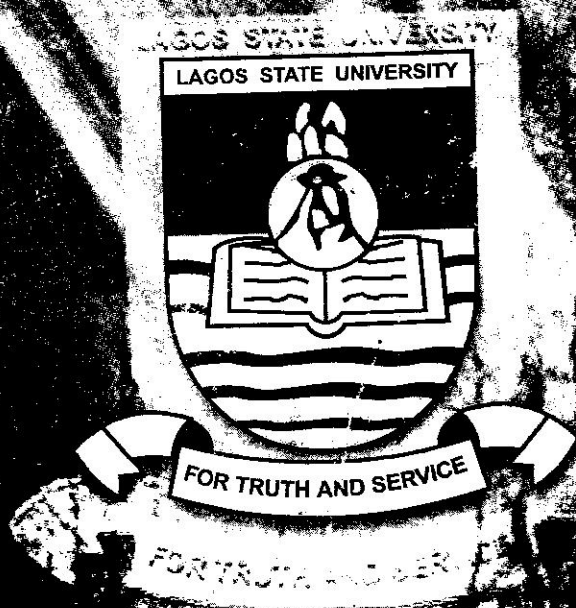


*Readings  
In*

# **Educational Theories & Practice**



EDITED BY

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# THE ROLE OF STATISTICS IN EDUCATIONAL MANAGEMENT AND EVALUATION

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## *Introduction*

Investment in education is important element of the development process and usually accounts for a large proportion of the combined total current and capital expenditure of the Federal and State governments in Nigeria. For instance, in 1995, over N 12.7 billion of the Federal government expenditure, amounting to about 13 percent of the annual Federal budget, was spent on education. This trend has increase steadily over the years. In other words, education has continued to take the lion share of the Federal and State budgets. To ensure adequate planning and effective management of this system, it is essential for educational administrators have adequate and accurate knowledge of educational statistics.

## **Statistics and Rational Decision Making.**

Statistics is described as a scientific method of collecting, organizing, summarizing, and analyzing data. Such analysis must lead to drawing valid conclusions and making rational managerial decisions.

Adamu and Johnson (1995) defines statistics as a discipline which is concerned with the scientific method of decision making under uncertainty, when numerical data and calculation of risk are involved. Effective decision-

making requires a rational selection of a course of action. However, certain conditions must be met before we can say that people are acting or deciding rationally. In the first place, they must be attempting to reach some goals that cannot be attained without positive action. Secondly, they must have clear understanding of alternative courses by which a goal could be achieved under existing circumstances and limitations. Thirdly, they must have the information and the ability to analyse and evaluate alternatives in the light of the goal sought. And finally, they must have a desire to come to the best solution by selecting the alternative that best satisfies goal achievement. It is not possible for alternative to be lacking for any course of action, indeed, a sound adage for the manager is that if there seems to be only one way of doing a thing that way is probably wrong. In such a case, the manager, perhaps, has not forced himself to consider the other ways, which is necessary if the decision is to be the best. Therefore, the exercise of comparing alternative plans for achieving an objective is likely to hang exclusively on quantitative factors. These consist of variables which can be measured. Thus, the extent to which planners and administrators can perform their function of effectively managing the educational system will depend on their understanding of the inter-relationship between statistics and educational management.

### **Educational management and Evaluation**

Education management is described as the application of rational system analysis aimed at developing and maintaining quality in processes and outcomes, using resources effectively, and establishing a strategic method and direction for the purpose of making the system more efficient and more responsive to the need of the society in general and the student in particular. Adepoju (1998) sees education management as the process of planning and formulating educational policies or programmes with a view to achieving educational goals. In other words, educational management involves the application of the processes of planning, organizing, co-ordinating, leading, controlling, reviewing and evaluating human, material, time and other resources to education such that predetermined educational goals or objectives are integrated into the five central and interrelated functions of management (popularized by Henry Fayol 1949). These are: planning, organizing, communication coordinating, and controlling.

### **Evaluation**

However, the determination of congruence between performance and these management objectives, to a large extent, rely heavily on the process of evaluation. Stufflebeam, *et al* (1991) describe evaluation as a process of delineating, obtaining and providing useful information for judging among decision alternatives. Moreover, Haustung (1981) presents an approach to the evaluation process in a way that is particularly appropriate for educational managers. He maintains that evaluation is the process of finding the extent to

which actual experience conforms to objectives. Evaluation is very important in the overall process of education. It is concerned with the activities of goal formulation analysis of future possibilities, and plan implementation.

### Statistics and Planning

Planning is at the core of all management processes. It determines the activities of the organization towards defined or predetermined objectives. Planning involves setting specific educational goals and objectives as well as determining the approach by which the goals and objectives are to be accomplished.

