was used to test hypotheses 1(b), 2(a) and 3(a). To test hypothesis (4), Pearson product moment correlation coefficient was utilized.

# CHAPTER FOUR

# DATA ANALYSIS

This Chapter presents the analysis of data collected for the study. Statistical inferences based on results of the analysis were made as to whether or not there were significant relationships between the dependent and independent variables utilized in the study.

There are two sections in this Chapter. The first section gives the questionnaire return rate, the demographic data of respondents, the school descriptive data and the mean performance index. The section that follows presents a statement of the analysis technique utilized, the analysis of data with respect to the hypotheses and a summary of the data analysis findings.

## The Questionnaire return rate:

Out of the 240 questionnaires administered to the teachers, 232 questionnaires were collected. The Teachers' Questionnaire return rate was therefore 96.7 %. All the 30 questionnaires administered to the Principals were collected. The principals' questionnaire return rate was therefore 100%.

## Demographic data of respondents and the school descriptive data

The demographic data of teachers who participated in the study was summarised on the basis of the percentage of the sample represented in each group with regard to their: age, sex, marital status, professional experience, academic qualification and area of specialization as presented in Table 3.

**Table 3: Demographic Data of Teachers**

| Variable | Group | F | % |
|---|---|---|---|
| Age(years) | 20-29 | 21 | 9.1 |
| | 30-39 | 153 | 65.9 |
| | 40-49 | 49 | 21.1 |
| | >49 | 9 | 3.9 |
| Sex | Female | 173 | 74.6 |
| | Male | 59 | 25.4 |
| Marital Status | Married | 199 | 85.8 |
| | Single | 27 | 11.6 |
| | Divorced | 2 | 0.9 |
| | Separated | 4 | 1.7 |
| Experience(years) | 0-5 | 26 | 11.2 |
| | 6-10 | 63 | 27.2 |
| | 11-15 | 94 | 40.5 |
| | 16-20 | 26 | 11.2 |
| | >20 | 23 | 9.9 |
| Academic qualification | DIP/ED | 63 | 27.2 |
| | BA/BSC/-PGDE | 32 | 13.8 |
| | BED | 128 | 55.2 |
| | MED | 8 | 3.4 |
| | MA/MSC | 1 | 0.4 |
| Area of specialization | Sciences | 89 | 38.4 |
| | Non-sciences | 143 | 61.6 |

**N= 232 Teachers**

It is significant to note that most teachers (61.6%), specialize in non-sciences and only 38.4% in sciences. In a school setting, the majority non-science teachers may, by their sheer numbers, make it difficult for the science teachers to influence school leadership and contribute effectively to decision making. This may be demotivating especially if decisions affect the science teaching-learning process and may have a negative effect on the performance in sciences.

Data shows that most teachers were married (85.8%) and that most of them were female (74.6%). Indeed, the teachers' employer, the Teacher's Service Commission, provides for married, female teachers to join their husbands at their stations of work. The province is endowed with competent trained teachers, with the majority (69%) being University graduates and 27.2% being Diploma in Education (DIPED) holders. Most teachers (65.9%) were at the 30-39 years age group. With retirement at 55 years, most teachers still had 16 to 25 potential years of service. Data indicates that most teachers (67.7%) had a professional experience within the 6-15 years bracket.

The Principals responded to Questionnaire questions with regard to their: age, sex, academic qualification, area of specialization, in-service training, professional experience and with regard to their school size, sex of the student body and category. These data were summarised on the basis of the percentage of the sample represented in each subgroup as presented in Table 4 and Table 5 respectively.

**Table 4: Demographic Data of Principals.**

| Variable | Group | F | % |
|---|---|---|---|
| Age (Years) | 20-29 | 0 | 0.0 |
| | 30-39 | 3 | 10.0 |
| | 40-49 | 18 | 60.0 |
| | > 49 | 9 | 30.0 |
| Sex | Female | 17 | 56.7 |
| | Male | 13 | 43.3 |
| Academic qualification | DIPED | 6 | 20.0 |
| | BED | 18 | 60.0 |
| | BA/BSC-PGDE | 4 | 13.3 |
| | MED | 0 | 0.0 |
| | MA/MSC | 2 | 6.7 |
| Area of specialization | Science Education | 14 | 46.7 |
| | Administration | 1 | 3.3 |
| | Non-science | 16 | 50.0 |
| Administrative exposure | In-serviced | 23 | 76.7 |
| | Not in-Serviced | 7 | 23.3 |
| Professional experience (years) | 0-5 | 12 | 40.0 |
| | 6-10 | 8 | 26.7 |
| | 11-15 | 2 | 6.7 |
| | 16-20 | 4 | 13.3 |
| | >20 | 4 | 13.3 |

**N = 30 Principals**

The demographic data of principals that participated in the study, as presented in Table 4, shows that the proportion of principals specializing in sciences (46.7%) are fairly balanced with those specializing in non-sciences 53.3%. This is despite indications that majority of teachers specialize in non-sciences. This balancing act may be significant in view of possible disparity in popularity between sciences and non-sciences. The proportion of female principals and male principals is comparable, at 56.7% female and 43.3% male. It is significant that the distribution of principals on the basis of area of specialization and sex is fairly balanced. Data indicates that majority of principals, (73.3%), are university graduates and 20% Diploma in Education (DIPED) holders. Thus, in terms of certification and training, the province has adequate personnel. The data flow shows that most principals, (60%), are in the 40-49 years age group, and 30% at the 50 and above years age group. With mandatory retirement at 55 years and optional retirement at 50 years, the 30% of the principals above 50 years are at the retirement bracket and may be reluctant to embrace change. They may resist attempts to break away from what they regard as the tried and true methods of the past in favour of new and bold unproven procedures. This may fundamentally influence the nature of school organizational climate and thus the level of performance in sciences. Most principals, (76.7%), participated in in-service courses organized by the Teachers' Service Commission (TSC), Ministry of Education or the Kenya Headteachers Association. Most in-service centres are located within Nairobi Province and may explain the high response.

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**Table 5: School Descriptive Data**

| Variable | Group | F | % |
|---|---|---|---|
| School Student Size | 201-400 | 13 | 43.3 |
| | 401-600 | 8 | 26.7 |
| | 601-800 | 9 | 30.0 |
| School Student Sex | Male | 15 | 50.0 |
| | Mixed | 7 | 23.3 |
| | Female | 8 | 26.7 |
| School Category | Day | 24 | 80.0 |
| | Boarding | 6 | 20.0 |

**N= 30 Schools**

The school descriptive data, as presented in Table 5, shows that majority of schools that participated in the study, at 80%, were day schools while 20% were boarding schools. Most day schools lacked space and learning facilities and were congested within the estates and the city centre with no playing grounds, often under intense noise from traffic vehicles and a general environment not conducive for the teaching – learning process. Most boarding schools were in the outskirts of the city in secure compounds, away from traffic noise and with adequate learning and extra curricular facilities, and had a general atmosphere conducive for the teaching – learning process. The sex of the student body of majority of schools was male, at 50%, with female and mixed schools nearly equal at 26.7% and 23.3% respectively. Indeed there were more male students than female students in secondary schools though the population of secondary school going age girls may surpass that of boys. The student size of majority of schools was in the 201-400 students bracket, at 43.3%. Schools of size 401-600 student and 601-800 students were near equal at 26.7% and 30% respectively. No schools of student size above 800 or below 200 was reported. Most schools with low enrolment were day schools which did not have room for expansion and were expected to maintain their size. Most schools with large enrolment were boarding schools which, unlike day schools, provided accommodation facilities for students and teachers.

