STATISTICAL EDUCATION IN NIGERIA - PROBLEMS AND PROSPECTS

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An expository overview of the problems and prospects of "Statistical Education in Nigeria" is presented. The paper examines the extent of statistical education at the elementary (primary), secondary, intermediate and tertiary levels, in terms of scope and depth. Reasons for the low level of statistical education in Nigeria are explored. In particular, the issue of the availability of requisite manpower for statistical education, as well as the effect of fast changing technologies on the teaching and learning of statistics, are examined. The paper concludes with a number of suggestions on how to improve and sustain statistical education in Nigeria.

INTRODUCTION

In a recent issue of the *ADEA*[1] *Newsletter* (Vol. 9, No. 2, April - June 1997), Kjell Nystrom[2] and Ko-Chih Tung[3], though focussing on education statistics, aptly summarised the state of statistical information in many sub-Saharan African countries as follows:-

> "The data we have is not what we want, the data we want is not what we need, the data we need is not available."

The authors went ahead to identify the problems and challenges facing sub-Saharan African countries in developing effective statistical information systems as including the following: lack of statistical information, coupled with weak analytical capacities; statistical reports are available too late to be of any use for planning and management; lack of coordination between data producers and users; inadequate hardware, software, organisational structure, management, work procedures and human competencies; and the need to introduce planners, managers, and decision-makers to modern planning techniques through training.

STATISTICAL EDUCATION IN NIGERIA

Though Nigeria was not one of the countries specifically covered in the *ADEA* report, the problems and challenges enumerated above afflict Nigeria to a very high degree. The role of statistics in national development has long been recognised among high government officials. The Federal Office of Statistics (FOS) is part of Nigeria's colonial heritage from Britain. The FOS has the statutory function of gathering

information on various aspects of the peoples' lives and making such data available to government for planning purposes.

More than two decades ago, Osemeka (1976), a one-time Chief Statistician of Anambra state of Nigeria, had pointed out:

> "...that basic Statistics are required at both the planning stage and the implementation stage of any economic plan; at the planning stage for fixing targets and constructing econometric models, and at the implementation stage for assessing performance and the social effects of a plan. Statistics are also required at the end of the plan period for assessing the achievements of the plan as a whole."

In spite of this early recognition of the role of statistics in national development, the application of statistical techniques in the day-to-day running of government business is still very low. Many reasons are responsible for this state of affairs. Firstly, the literacy rate in the country is still very low; secondly, the cultures of the different nationalities that make up Nigeria do not promote record-keeping; thirdly, there is inadequate manpower with statistical training; fourthly, there has not been sufficient political commitment to the promotion of statistical education, generally; and fifthly, lack of accountability among government officials which makes them regard any form of statistical inquiry as a kind of "audit investigation".

STATISTICAL EDUCATION AT THE PRIMARY SCHOOL LEVEL

Nigeria runs a 6-3-3-4 system of education. This means that six years are spent in the primary school which most pupils enter at the age of 6 years; the first segment of the secondary education programme, otherwise known as the junior secondary school, lasts for three years, while the senior secondary school lasts another three years. University education, leading to the award of a first degree, lasts four years.

There are rudiments of statistical education in the primary education mathematics curriculum of Nigerian schools. Primary school education in Nigeria starts at the age of 6 years and lasts for 6 years, identified as Primary I, II, III, IV, V and VI. The first elements of statistics are introduced in Primary IV (ie approximately when the pupils are aged 9 years) under the heading: "Everyday Statistics." The

objective at this early stage is to teach pupils how to:-

(i) read pictograms and show information in pictograms using vertical and horizontal arrangements;

(ii) identify the most common value from a pictogram.

In Primary V the pupils do further work on pictograms and bar graphs. The objective at this level is to teach the pupils how to read and prepare bar graphs.

In Primary VI, the "Everyday Statistics" component of the mathematics curriculum covers the following contents:-

(i) Further work on pictogram and bar graph;

(ii) Preparing a tally and using it to make a table; and

(iii) The Mode and the Mean.

At the end of this component of the curriculum, pupils are expected to be able to:-

(a) draw bar graphs and pictographs of information collected locally;

(b) prepare tables for graph work; and

(c) calculate the mean of data.

Perhaps, one needs to add in passing that the use of mechanical gadgets such as calculators, is not allowed in primary schools, and therefore, all the activities involved in the teaching of the above concepts have to be performed manually.