Johnson (1981) provides ways by which statistics can be used in planning as follows:

- \* is for the provision of the necessary information for drawing up and implementing policies about the numbers of pupils and students in each branch of education;
- \* for drawing up policies to make sure that the supply of teachers for various levels of education is adequate;
- \* for directing the flow of pupils into and out of the system in such a way that individual desires and the principles of equality and efficiency are met;
- \* to ensure that there is an adequate stock of building and equipment and that these are used efficiently;
- \* for providing an estimate of the finance necessary to carry out the programmes; and
- \* for identifying possible source of finance and promoting efficient use of the financial resources and evaluating the educational system.

Statistics provides the educational planner with the needed information for drawing up policies and implementing them. The planning for expansion especially at the university level, require accurate projection of human and material resources as well as studying the various manpower needs of the society.

### Statistics and Organizing

Organizing both human material resources has been seen as the second major function of the educational managers. The **AMA** management Handbook cited by Ezeocha (1992) defines organizing as the means by which all group enterprises are give socially acceptable purposes and made capable of effective operation. In words, organizing is primarily a complex goal seeking exercise, which require statistical information. Two basic statistical information always make organizing one of the key element of the educational management process. These are information about the number of participants and diverse operation.

Operation in this context connotes the task to be performed and these, because of the recognizing differences in personnel, require accurate statistical information. Moreover, diversity of personnel associated with diversity of operations necessitates statistical information for division of labour. This is conceptualized as putting a round peg in a round hole (Ajayi and Akinwunmi U,1996). Statistics helps educational organization to reconcile appropriate human resources with the various technologies involved in the operations to be performed and who are to perform.

### Statistics and Commanding

The commanding function of the educational management has always been described as the art of leadership, which demands the collection and organization of personnel data. Commanding according to the Durotolu (1997) refers to the productivity of employees and to carry this out, the manager needs statistical information about his staff. This will help him to set a realistic standard, take initiative, eliminate incompetence and inculcate the spirit of belongingness among his staff. The extent to which the school administration will exercise the right to command and issue instruction to both staff and pupils/students in the educational system largely depends on his knowledge of these people and the environment. Statistics can help in no small way to supply his needed information. It is therefore necessary for school administrators to have basic knowledge of statistics of the educational system such as in respect of the teachers, students, building, as well as other elements consisting of those supplementary data needed in forecasting and planning the educational system (e.g. data on demographic, economic and social factors).

### Statistics and Coordinating

Coordinating is the wire that binds all members of the school system together. It involves the ability and capability of the school administrator to put the human and material resources together in a way that is proportional to achieve the objectives of the organisation. In coordinating, there is a need to obtain and analyse data for the purpose of making projections on future development and in particular make estimate of human, physical and financial resources required to achieve the proposed development. Programme co-ordinating is dependent upon the formulation of well-activated educational goals and objectives and availability of sufficient and appropriate data. Co-coordinating require a high degree of skill and expertise. It deals with the harmonization of the activities of various arms of the organization (Gulick 1937). It brings together the various parts to ensure that the minor decision taken at the various levels are in consonance with the major decision (Simon, 1995). It brings and fits together the various groups into an integrated whole achieving desired goals (AASA cited by Durotolu 1997).

Control is the reverse side of the coin of planning. First, managing plan, then, plans become the yardstick by which designed actions are measured. Managerial planning seeks consistent, integrated and articulated programmes while management control seeks to compel events to conform to plans. Control must be based on plan, and effective control can then be achieved. There is no way managers can determine whether the organization is accomplishing what is desired as expected unless they first know what the goals are. The managerial function of controlling is the measurement and correction of the performance of activities of subordinates. It is thus through the use of statistics that managers can perform this function effectively.

The basic control process, wherever it is found and whatever it controls involves three steps:

- (1) Establishing standards;
- (2) Measuring performance against these standards, and
- (3) Correcting deviation from standards and plans.

Because plans are the yardstick against which control must be devised, it follows logically, therefore, that the first step in the control process would be to establish plans which requires statistics. Standards may be of different kinds. Among the best are verifiable for objectives and whether stated in quantitative or qualitative terms, they get required statistics. The measurement of performance against standard needs statistics to actually provide for a forward-looking activity so that deviations may be detected in advance of their real occurrence and avoided by appropriate action. However, if standards are drawn to reflect organization structure that is, if performance is measures in these terms, the correction of negative deviation is expedited. This is because the manager will know exactly where in the assignment of individuals or groups the corrective measures are to be applied on the bases of statistics being a discipline that is concerned with relationships, especially between two or more variables and will help educational managers in juxtaposing or comparing standard against performance and applying corrective measures in cases of deviations.