### Mean Performance Index for Sciences

The Mean Performance Index (MPI) for each school and the Population Mean Performance Index (PMPI) was computed as presented in Table 6. The sum of candidature for each of the science options (Physics, Chemistry, Biology) represents the candidature (N) in sciences.

The performance at KCSE in sciences of each school that participated in the study was based on the school mean grade (MG) and scored as school performance index (PI). The lowest performance index is 1.00 and the highest is 12.00. The performance Index for each school over a period of five years is presented in appendix D.

**Table 6: School KCSE Mean Performance Index in sciences in Nairobi Province**

| School | N | MPI | School | N | MPI |
|---|---|---|---|---|---|
| AI | 169 | 2.75 | H2 | 147 | 3.10 |
| A2 | 369 | 8.03 | I1 | 207 | 2.90 |
| B1 | 618 | 7.54 | I2 | 399 | 5.44 |
| B2 | 196 | 4.41 | J1 | 268 | 6.67 |
| C1 | 456 | 6.09 | J2 | 143 | 4.39 |
| C2 | 214 | 2.40 | K1 | 131 | 3.48 |
| D1 | 275 | 3.49 | K2 | 560 | 10.40 |
| D2 | 165 | 4.44 | L1 | 229 | 2.81 |
| E1 | 150 | 2.80 | L2 | 275 | 6.96 |
| E2 | 395 | 4.61 | M1 | 202 | 10.42 |
| F1 | 244 | 4.38 | M2 | 533 | 4.65 |
| F2 | 256 | 3.70 | N1 | 155 | 4.15 |
| G1 | 329 | 4.39 | N2 | 140 | 2.60 |
| G2 | 304 | 5.05 | P1 | 201 | 5.79 |
| H1 | 147 | 3.12 | P2 | 142 | 3.01 |

**N: Candidature**
**MPI: Mean Performance Index**
**PMPI: Population Mean Performance Index = 4.8**
**SOURCE: KNEC, (1996 – 2000)**

### Performance data by School

The KCSE Science performance data of schools that participated in the study is presented in Table 7. Admission into science based courses and faculties is dependent on the performance in sciences besides meeting the minimum mean grade admission requirements. Though the minimum university entry requirement is a mean grade of C (plus), competitive admission on cluster point basis requires a high performance in sciences to qualify for admission into science based faculties. This requirement gives added significance to the need for high performance in sciences at K.C.S.E. The school performance data indicates a low performance in sciences, with 86.7% of the schools scoring a mean grade below C (plus) and only 6.7% of the schools scoring a mean grade of B (plus) and above. A school mean grade score of B (plus) and above in sciences ensures that a significant portion of the candidature qualifies for admission into science based faculties. A low school mean grade in sciences in a majority of schools as indicated by the school science performance data means that most students do not qualify for admission into science related courses and faculties in colleges and universities. The importance of encouraging high enrolment in sciences at advanced levels, lies in the need to advance in technology as a basis for industrialization. The performance data of schools as presented in table 7 is reflected in the distribution of grades scored as presented in Table 8.

**Table 7: KCSE Science Performance Data by Schools in Nairobi Province**

| MG | MPI | N | % |
|---|---|---|---|
| E - D | 1 - 3.99 | 12 | 40.0 |
| D+ - C | 4 - 6.99 | 14 | 46.7 |
| C+ - B | 7 - 9.99 | 2 | 6.7 |
| B+ - A | 10 - 12 | 2 | 6.7 |
| **TOTAL** | | 30 | 100.0 |

**MG: Mean Grade**
**MPI: Mean Performance Index**
**N : Number of Schools**
**Source: KNEC(1996-2000)**

## Performance data by Grade counts

The KCSE Science performance data by grade counts as presented in table 8 shows that only 9.5% of the total candidature in sciences scored B (Plus) and above. The number of candidates in sciences who scored below grade C (Plus) represented 78.2% of the total candidature in Sciences. Grade counts in Sciences is the sum of specific grades scored in Physics, Chemistry and Biology. It is significant to note that the number of candidates who scored grades B (Plus) and above in sciences and therefore qualified for admission into science based faculties in public universities were only 9.5% of the total candidature in sciences from only 6.7% of the schools that participated in the study. The majority of candidates from most schools failed to qualify for admission into science based faculties in public universities. These data indications reflect the low level of performance in sciences in public secondary schools in Nairobi Province. Indeed the population mean performance index in sciences for public secondary schools in Nairobi Province that participated in the study was a low 4.80, placed at pass grade D (Plus).

**Table 8: KCSE Science Performance Data by Grade Counts in Nairobi Province**

| MG | MPI | N | % |
|---|---|---|---|
| E - D | 1 - 3.99 | 2207 | 27.5 |
| D+ - C | 4 - 6.99 | 4063 | 50.7 |
| C+ - B | 7 - 9.99 | 987 | 12.3 |
| B+ - A | 10-12.00 | 762 | 9.5 |
| TOTAL | | 8019 | 100.0 |

**MG: Mean Grade**
**MPI: Mean Performance Index**
**N: Grade Counts**
**Source: KNEC (1996-2000)**

## Profile of a School

Likert's system 1 through system 4 authoritative participative continuum was utilized in scoring responses on the profile of a school questionnaire as described in Chapter Three. It was necessary to condense data by organising it into frequency distributions and percentages. The mean climate score for each of the six organisational processes in each school that participated in the study was computed. The total score for each respondent in a school in the sample was computed. This enabled the computation of the mean score for each school in the sample, which represented the school's mean organisational climate (Moc) score. This also enabled the computation of the mean score for all the schools that participated in the study.

The minimum and maximum mean scores for each of the six organisational processes in a school is 1 and 4 respectively, while the minimum and maximum scores for the school mean organisational climate (Moc) is 30 and 120 respectively. The distribution of the mean climate scores for each school is represented in appendix E. The mean climate scores were used to compute standard deviations, correlation tests, t-test and analysis of variance. The performance index for each school over a period of five years (1996 – 2000) was computed, as presented in appendix D. The Mean Performance Index (MPI) for each school was then computed. This enabled the computation of the Population Mean Performance Index (PMPI) for all schools that participated in the study. The minimum and maximum scores for the mean performance index (MPI) is 1 and 12 respectively. The standard deviation for all schools in the study sample was computed. The three main techniques described in Chapter Three were utilized in the analysis of data to determine whether or not to accept or reject the null hypotheses. The techniques utilized were pearson product moment correlation coefficient, student's t-test and one-way analysis of variance. All the hypotheses were tested at the 0.05 level of confidence. If the computed value is less than the critical table value, then the null hypothesis is rejected, otherwise it is accepted.

## HYPOTHESES TESTING

The hypotheses were stated in null form for purposes of analysis. The relevant data were analyzed to determine whether to accept or reject each hypothesis.

HYPOTHESIS (1a) was stated as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's age.

The data analysis is presented in Table 9.

**Table 9: Analysis of variance for differences in school organizational climate by principal's age.**

| Age group(years) | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| 30-39 | 3 | 86.4 | 2.83 | 2.40 | 0.109 |
| 40-49 | 18 | 80.6 | 8.73 | | |
| 50 & above | 9 | 75.5 | 7.03 | | |

**N =30 Principals**

The F-ratio value (2.40) obtained was less than the critical value (2.43). Since the p-value (0.109) is greater than chosen α – levels (0.05), there was no evidence for a significant difference between school organizational climate and the principal's age. The null hypothesis was thus accepted. However, the mean organizational climate scores seemed to decrease with increasing age. A high mean organizational climate score is perceived to imply participative climate while a low mean organizational climate score is perceived to represent authoritative climate.

