The 52nd Session of the International Statistical Institute
August 10-18, 1999, Helsinki, Finland

"NEW AND EMERGING DEMANDS FOR STATISTICAL TRAINING IN RESPONSE TO USER NEEDS: MEETING THE HUMAN RESOURCE CHALLENGE IN THE CARIBBEAN"

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INTRODUCTION

A substantial amount of literature has been emerging as testimony to the fact that statistics is being applied across both traditional and to newer emerging disciplines and organisational operations, in an effort to make decisions and solve problems which have defied other procedures. We are seeing more intense applications, especially in the field of business (Statistics for Modern Business Decision Making), and jointly, in the fields of Business and Economics, and in Health, Environmental Studies, Marketing and International Trade. Countries that band themselves together into economic trading blocks, such as the European Community and the North Atlantic Free Trade Area, (NAFTA), have found great utility in deriving economic, demographic and social statistics about both the peoples who constitute these entities and about aspects of their culture and attributes which govern their production function. These are perceived as vital, in order to promote good relations and maintain their competitive advantage over rivals. In the Caribbean area we also have the more recently established, Association of Caribbean States, the ACS, made up of both Spanish Latin American and English speaking former British colonies of the West Indies. In the case of the latter, there has been a community of sixteen states, (CARICOM) in existence for some time.

Statistics in these contexts are being employed to illuminate issues relating to the development of these entities and to deal with problems and decision making arising from market globalization. This blossoming of statistics out of its traditional domain has been greatly helped by the universalisation of the computer and associated development of its technology, which has enriched its quantitative delivery and appeal. Further development in Information technology has enabled the qualitative dimension of statistics to be extended beyond its traditional domain. Practitioners in every field now have a wide range of statistical applications from which to choose and there is less emphasis on debates about the relevance of use of statistics in qualitative assessments than previously existed. The package of materials and methods available can service a variety of user needs.

HIGHLIGHTS OF THE PAPER

This is essentially an issues paper, intended to highlight some of the problems which small emerging nations face in relation to the acceptance and practice of statistics, even though they are mindful of the benefits to be derived from its applications. And the problem is not limited to the everyday functionaries of the society. I currently work at an institution which has been educating and training students at the highest level since 1948. This function has been extended to

embrace the international community, since a significant number of students come from countries outside of the Caribbean region. Yet, statistics has neither been regarded as a priority area nor has it been afforded similar status as in the case of Economics, Engineering, the Natural and Medical Sciences or even the Humanities. At the University, students must compulsorily offer a course entitled, " statistics and Scientific Method", and, if unsuccessful in the first year, they must carry it like an albatross, to be off-loaded before they can be accredited with a degree. Many students fail the course outright, without knowing why, as they may never encounter statistics further on in their University career. University administrators remain in the dark about whether failure rates have been on account of the student's inability to assimilate statistics or with the instructional methods employed.

Another issue surrounding statistical training, is the very strict matriculation requirements enforced by the University. These greatly constrain persons with many years of practice in the statistical field, but who do not have the required university entry requirements. Such persons experience great difficulty gaining admission to academic programs. Advanced age and admission as "mature students" are also limiting factors, in adapting to the university environment. The demands being made for new types of statistical course programming also put them at a disadvantage. Additionally, statistical offices now tend to recruit trained specialists, so that unqualified persons are at risk of becoming displaced. The need therefore, for intermediate training institutions is evident.

THE ROLE OF EDUCATIONAL INSTITUTIONS

If educational institutions are to effectively serve their environment, from which they derive their support, (from paying students, contributing governments, business firms and individual donors), they should readily respond to expressed needs for: trained human resources; increased knowledge that will inform decision making; assistance in solving problems encountered by the society. There ought to be as well, congruency between the training programs and the demands of the labour markets which surround them. Graduates should possess skills which render them marketable and well suited to the work environment. This assumes that academic teaching is driven by an awareness of the demands of the labour market and by a knowledge of how to prepare students for the tasks expected of them. In the case of statistics, educational planners must develop an awareness of the demands being made for statistical interventions and become familiar with the range of problems that require statistical treatment.