In general terms, educational managers have also made use of various statistical techniques in solving some management problems. Some of these techniques include probability theory, game theory, queuing or waiting-line theory, etc. With the use and study of statistics in educational management, processes of working in students' registers, admission data, and enrolment trend have been improved tremendously. Statistics also assists educational planners to carry out research and investigation with a view to finding solutions to social and educational problems. The method of sampling, which aims at

statistical investigation, has helped educational management in no small measure in the process of planning, implementing and evaluating educational programmes.

### *Evaluation of educational programmes*

Programmes evaluation is effective when it provides evidence of the extent of the changes in educational programmes. Ezoecha (1992) presents four purposes served by evaluation, as identified by Campbell (1965) in the following ways:

- i. Are the objectives and procedures chosen to achieve the programme consistent with one another?
- ii. Are the procedures operating as intended?
- iii. To what extent and how well have the organizational objectives been met?
- iv. To what extent and how well has the organization been maintained considering the place of evaluation in educational management?

Hammock and Owing (1955) submit as listed below that:

- i. Evaluation appraises what has been done in order to plan for the future.
- ii. Evaluation appraises progress towards predetermined goals.
- iii. Evaluation of programme is diagnostic and continuous.

Ezoecha (1992) also presents strategies for effective evaluation of educational programmes as follows:

- i. There is the need for good inspecting and administrative services from the beginning of the implementation of the programme, and a supervisor that is large enough to ensure that guidance and control are adequate.
- ii. Evaluation must be a mixture of qualitative and quantitative appraisal.
- iii. Devising truly comprehensive information gathering about the many facets of education.
- iv. An effective evaluation programme must be evaluated. The objectives and goals therefore measure the degree of success in their accomplishment

An evaluation of the educational programmes in Nigeria now would reveal increase in pupil enrolment, shortage of qualified teachers, classrooms, equipment and funds, the presence of unqualified and uncommitted teachers in the schools and proliferation of schools of all sorts. All these have accounted for the parental failure presently experienced in the educational system. The educational plans show inadequate public enlightenment about goals and objectives to be achieved with subsequent poor implementation of the programme involved and the attainment of the educational objectives in Nigeria has become a mission impossible. Finally, a worthy educational plan

that deserves its place must not only involve basic statistical measurement and instrument but must also encompass evaluative measure. At various stages of the plan, implementation efforts must be made to establish good inspection and supervisory services to make both a qualitative and quantitative appraisal. This will enable educational managers to determine the value and degree of success in their programmes.

### **Statistical Problem in Educational Management**

Though appropriate and reliable educational management and evaluation of dependable statistical data, still have certain problems, reliable records of what have been done, and what averagely will be done, help planners know what the population of the beneficiaries is, the anticipated population rise in future and also what the employment structure is like. However, earlier plans in Africa in general and Nigeria in particular have severely suffered from the dearth of such information. There is no reliable date of children of school going age. The main source of data for educational planners has been the population statistics or Nigeria ten-yearly census. Before independence, census data have not been meaningful because it was incompletely conducted due to inadequacy of qualified personnel and finance. After independence, census data become over-inflated and falsified because of fears of tribal domination and over-zealousness. Educational planners will thus run into a hitch to know how many children there are at present in Nigeria, how many are likely to be in school during the plan period, and what kinds of employment opportunities are available for them. For instance, when one plans for two million children and five million turn out for the programme, a serious crash is bound to develop.

### **Conclusion**

We have tried to show in this paper that the role of statistics in educational management and evaluation cannot be over-emphasized especially in the area of the five basic central and inter-related functions of management. It was also shown that the predictions of educational phenomena and setting of educational goals and determining the plan of operating have been greatly enriched and enhanced through the use of statistics. However, the paper recognizes some of the major constraints, which limit the use of statistics in educational management. These among others include inadequate qualified personnel in the collecting as well as analysis of data and financial constraints which make the statistical unreliable for application to educational management and evaluation purpose.

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## **PROPHYLACTIC EFFECTS OF EXERCISE**

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### ***Introduction***

Good health is very vital to our existence. The World Health Organization (W.H.O) defined health as a state of complete physical, mental, social and moral well being and not merely the absence of disease or infirmity. The human body is built for activities. It is like a machine or engine that will spoil when not used. Our bones, joints, muscles, tendons and ligaments are not just there for fun; they are specially made to assist in various types of movements we perform. But due to technological advancement, these structures are underutilized, giving rise to atrophy and hypokinetic diseases.