HYPOTHESIS (1b) was stated as follows:

There is no significant relationship between school organizational climate as perceived by teachers and the principal's sex.

The data analysis is presented in Table 10.

**Table10: Analysis for differences in school organizational climate by principal's sex.**

| Sex | F | Mean | SD | SE | P-value | T-value |
|---|---|---|---|---|---|---|
| Male | 17 | 80.1 | 7.71 | 1.9 | 0.752 | 0.32 |
| Female | 13 | 79.1 | 9.37 | 2.6 | | |

**N =30 Principals**

The T- value obtained (0.32) was less than the critical T-value. Since the P-value (0.752) was greater than the chosen α – levels (0.05), there was no evidence for a significant difference in school organizational climate as a function of sex. The null hypothesis was thus accepted.

HYPOTHESIS (1c) was stated as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's area of specialization.

The data analysis is presented in Table 11.

**Table 11: Analysis of Variance for differences in school organizational climate by principal's area of specialization.**

| Area of specialization | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Science | 14 | 79.3 | 9.46 | 0.17 | 0.841 |
| Non-Science | 15 | 80.2 | 7.65 | | |
| Educational Administration | 1 | 75.3 | 0.00 | | |

**N = 30 Principals**

The F-ratio value (0.17) obtained was less than the critical value (2.03). Since the P-value (0.841) is greater than the chosen α-levels (0.05), there was no evidence for a significant difference between school organizational climate as perceived by teachers and the principal's area of specialization. The null hypothesis was thus accepted.

HYPOTHESIS (1d) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's professional experience.

The data analysis is presented in Table 12.

**Table 12: Analysis of Variance for differences is school organizational climate by principal's professional experience.**

| Experience (Years) | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| 0-5 | 12 | 76.5 | 9.59 | 1.13 | 0.364 |
| 6-10 | 8 | 83.0 | 7.29 | | |
| 11-15 | 2 | 85.7 | 8.70 | | |
| 16-20 | 4 | 77.5 | 6.61 | | |
| 21 & above | 4 | 81.3 | 6.10 | | |

**N =30 Principals**

The F-ratio (1.13) obtained was less than the critical value (2.34). Since the P-value (0.364) was greater than the chosen α-levels (0.05), there was no sufficient evidence for a significant difference between school organizational climate as perceived by teachers and the principal's professional experience. The null hypothesis was thus accepted. It was however found that schools whose principals had a professional experience of 6-10 years and those with twenty years and above tended to be more participative (high organizational climate score) than schools whose principals had a professional experience of 0-5 years and 16-20 years.

HYPOTHESIS (1e) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the principal's highest academic qualification

The data analysis is presented in Table 13.

**Table 13: Analysis of Variance for differences in school organizational climate by principals' highest academic qualification**

| **Academic qualification** | **F** | **Mean** | **SD** | **F-ratio** | **P-value** |
|---|---|---|---|---|---|
| BIPED | 6 | 80.8 | 10.12 | 0.94 | 0.472 |
| BED | 18 | 81.0 | 7.71 | | |
| BA with PGDE | 3 | 77.7 | 8.88 | | |
| BSC with PGDE | 1 | 70.8 | 0.00 | | |
| MA | 1 | 75.3 | 0.00 | | |
| MSC | 1 | 66.3 | 0.00 | | |

**N = 30 principles**

The F-ratio value (0.94) obtained was less than the critical value (2.46). The P-value (0.472) was greater than the chosen α-levels (0.05) and indicates absence of sufficient evidence for a significant relationship between school organizational climate as perceived by teachers and the principal's highest academic qualification. The null hypothesis was thus accepted. It was however found that organizational climate in schools with principals having BED and DIPED as their highest academic qualification, tended to be more participative (high organizational climate scores) than in schools with principals having MA/MSC or BA/BSC (PGDE) as their highest academic qualification. The presentation of principals with MA/MSC and BA/BSC (PGDE) academic qualifications in the sample was however small (20%). The majority of principals (50%) were found to hold a BED qualification while 20% of the principals in the sample had DIPED as their highest academic qualification. None of the principals in the sample were found to hold a MED academic qualification.

HYPOTHESIS (2a) states as follows:

There are no significant differences between school organizational climate as perceived by teachers and the school's category.

The data analysis is presented in Table 14.

**Table 14: T-test for differences in school organizational climate by school category.**

| School category | F | Mean | SD | SE | P-value | T-value |
|---|---|---|---|---|---|---|
| Day | 24 | 79.2 | 8.06 | 1.6 | 0.635 | -0.50 |
| Boarding | 6 | 81.4 | 9.92 | 4.1 | | |

**N =30 of schools**

The T value (-0.50) obtained was less than the critical value. Since the P-value (0.635) was greater than the chosen α-levels (0.05), there was no evidence for a significant difference between school organizational climate as perceived by teachers and the school's category. The null hypothesis was thus accepted. Boarding school representation in the sample was however small (20%) compared to day school representation (80%).

HYPOTHESIS (2b) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the school's student sex.

The data analysis is presented in Table 15:

**Table 15: Analysis of Variance for differences in school organizational climate by school students' sex.**

| School Student Sex | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Male | 15 | 81.0 | 7.12 | 0.64 | 0.535 |
| Female | 8 | 79.5 | 11.88 | | |
| Mixed | 7 | 76.7 | 6.07 | | |

**N = 30 Schools**

The F-ratio (0.64) obtained was less than the critical value (2.02). Since the P-value (0.535) was greater than the chosen α-levels (0.05), there was no evidence for a significant difference between school organizational climate and school students' sex. The null hypothesis was thus accepted. Representation of mixed sex schools in the sample was however small (23.3%).

HYPOTHESIS (2c) states as follows:

There is no significant difference between school organizational climate as perceived by teachers and the school's size.

The data analysis is presented in Table 16.

**Table 16:Analysis of Variance for differences in school organizational climate by school size.**

| School Student Size | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| 201-400 | 13 | 80.1 | 8.61 | 0.43 | 0.658 |
| 401-600 | 8 | 77.4 | 9.44 | | |
| 601-800 | 9 | 81.0 | 7.38 | | |

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**N = 30 Schools**

The F-ratio value (0.43) obtained was less than the critical value (2.01). Since the P-value (0.658) is greater than the chosen α-levels (0.050), there was no sufficient evidence for a significant difference between school organizational climate as perceived by teachers and school size. The null hypothesis was thus accepted. Schools with an enrollment of 401-600, however, tended to have lower organizational climate scores (more authoritative) than schools with an enrollment of 201- 400 and those with and enrollment of 601-800. Representation of schools with an enrollment of 401 – 601 was however small (26.7%).

HYPOTHESIS (3a) states as follows:

There is no significant difference between school performance in sciences and the school's category.

The data analysis is presented in Table 17.

**Table 17: T-test for differences in performance in sciences by school category.**

| School category | F | Mean | SD | SE | P-value | T-value |
|---|---|---|---|---|---|---|
| Day | 24 | 4.10 | 1.65 | 0.34 | 0.001 | -4.98 |
| Boarding | 6 | 7.61 | 1.52 | 0.62 | | |

**N =30 Principals**

A T- value (–4.98) obtained was above the critical T-value. Since the P-value (0.001) was less than the chosen α-levels (0.05), there was evidence for a significant difference between performance in sciences and school category. The null hypothesis was therefore rejected. Boarding secondary schools were found to have a significantly higher mean performance index in sciences than day secondary schools. Representation of day secondary schools was however large (80%).