STATISTICAL EDUCATION AT THE SECONDARY SCHOOL LEVEL

The secondary school system in Nigeria is of six years duration, divided into two segments of three years each. The first segment is referred to as the junior secondary school, while the second segment is called the senior secondary school. Statistical education at the secondary school level suffered a serious setback in the late 1970s. Statistics, after featuring as a school subject for some years, was suddenly dropped as an examinable subject. Instead, elements of statistics were built into the curriculum of mathematics and further mathematics, both of which are separate examinable subjects in the SSSCE.

All the statistical concepts taught at the primary school level are usually revised at the junior secondary school level. The following concepts are subsequently studied in greater details:- statistical graphs, mean, median, mode, deviation from the

mean, working mean, interpretation of averages, and elements of probability.

The coverage and depth of treatment of the various concepts normally depends on the teacher, as well as on the time available. In practice, teachers tend to concentrate on the "core" mathematics content of the syllabus, to the neglect of statistics. While the use of calculators is allowed in class work, it is not permitted in examinations.

STATISTICAL EDUCATION AT HIGHER LEVELS

Beyond the secondary school level, statistical education is carried on in different forms at the colleges of education, the polytechnics and the universities.

(a) Statistical Education at the Colleges of Education

As at 1996, Nigeria had about 61 colleges of education whose mandate is to produce qualified teachers for the nation's primary and secondary schools.
At the colleges of education, mathematics is a teaching subject while statistics is not. Therefore, as in the secondary school level, statistics is studied as part of the mathematics curriculum. Students who take mathematics as a teaching subject, take about four courses in statistics before they graduate.

(b) Statistical Education at the Polytechnics

As at 1996, Nigeria had forty-one polytechnics (Federal = 17; State = 24) which produce middle-level manpower in various disciplines for the nation's industries and schools. Statistics is offered in most polytechnics as a separate subject. In some polytechnics it is offered as part of the programme in mathematics. Many polytechnics in Nigeria have well-equipped computer science Departments which facilitate the training of statisticians.

(c) Statistical Education at The University Level

Nigeria currently has about 33 universities. More than 15 of these offer degree programmes in statistics at the undergraduate level only, while about 10 others offer statistics at both the undergraduate and postgraduate levels. Not all the departments of statistics are either well-staffed or well-equipped for effective production of statisticians. Apart from departments of statistics in Nigerian Universities, many other

departments and faculties require their students to take some statistics courses at the 100- and 200-levels. Such departments and faculties include Mathematics, Economics, Sociology, Management Sciences and Education.

MAIN PROBLEMS FACING STATISTICAL EDUCATION IN NIGERIA

The following factors have been identified as militating against good teaching and learning of statistics (Adichie, 1991):-

(a) Reluctance on the part of the education authorities to recognise that statistics is a school subject distinct from mathematics;

(b) Insufficient number of well qualified statistics teachers at all levels; and

c) Inadequate facilities in schools, colleges and universities for teaching statistics; e.g. lack of suitable textbooks even in the libraries of the institutions.

PROSPECTS FOR IMPROVEMENT OF STATISTICAL EDUCATION IN NIGERIA

Among the policies/strategies for the improvement of teaching and learning of statistics, Adichie had suggested the following:-

(i) the need to cultivate numeracy and quantitative observational ability in our culture;

(ii) the need to restore statistics as a school subject at the secondary school level; and

(iii) the need to organise workshops, seminars and refresher courses for teachers of mathematics willing to teach statistics.

CONCLUSION

The problems and prospects of statistical education in Nigeria have been examined. The main problems militating against an efficient statistical education programme in the country revolve around insufficient number of well-qualified statistics teachers at all levels, as well as inadequate facilities in schools, colleges and universities. Prospects for the improvement of statistical education in Nigeria must take into account, the need to restore statistics as a school subject at the secondary school level; the need to cultivate numeracy and quantitative observational ability in

our culture; and the need to pursue a deliberate policy to ensure that today's primary school pupils become computer literate by the time they graduate from the universities in the next fifteen years.

FOOTNOTES

1. ADEA: Association for the Development of Education in Africa
2. Kjell Nystrom is the Head of the Education Division, Swedish International Development Agency (Sida) and Leader of the Association for the Development of Education in Africa (ADEA) Workshop Group of Education Statistics (WGES).
3. Ko-Chih-Tung is Coordinator of the National Education Statistical Systems (NESIS) programme of the WGES at the UNESCO Division of Statistics.

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