THE WAY FORWARD FOR STATISTICS

Following from the above, we might consider, as an issue, why, despite the obvious need for both qualitative and quantitative tools to derive new kinds of knowledge and approaches to problem solving, statistics has yet to be universally accepted and deservedly given its rightful place in current academic programming. The question of what aspects of the methods and materials of statistics can be usefully adopted to meet the demands for a statistically literate and functional environment, has already been considered in some contexts. Books on Statistics

for Business and Economics examined, suggest that students must first become acquainted with the materials and methods of statistics, and with the different types of statistics. Methods of computing frequency distributions, measures of central tendency and dispersions, calculations of regressions, probabilities and sampling methods are essential. Techniques for analyzing data, presenting the results by graphs and charts, and the dissemination of results, should form the basic core of statistical training and applications. The need for determining margins of error, the exercise of quality control and testing for significance are also suggested.

These items form part of the tool-kit of statistics, that can be employed across disciplines, to train persons who wish to become proficient in the application of statistical methods to derive numerical facts that can transform mere knowledge into a decision making and management tool. The character of the programme offered in statistics should, as acknowledged in the Business and Economics fields, be driven by consideration of what the fields demand today. Anderson, Sweeney and Williams, in their work, " statistics in Practice" cite the cases of big names in industry such as Xerox, Colgate-Palmolive, Proctor and Gamble, Polaroid and others, where statistical applications are currently employed. Students in training can derive living examples of the application of statistics as they acquire skills in a learning/work environment.

THE CARIBBEAN SITUATION

In the Caribbean, the training of human resource skilled in the application of statistical theory and methods, will have to surmount difficulties created by the matter-of-fact manner in which the discipline has been treated by academic institutions in the region. Now in the midst of new demands for statistical data and their applications, there is a lot of catching-up to be made. There was a time when at least in some of the s, Statistical Offices in the region, used to be strong producers of statistics and had some influence on the planning and decision making process. Some of these were strategically positioned under Finance and Planning Ministries. They therefore benefited from allocations of resources required to carry out their functions. In one case, the statistical office was upgraded to Institute level which enabled it to more to enable it to more effectively carry out its mandate of servicing users and more readily responding to new demands.

Statistical offices also maintained associate membership in regional, commonwealth and international statistical organizations and were kept abreast of developments in the statistical field.Within more recent times however, there has been some dormancy in these relations and the cadre of officers of this era have mostly undergone the natural aging process, without replacement. It is worrisome to be faced with a period of inactivity at both the producer and user ends. Apart from the need for intermediate statistical training facilities, university level programs are also required. The School of Natural Sciences at the University names its department responsible for the teaching of statistics, the " Department of Mathematics and Computer Science" instead. The fact therefore that there is no Department of Statistics with responsibility for training at the undergraduate, diploma or certificate levels, speaks for itself. Teaching material is not absent. Statistical offices in the region have amassed large volumes of statistical data over an

extended period of time and continue to routinely collect data. Teaching institutions can make use of this storehouse for both teaching and research.

The demand for new types of statistical data and the exploitation of existing ones towards purposeful ends are well defined task areas. In both instances, applications can be made to problems of local, regional and international origin. The fact that the dominant characteristic feature of the sixteen countries of the region is smallness, does not minimize the range of problems they experience nor restrict the extent of applicability of statistical conventions in finding solutions in each case. Caribbean countries have economies that are sensitive to world events and suffer greatly from their consequences. Among these are: product pricing; non-availability of vital products at critical times; trade and marketing practices; ownership of financial capital; exclusion from international agreements and generally, international decision making. The contradiction is that the countries become signatories to international accords and declarations, e.g " health and education for all by the year 2000"; General Agreement on Tariffs and Trade; Environmental Protection; Intellectual Property Rights"; etc, without adopting appropriate methods and procedures for upholding them and achieving their associated objectives. In all cases, the acquisition of data and information is heavily dependent upon the application of statistical methods.

The development of a statistics culture and of human resources trained in the skills of its application to economic and social situations, can be beneficial to the countries of the Caribbean in a number of ways. Countries face many challenges: of becoming self-guarantors in matters of economic production, marketing and trade. They face preferences exercised in the world market in favour of beet sugar against sugar cane; bananas from Latin America and from the Middle East; coffee from Brazil, and petroleum oil from Venezuela and the Middle East. In confronting these issues, the question is whether to rely upon intuition in exercising negotiating skills or be informed by sound knowledge of alternative products. Caribbean learning institutions must adopt analytical tools drawn from statistics as part of their instructional ensemble. Their students will then become part of learning and applied experiences, which will equip them to deal with these issues.