HYPOTHESIS (3b) states as follows:

There is no significant difference between performance in sciences and the school's student sex.

The data analysis is presented in Table 18.

**Table 18:Analysis of Variance for differences in performance in sciences by school Students' sex.**

| School Student Sex | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Male | 15 | 5.28 | 2.43 | 1.64 | 0.212 |
| Female | 8 | 4.99 | 1.35 | | |
| Mixed | 7 | 3.56 | 1.98 | | |

**N =30 Schools**

The computed F-ratio value (1.64) was less than the critical value (2.02). Since the P-value (0.212) was greater than the chosen α-levels (0.05), there was no evidence for a significant difference between performance in sciences and school students' sex. The null hypothesis was thus accepted.

It was however found that the mean performance index for mixed schools was lower than that for single sex schools. Representation of schools with male students in the sample was large (50%) compared to schools with female students (26.7%) and schools with mixed students (23.3%).

HYPOTHESIS (4) states as follows:

There is no significant relationship between school organizational climate as perceived by teachers and performance in sciences.

A pearson product moment correlation coefficient was computed to examine the relationship between school organizational climate as perceived by teachers and performance in sciences.

A correlation coefficient of -0.004 significant at p=0.05 level and beyond was obtained. The null hypothesis was thus accepted.

A test for any significant differences in school organizational climate scores between one third of the schools with the highest climate scores (MPC) and one third of the schools with the lowest climate scores (MAC) was taken.

The data analysis is presented in Table 19:

**Table 19: Analysis for differences in school organizational climate scores by climate type.**

| Type of climate | F | Mean | SD | F-ratio | P-value |
|---|---|---|---|---|---|
| Participative | 10 | 88.67 | 3.96 | 112.33 | 0.000 |
| Authoritative | 10 | 70.26 | 3.81 | | |

**N =20 Schools**

The P-value (0.000) obtained indicates sufficient evidence to claim that there are significant differences in organizational climate scores on the basis of climate type. It was thus concluded that there exists significant differences in organisational climate scores between the group of ten schools with the lowest organisational climate scores, comprising one third of the schools in the sample, and the group of ten schools with the highest organisational climate scores, comprising one third of the schools in the sample. Since high organizational climate scores represents participative climate and low organizational climate scores represents authoritative climate, a significant difference between the two types of climates implies a clear distinction between them.

## Summary of data analysis findings

This chapter presented the statistical data analysis with respect to the relationship between organizational climate as a single construct and performance in sciences in public secondary schools in Nairobi province. Differences between the means of schools in which organizational climate tended towards the opposite ends of the authoritative-participative climate continuum were also analyzed to determine any significant differences in organizational climate scores between the two extreme groups in the sample representing the most authoritative climate (MAC) and the most participative climate (MPC). The eleven null hypotheses were analyzed at the $p=0.05$ level of significance as a basis for their rejection or acceptance. The following were findings of hypotheses analysis.

The principal's selected demographic variables of (i) Age (ii) Sex (iii) Area of specialization (iv) Professional experience and (v) Academic qualification had no significant influence on the school organisational climate. It was also observed from the findings that school selected variables of (i) Category (ii) Sex of the student body and (iii) Size had no significant influence on the school organizational climate. It was however observed that the school category had a significant effect on performance in sciences.

Indeed, boarding schools had a significantly higher mean performance index (MPI) than day schools. It was observed that boarding school teachers and students were more participative and more positive in their satisfaction tendencies than their day school counterparts. Indeed, boarding school teachers, unlike their day school counterparts tended to perceive their school organisational climate as friendly and supportive. This may have explained the disparity in performance in sciences.

# CHAPTER FIVE

## SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter consists of a summary of the study, conclusions, recommendations from findings of the study and suggestions for further research.

### Summary of the study

The incoherent view of the concept, organizational climate, is apparent in contributions by scholars and practitioners. Attempts at devising a reliable measure and drawing a boundary for the concept remains controversial.

Despite the elusiveness of the concept, its effect on the motivational performance of individual workers and, thus, its significance in influencing organizational performance is largely acknowledged.

The main purpose of the study was to investigate whether or not there was a relationship between school organizational climate, as perceived by teachers, and performance in sciences in public secondary schools in Nairobi Province.

The other purpose of the study was to investigate if there were significant differences in school organizational climate as a function of (a) the principal's individual characteristics of (i) age (ii) sex (iii) area of specialization (iv) professional experience and (v) academic qualifications and (b) the school variables of (i) category (ii) sex of the student body and (iii) size.

Indeed, the inability to achieve desired high performance levels in sciences, in public secondary schools, over the years, has caused considerable concern to society as tax payers and to stakeholders who pay for the provision of education. The government shares in this concern partly because the school is its main source of qualified manpower and partly due to its high budgetary allocation to educational institutions.

This shared concern can be justified by the level of the performance index in sciences. Indeed, the performance index, in sciences, in public secondary schools in Nairobi Province, over a five year period (1996 – 2000), was a low 4.8.

The study used Expost Facto design and thus had no control over factors that may have influenced the performance in sciences such as a student's (a) past experience (b) mental ability (c) instructional resources (d) performance effort and (e) self-concept.

The study sample comprised 320 teachers from a population of 2437 teachers and 40 principals and schools from a population of 47 principals and schools in Nairobi Province. Teachers and principals who had served for less than 1 year were however exempted from the study. The study, which was located in a cosmopolitan setting, focused on the performance at KCSE and ignored continuous assessment performance.

It was assumed that the measures of the construct, organizational climate, approached an interval scale of measurement and were closely related to the perceived behavior of principals and teachers.

A review of literature shows that the desire to improve organizational climate led to the development of organizational theory, traced through three movements, namely: The Scientific Management movement, The Human Relations movement and The Behavioral movement. The focus was to discourage authoritative organizational tendencies and embrace participative organizational practice. It was an attempt to integrate organizational and individual needs, at the work place, thereby giving workers a greater sense of ownership of the objectives of the organization.

It became evident that neither the Human Relations movement nor the Scientific Management movement represented a complete view of human behaviour at the work place. The integration of the two movements, within an organizational system, was the focus of Modern or Behavioural movement. It held the view that it is the task of organizational leadership to make use of the full human potential through provision of opportunities to realize one's self-fulfillment in one's work. This brought to focus the nature of organizational climate that enhanced the satisfaction of both human and organizational needs with a promise to improve performance.

Behavioural theorists' attempts to explain human behaviour however remains controversial. Indeed not all findings may be universally accepted. Human Behaviour thus remains complex due to complexities of human needs and motivation. Although Maslow's needs hierarchy theory is, for instance, reputed to be more influential than any other in the area of organizational behaviour, his theory is not controversy free. Such controversy is apparent in influential motivation theories such as Herzeberg's Motivation – Hygiene theory and McGregor's philosophical point of view about the nature of man.

The significance of their contributions towards the development of work motivation and its possible positive effect on organizational climate and performance can not however be overemphasized.

The conceptual framework of the study is based on the effects of the Principal's demographic variables and the school variables on organizational climate and their influence on the performance in sciences in public secondary schools in Nairobi Province.

The techniques utilized in the analysis of data to determine whether or not to accept or reject the hypotheses were, Pearson correlation analysis, analysis of variance and student's t-test. The questionnaire return rates were 96.7% for teachers and 100% for principals who participated in the study.

The data analysis findings indicated that:

(a) There were no significant differences in school organizational climate as perceived by teachers as a function of the principal's (i) age (ii) sex (iii) area of specialization (iv) professional experience and (v) academic qualification.

(b) There was no significant relationship between school organizational climate as perceived by teachers and the school (i) category (ii) student sex (iii)size.

(c) There were significant differences between performance in sciences and school category.

(d) There were no significant differences between performance in sciences and school students' sex.

(e) A Pearson product moment correlation coefficient test found no significant relationship between school organizational climate as perceived by teachers and performance in sciences.

## Conclusions of the Study

From the description of the development of organization theory, it is important to note that concerns central to the understanding of organizational climate were the achievement of organizational goals and the fulfillment of personal needs. The central concept in organizational climate was the integration of these concerns. These foci were identical in the literature on organizations. Although research studies with respect to performance and organizational climate were carried out prior to this study, it is apparent from the review of literature that there was a paucity of research findings with regard to the relationship between these variables in secondary schools and other social settings.

Findings of the study indicated that school organizational climate was not significantly influenced by the experience of the principal. It was however observed that newly appointed principals (below 5 years) and principals with long experience (above 16 years) were less participative in their school organizational climate tendencies. This was probably because newly appointed principals may have been more cautious and suspicious in their school relationships while principals with long experience may have become less accommodative to change or alternative approach, thereby creating school organizational climates with authoritative tendencies.

An important observation in this study was that authoritative tendencies increased with the age of the school principal. The older principals tended to be conservative and held onto the rigid forms of organization that embraced indirect participation. The representation in the study sample of principals below 40 years of age was small (10%) although majority of teachers (75%) were below 40. This tended to suggest systems of appointment that tended to limit chances of younger principals ascending to school leadership.

Findings of this study indicated that performance in sciences was neither significantly influenced by the perceived school organizational climate, nor by the students' sex but by the school category. It was observed that day school teachers and students, unlike their boarding school counterparts, were more likely to be withdrawn to relative docility, be compliant and even indifferent to administrative inadequacies. They were more preoccupied with managing the high cost of housing and transport and venturing into alternative supplementary sources of income. This indifference may have manifested itself in the perceptions of their schools' organizational climate. They displayed tendencies that accommodate the existing organizational climate despite expressing dissatisfaction for its lack of participative space in decision – making, and despite acknowledging that the existing school climate tended towards the authoritative end of Likerts's authoritative – participative continuum. Indeed, findings of this study indicated that teachers' perceptions of their schools' organizational climate were not significantly different.

Day school teachers were subjected to a relatively closed organizational climate and were more likely to be demotivated than their boarding school counterparts. Findings of this study indicated that the performance in Sciences in boarding schools was significantly higher than that in day schools. It was observed that boarding school teachers and students were more participative, were less exhausted, less overburdened and more positive in their job satisfaction tendencies. Indeed, the prevailing school climate in most boarding schools, unlike in most day schools, was perceived by teachers as friendly, supportive and met individual needs. This may have explained the higher performance in boarding schools. Indeed, it is the motivated teacher who is more likely to use adequate instructional strategy required in the teaching – learning process in sciences. This observation tends to suggest that unfavourable school climate de-motivates employees who may then lose focus on the objectives of the organization and profoundly affect its performance.

It was observed from the study findings that the school organizational climate was neither significantly influenced by the sex of the principal nor by the area of specialization of the principal. Representation of principals by sex and by specialization in the study sample was not significantly different.

Despite the poor performance in sciences, observations tend to suggest that the majority of the teaching staff in Nairobi Province were reluctant to transfer to alternative working stations away from their city life family attachments. School principals should thus encourage supportive school organizational climate that enables their staff to participate in decision-making and thereby take responsibility for the performance of their schools. An expression of confidence in their potentiality can boost their motivation and enhance their performance.

The extent of teacher participation in decision-making is alluded to by Strauss (1963) who however cautions that participation raises certain dangers such as members expecting to be consulted on every problem that arises. This happens when members become more involved in group processes thereby increasing cohesion in the organization. School stakeholders should thus be cautioned that whereas participative school organizational climate entails collective decision making, the ultimate responsibility for the decisions still resides with the school principal.

Findings of this study indicated that there was no significant relationship between school climate and the principals' qualifications. The level of qualification of the principals was thus found not to be a significant factor in determining the nature of organizational climate in their schools.

Findings of the study however tend to suggest that school principals play a crucial role in the process of determining organizational climate in schools. They should thus be given training and in-service opportunities to reflect upon their role in relation to the enhancement of participative values and performance in sciences.

## Recommendations of the study

Study findings tended to suggest that participative school climate systems were indicative of better and more effective schools in their performance index in sciences than were authoritative school systems. Institutional devices should thus be put in place, at the school and national levels, to encourage and enhance widespread participation in the general educational decision-making and policy formulation. In particular, the Ministry of Education should encourage participative school climates through legislations that will be reflected in Education Acts.

It is defective of the current Education Act to provide that the school Board of Governors (BOG), which has a small stakeholder representation, has a legal voice on school management issues such as decision and policy making, to the exclusion of the Parents Teachers Association (PTA) which has a widespread representation of school stakeholders. The lack of legal representation at the school level through PTA makes it "toothless" and inconsequential in enforcing decision-making. This discourages participative school climates in favour of authoritative school climates. It is thus encouraging that the latest proposals on management of educational institutions seek to address this anomaly.

Deliberate efforts should be put in place to ensure stakeholders' real commitment to the ownership of school initiatives and programs. School leadership should, in particular, institutionalize stakeholder ownership of educational decisions and innovations through administrative nurturing of open climates. This provides for participative style of implementation, responsibility, support and team spirit.

The importance of participative organizational climate in school science performance can be enhanced at national level. The Kenya Institute of Education (KIE) can, for instance, give it adequate attention and emphasis in the content of the curriculum for secondary schools and teacher training institutions and encourage educators through in-service courses, workshops, seminars and Head teachers' manuals.

It was observed that a majority of school teachers (75%) were below 40 years of age, yet only 10% of the school principals were below 40 years of age. The Teachers Service Commission (TSC), should adopt a less bureaucratic system that encourages more youthful teachers to ascend to positions of school principals. This may stimulate desirable changes in schools' organizational climate that appeals to the majority of teachers.

Boarding schools reported significantly higher performance in sciences than day schools. It was, indeed, observed that boarding school teachers perceived the organizational climate of their schools to be supportive and friendly and were more positive in their job satisfaction tendencies. The Ministry of Education should thus ensure provision of basic programmes that may affect performance in sciences such as transport, housing, food, library and laboratory services to teachers and students in both boarding and day schools. This might create a supportive school climate that enhances the general teaching and learning process in sciences.

### Suggestions for further study

Findings of the study were based on teacher perceptions which could be influenced by many factors such as the demographic variables of teachers. To reduce on the limitation associated with generalization, replication of this research is suggested, drawing participants from other provinces, rural settings and urban-suburban settings.

Further research may enable practitioners understand and apply the relationship between organizational climate and performance in sciences towards meeting challenges in modern organizations in trying to create an organizational climate conducive to human growth. A potential focus for further research is on attempts to identify variables, other than those utilized in this study, that significantly relate to organizational climate. Such variables as (a) students' perceptions and (b) Board of Governors' (i) sex (ii) academic qualification and (iii) age might be found to significantly influence organizational climate and performance in sciences.

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# APPENDIX A

## LETTER OF INTRODUCTION TO THE PRINCIPALS

University of Nairobi,
Faculty of Education,
P.O. Box 30197,
Nairobi.

The Principal,
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Dear Sir/Madam;

You have been chosen to participate in the study on the relationship between organizational climate and performance in sciences at KCSE in public secondary schools in Nairobi Province.

The information you give is confidential and will be used for research purposes only. Do not write your name or the name of your school in the questionnaire.

Please respond to all items in the questionnaire as correctly and as honestly as possible. Return the filled questionnaire into the addressed envelope. Hand over the sealed envelope to the secretary.

Thank you for your cooperation.

Sincerely,
Nyaanga Zachary, K.S.
Post graduate student,
University of Nairobi.

## APPENDIX B

## PRINCIPAL'S QUESTIONNAIRE

The questionnaire is designed to gather information for study to determine the relationship between organizational climate and performance in sciences at KCSE in public secondary schools in Nairobi province. You are assured that the information you give will be kept confidential and will be used for research purposes only. Therefore, do not write your name or that of your school in the questionnaire.

Please respond to all items in the questionnaire as correctly and honestly as possible by putting a tick ( ✓ ) against one of the options. For the open ended questions please use the blanks provided.

**Part I**

1. Please indicate your chronological age in years
   a) 20 – 29 ( )
   b) 30 – 39 ( )
   c) 40 – 49 ( )
   d) above 49 ( )

2. Please indicate your sex
   a) Female ( )
   b) Male ( )

3. Please indicate your marital status
   a) Married ( )
   b) Single ( )
   c) Divorced ( )
   d) Separated ( )
   e) Other, please specify ………………………………………………

4. Please indicate the number of years you have served since your first appointment as Principal.
   a) 0 – 5 ( )
   b) 16 – 20 ( )
   c) Above 20 ( )

5. How many years have you served as Principal in your present school?
   a) Less than 1 (   )
   b) 0 - 5 (   )
   c) 6 - 10 (   )
   d) 11 - 15 (   )
   e) Above 15 (   )

6. What is your highest educational qualification?

   a) DIP ED (   )
   b) BA/BSC (with PGDE) (   )
   c) B ED (   )
   d) M ED (   )
   e) MA/MSC (   )

7. What is the sex of the student body?
   a) Female (   )
   b) Male (   )
   c) Mixed (   )

8. Please indicate the population of the student body.
   a) Below 200 (   )
   b) 210 – 400 (   )
   c) 401 – 600 (   )
   d) 601 – 800 (   )
   e) Above 800 (   )

9. What is the category of your school?
   a) Day (   )
   b) Boarding (   )
   c) Day and Boarding (   )

10. Which is your area of specialization?
   a) Science (   )
   b) Arts (   )
   c) Arts and Sciences (   )
   d) Others, please specify----------------------------------------

11. Which of the following sessions in Educational Administration have you attended?

a) In - service training ( )
b) Seminar ( )
c) Workshop ( )
d) Non of the above ( )

12. Which body organised the above Session (s)?

a) Teachers Services Commission ( )
b) Ministry of Education ( )
c) Kenya Headteachers Association ( )
d) Any other (s), please specify-------------------------------------

**Part II**

Please answer the questions below in the spaces provided.

1. In your opinion, what are some of the difficulties you encounter in carrying out your administrative duties related to enhancing the freedom and willingness of (a) teachers (b) Students (c) parents/community: to actively participate in seeking solutions towards achieving the desired performance levels of your school?

(a) Teachers:

(b) Students:

(c) Parents/Community:

2. In your opinion, what are the possible solutions to the problems you have stated above?

Thanks for your participation.

# APPENDIX C

## TEACHER'S QUESTIONNAIRE

You have been chosen to participate in a study on the relationship between organizational climate and performance in sciences at KCSE in public secondary schools in Nairobi Province.

This questionnaire is designed to explore how you perceive the organizational characteristics of your school.

The information you give is confidential and will be used for research purposes only. Do not, therefore, write your name or the name of your school in the questionnaire.

Please respond to each statement as correctly and as honestly as possible. Return the filled questionnaire into the addressed envelope and seal it. Hand over the sealed envelope to the secretary.

Thank you for your cooperation.

### Part I

1. Please indicate your age in years
    a) 20 – 29 ( )
    b) 30 – 39 ( )
    c) 40 – 49 ( )
    d) 50 or above ( )

2. Please indicate your sex
    a) Female ( )
    b) Male ( )

3. What is your marital status?
    a) Married ( )
    b) Single ( )
    c) Divorced ( )
    d) Separated ( )
    e) Other, please specify ..................................................

4. Please indicate the number of years you have served since your first appointment as teacher.
a) 0 – 5 ( )
b) 6 – 10 ( )
c) 11 – 15 ( )
d) 16 – 20 ( )
e) Above 20 ( )

5. How many years have you served as teacher in your present school?
a) Less than 1 ( )
b) 1 -5 ( )
c) 6 -10 ( )
d) 11 -15 ( )
e) Above 15 ( )

6. What is your highest educational qualification?
a) DIP ED
b) BA/BSC (with PGDE) ( )
c) B ED ( )
d) M ED ( )
e) MA/MSC ( )

7. Which is your area of specialization?
a) Science ( )
b) Arts ( )
c) Arts and science ( )
d) Others, please specify--------------------------------------------------

8. a) Have you held any administrative position?
i) Yes ( )
ii) No ( )

b) If Yes indicate the position:
i) Deputy Principal ( )
ii) Senior teacher ( )
iii) Head of Department ( )
iv) Any other, please specify--------------------------------------------------

**Part II**

For the statements below, there are, no right or wrong answers. Some items may seem similar to others. However, each item is different, so please answer each one without regard to the others. Decide which **ONE** of the following four responses: A, B, C, and D; best applies to your school and place a tick ( ✔ ) against one of the responses.

------- 1.How frequent do you, as teachers, view the Principal's behaviour as friendly and supportive?

(A) Rarely ( )
(B) Sometimes ( )
(C) Often ( )
(D) Always ( )

--------2.How much confidence do you have in your Principal as a competent educational leader?

(A)Very little ( )
(B) Little ( )
(C) Substantial ( )
(D) A great deal ( )

---------3.In your opinion, how much confidence and trust does your Principal have in you as teachers?

(A) Very little ( )
(B) Little ( )
(C) Substantial ( )
(D) A great deal ( )

---------4.How free do you feel to express your opinions and feelings to the Principal?

(A)Not free ( )
(B) Somewhat free ( )
(C) Free ( )
(D) Very free ( )

---------5. How frequent does the Principal seek, discuss and use new ideas and information relating to educational issues from you?

(A)Rarely ( )
(B) Sometimes ( )
(C) Often ( )
(D) Always ( )

---------6. How, in your opinion, would you describe the direction of flow of information on academic issues in your school?

(A) Downward only: from Principal to teacher to Student ( )
(B) Mostly downward ( )

(C ) Downward and upward ( )
(D) Downward, upward and horizontal ( )

---------7. How, in your opinion, would you describe the direction of flow of information on non-academic issues in your school?

(A) Downward only: from Principal to teacher to Student ( )
(B) Mostly downward ( )
(C )Downward and upward ( )
(D)Downward, upward and horizontal ( )

---------8.How, in your opinion, would you describe the extent to which downward communication is accepted in your school?

(A) Almost always accepted ( )
(B) Usually accepted, sometimes cautiously ( )
(c ) Some accepted, some viewed with suspicion ( )
(D) Almost always viewed with great suspicion ( )

---------9. How would you rate the accuracy of upward communication in your school?

(A)Usually inaccurate ( )
(B) Often inaccurate ( )
(C) Fairly accurate ( )
(D) Accurate ( )

---------10. How would you describe the extent to which your Principal knows the problems faced by teachers in your school?

(A) Not well ( )
(B) Rather well ( )
(C) Quite well ( )
(D) Very well ( )

---------11. How frequent are you friendly and supportive to your Principal?

(A) Rarely ( )
(B) Sometimes ( )
(C) Often ( )
(D) Always ( )

---------12. How frequent are you friendly and supportive to other teachers?

(A) Rarely ( )
(B) Sometimes ( )
(C) Often ( )
(D) Always ( )

---------13. How, in your opinion, would you describe the nature of interaction between the Principal and teachers in your school?

(A)Very little; usually with fear and distrust ( )
(B)Little; Principal and teachers usually distant from one another ( )
(C )Moderate; often fair amount of confidence and trust ( )
(D) Extensive; friendly, high degree of confidence and trust ( )

---------14. How, in your opinion, would you describe the nature of interaction between teachers in your school?

(A) Very little; usually with fear and distrust ( )
(B) Little; teachers usually distant from one another ( )
(C ) Moderate; often fair amount of confidence and trust ( )
(D )Extensive; friendly, high degree of confidence and trust ( )

---------15. What is the extent of cooperative teamwork between the Principal, teachers and students in your school?

(A)Very little ( )
(B) Relatively little ( )
(C) Moderate amount ( )
(D) Very substantial ( )

---------16. How, in your opinion, would you describe the nature of discussions involving school policy and academic programmes in your school?

(A) Principal, teachers and students participate in decisions affecting them ( )

(B) Sometimes at top by principle; specific decisions by teachers ( )
(C ) Often at the top by Principal; specific decisions by teachers but approved by Principal before action. ( )
(D )Always at the top by Principal ( )

---------17.To what extent, in your opinion, is decision making in your school based on an individual or a group?

(A) Largely group ( )
(B) Both individual and group ( )
(C) Almost entirely individual ( )
(D) Individual only ( )

---------18. To what extent, in your opinion, does the nature of decision- making process in your school contribute to enhancing the performance of teachers and students in your school?

(A) Substantial contribution ( )
(B) Some contribution ( )
(C Relatively little ( )
(D) Not very much, often weakens it ( )

---------19. To what extent, in your opinion, are decision-makers in your school aware of teachers problems.

(A) Well aware ( )
(B) Moderately aware ( )
(C) Aware of some, unaware of others ( )
(D) Often unaware ( )

---------20. How often are teachers allowed the opportunity to participate appropriately in decisions related to their work?

(A) Fully involved in all decisions ( )
(B) Usually consulted ( )
(C ) Occasionally consulted ( )
(D) Not at all ( )

---------21. Who, in your opinion, feels responsible for setting high performance goals for your School?

(A) Principal, teachers, students, parents ( )
(B) Principal, most teachers, some students ( )
(C ) Principal and some teachers ( )
(D) Principal only ( )

---------22. Who, in your opinion, feels responsible for achieving high performance goals for your school?

(A) Principal, teachers, students, parents ( )
(B) Principal, most teachers, some students ( )
(C) Principal and some teachers ( )
(D) Principal only ( )

---------23.How, in your opinion, would you describe the extent of internal resistance to achieving high performance goal in your school?

(A) Little or no resistance and much cooperation. ( )
(B) Some resistance and some cooperation ( )
(C ) Moderate resistance ( )
(D) Strong resistance ( )

---------24. How would you describe the process of establishing performance goals in your school?

(A) Established through group discussion ( )
(B)Issued by Principal; often discussion with teachers ( )
(C) Issued by Principal; teachers may comment ( )
(D) Issued by Principal ( )

---------25. In your opinion, what level of performance goals, does your Principal seek to be achieved by your school?

(A) Below Average ( )
(B) Average ( )
(C) High ( )
(D) Very high ( )

---------26. What is the attitude of teachers towards your school in terms of really liking it and taking pride in it as a place to work?

(A) Strongly favourable ( )
(B) Usually favourable ( )
(C) Sometimes hostile, sometimes favourable ( )
(D) Hostile ( )

--------27. How, in your opinion, are teachers motivated in your school?

By use of:

(A) Rewards based on group participation and involvement ( )
(B) Rewards, occasional punishment and some involvement ( )
(C ) Rewards and some actual or potential punishment ( )
(D )Fear, threats, punishment and occasional rewards ( )

---------28. In your opinion, do motivational forces in your school conflict with one another or reinforce one another?

(A) Forces reinforce each other ( )
(B) Some conflict, often reinforcement of forces ( )
(C ) Conflict often exists with only occasional reinforcement of forces. ( )
(D) Marked conflict of forces ( )

---------29. How, in your opinion, would you describe the attitude of teachers in your school towards each other?

(A) High degree of confidence and trust ( )
(B) Some distrust and some cooperation ( )
(C) Some distrust ( )
(D) Frequent hostility ( )

---------30. How would you describe the extent of teachers' satisfaction derived from a visit to your school by school inspectors from the Ministry of Education?

(A) Usually dissatisfaction ( )
(B) Some dissatisfaction ( )
(C) Moderate satisfaction ( )
(D) High satisfaction ( )

**Part III**

Please answer the questions below in the blanks provided.

1. In your opinion, what aspects of the organizational characteristics of your school such as the nature of: decision making process; communication; interaction and motivational forces do you consider very positive?

2. In your opinion, what aspects of the organizational characteristics of your school such as the nature of: decision making process; communication; interaction and motivational forces do you consider very negative?

3. What suggestions can you give towards improving the organizational characteristics of your school?

Thank you for your participation.

# APPENDIX D

## SCHOOL KCSE SCIENCE PERFORMANCE INDEX

| SCHOOL | 1996 | | 1997 | | 1998 | | 1999 | | 2000 | | MPI |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | PI | N | PI | N | PI | N | PI | N | PI | |
| AI | 152 | 2.50 | 150 | 2.50 | 206 | 2.50 | 156 | 3.00 | 182 | 3.26 | 2.75 |
| A2 | 350 | 6.45 | 383 | 8.32 | 397 | 7.88 | 368 | 9.27 | 347 | 8.25 | 8.03 |
| BI | 656 | 7.21 | 603 | 7.54 | 616 | 7.16 | 623 | 7.53 | 594 | 8.28 | 7.54 |
| B2 | 181 | 3.99 | 195 | 4.00 | 176 | 4.45 | 233 | 4.60 | 196 | 5.00 | 4.41 |
| CI | 473 | 5.60 | 459 | 6.20 | 456 | 5.90 | 460 | 6.18 | 432 | 6.59 | 6.09 |
| C2 | 192 | 2.00 | 206 | 2.50 | 222 | 2.50 | 220 | 3.00 | 230 | 2.00 | 2.40 |
| DI | 294 | 3.30 | 289 | 3.29 | 303 | 3.55 | 241 | 3.56 | 249 | 3.73 | 3.49 |
| D2 | 178 | 3.88 | 163 | 4.62 | 159 | 5.00 | 160 | 4.10 | 163 | 4.60 | 4.44 |
| EI | 138 | 3.00 | 150 | 2.50 | 154 | 3.00 | 152 | 2.50 | 154 | 3.00 | 2.80 |
| E2 | 545 | 3.35 | 428 | 4.35 | 327 | 4.63 | 349 | 5.09 | 326 | 5.65 | 4.61 |
| FI | 296 | 3.65 | 249 | 4.44 | 244 | 4.20 | 219 | 5.05 | 213 | 4.54 | 4.38 |
| F2 | 258 | 3.57 | 272 | 3.34 | 272 | 3.78 | 274 | 4.02 | 204 | 3.77 | 3.70 |
| GI | 315 | 3.88 | 357 | 4.55 | 321 | 4.35 | 326 | 5.00 | 328 | 4.16 | 4.39 |
| G2 | 295 | 5.00 | 316 | 5.61 | 292 | 5.29 | 316 | 4.36 | 303 | 5.00 | 5.05 |
| HI | 148 | 2.73 | 134 | 3.10 | 134 | 3.31 | 165 | 3.20 | 155 | 3.26 | 3.12 |
| H2 | 175 | 3.00 | 126 | 3.00 | 170 | 3.55 | 164 | 3.46 | 100 | 2.50 | 3.10 |
| I1 | 170 | 3.50 | 220 | 3.00 | 259 | 2.50 | 216 | 2.50 | 168 | 3.00 | 2.90 |
| I2 | 339 | 5.12 | 401 | 5.60 | 400 | 5.40 | 417 | 5.39 | 440 | 5.70 | 5.44 |
| J1 | 188 | 5.91 | 281 | 6.45 | 288 | 5.67 | 281 | 8.03 | 303 | 7.30 | 6.67 |
| J2 | 144 | 4.00 | 167 | 4.95 | 137 | 4.53 | 143 | 4.46 | 122 | 4.00 | 4.39 |
| K1 | 104 | 3.00 | 138 | 3.09 | 118 | 4.25 | 146 | 3.00 | 148 | 4.05 | 3.48 |
| K2 | 539 | 9.65 | 584 | 10.32 | 542 | 10.34 | 559 | 11.00 | 577 | 10.67 | 10.40 |
| L1 | 216 | 2.50 | 248 | 2.50 | 237 | 4.03 | 248 | 3.00 | 196 | 2.02 | 2.81 |
| L2 | 242 | 5.99 | 277 | 6.65 | 277 | 6.91 | 259 | 7.83 | 319 | 7.41 | 6.96 |
| M1 | - | - | - | - | 181 | 10.42 | 195 | 10.42 | 231 | 10.42 | 10.42 |
| M2 | 594 | 4.37 | 572 | 4.62 | 515 | 4.63 | 508 | 4.62 | 478 | 5.00 | 4.65 |
| N1 | 148 | 4.00 | 153 | 3.50 | 138 | 3.77 | 156 | 5.00 | 182 | 4.50 | 4.15 |
| N2 | 100 | 2.50 | 122 | 2.00 | 110 | 2.50 | 168 | 2.99 | 198 | 3.00 | 2.60 |
| P1 | 162 | 4.22 | 190 | 5.26 | 188 | 6.84 | 212 | 6.21 | 251 | 6.41 | 5.79 |
| P2 | 146 | 3.01 | 142 | 2.50 | 150 | 3.27 | 130 | 3.26 | 140 | 3.00 | 3.01 |

**N: CANDIDATURE** **PMPI = 4.80**

**PI: PERFORMANCE INDEX**

**PMPI: POPULATION MEAN PERFORMANCE INDEX**

**MPI: MEAN PERFORMANCE INDEX**

## APPENDIX E

### ORGANIZATIONAL CLIMATE MEAN SCORES FOR PUBLIC SCHOOLS BY TOTAL AND BY SEPARATE ORGANIZATIONAL PROCESSES

| SCHOOL | L | C | I | D | G | M | ITEM MEAN | MOC |
|---|---|---|---|---|---|---|---|---|
| A1 | 2.73 | 2.53 | 2.67 | 2.4 | 2.33 | 2.27 | 2.49 | 74 |
| A2 | 2.48 | 2.36 | 2.8 | 2.24 | 2.36 | 2.4 | 2.44 | 73 |
| B1 | 2.6 | 3.09 | 3.29 | 3.37 | 3.14 | 3.03 | 3.09 | 92 |
| B2 | 1.8 | 2.09 | 2.71 | 1.86 | 2.51 | 2.29 | 2.21 | 66 |
| CI | 3.2 | 2.4 | 2.32 | 3.28 | 3.08 | 2.68 | 2.99 | 89 |
| C2 | 2.75 | 2.5 | 3.05 | 2.78 | 2.73 | 2.83 | 2.77 | 83 |
| DI | 2.63 | 2.49 | 3 | 2.66 | 2.86 | 2.63 | 2.71 | 81 |
| D2 | 2.96 | 2.8 | 3.36 | 3.04 | 3.08 | 2.32 | 2.93 | 87 |
| E1 | 2.06 | 2.29 | 2.66 | 2.17 | 2.49 | 2.46 | 2.36 | 70 |
| E2 | 2.68 | 2.44 | 2.92 | 2.6 | 2.52 | 2.72 | 2.65 | 79 |
| F1 | 1.7 | 2.1 | 2.53 | 2.05 | 2.75 | 2.28 | 2.24 | 67 |
| F2 | 2.95 | 2.25 | 3.08 | 2.48 | 2.63 | 2.73 | 2.69 | 80 |
| G1 | 2.64 | 2.44 | 3 | 2.4 | 2.52 | 2.48 | 2.58 | 79 |
| G2 | 3.49 | 2.54 | 3.43 | 3.14 | 2.86 | 2.89 | 3.06 | 91 |
| H1 | 2.63 | 2.2 | 3.13 | 2.8 | 2.77 | 2.73 | 2.71 | 81 |
| H2 | 2.78 | 2.23 | 2.75 | 2.25 | 2.9 | 2.43 | 2.56 | 76 |
| I1 | 2.45 | 2.45 | 3.15 | 2.95 | 2.9 | 2.65 | 2.76 | 82 |
| I2 | 2.71 | 2.69 | 3.26 | 3 | 2.97 | 2.57 | 2.87 | 86 |
| J1 | 2.8 | 2.76 | 2.76 | 2.64 | 2.33 | 2.71 | 2.67 | 88 |
| J2 | 3.07 | 2.57 | 3.3 | 2.83 | 2.67 | 2.93 | 2.9 | [illegible] |
| K1 | 2.3 | 2.35 | 3.03 | 2.3 | 2.53 | 2.55 | 2.55 | 76 |
| K2 | 2.63 | 2.15 | 3.08 | 2.48 | 2.33 | 2.4 | 2.51 | 75 |
| L1 | 3.23 | 2.27 | 3.03 | 2.83 | 2.4 | 3.1 | 2.81 | 84 |
| L2 | 2.13 | 1.93 | 2.87 | 2.3 | 2.4 | 2.2 | 2.31 | 69 |
| M1 | 2.53 | 2.2 | 2.6 | 2.47 | 2.93 | 3.07 | 2.63 | 78 |
| M2 | 2.8 | 2.23 | 2.53 | 2.38 | 2.1 | 2.45 | 2.42 | 72 |
| N1 | 3.37 | 3.03 | 3.49 | 3.09 | 3.06 | 3.17 | 3.2 | [illegible] |
| N2 | 2.64 | 2.32 | 3.28 | 2.84 | 3 | 2.4 | 2.75 | 82 |
| P1 | 1.77 | 2.17 | 2.54 | 1.86 | 2.06 | 2.29 | 2.12 | 63 |
| P2 | 2.23 | 2.23 | 2.53 | 2.23 | 2.35 | 2.33 | 2.32 | 69 |
| **Population Mean** | **2.62** | **2.4** | **2.97** | **2.59** | **2.65** | **2.63** | **2.64** | **79** |

**L: LEADERSHIP I: INTERACTION G: GOAL SETTING**
**C: COMMUNICATION D: DECISION MAKING M: MOTIVATION**
**MOC: MEAN ORGANIZATIONAL CLIMATE**