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Miscellanea

Under the heading Miscellanea, essays will be published dealing with topics considered to be of general interest to the readers. All contributions will be refereed for their compatibility with this criterion.

Challenges of a Central Statistical Office in a Developing Economy: The Case of Zambia

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Abstract: The organization, census and survey programmes, and problems of the Central Statistical Office of Zambia, namely, problems of organization, infrastructure, personnel, resources, data processing, and printing are reviewed. Also reviewed are attempts at building and sustaining enduring capabilities for census and survey taking, viz, attempts at developing a permanent field survey organization, and the development of data processing, cartographic unit, and printing unit.

1. Introduction

The Central Statistical Office (CSO) of Zambia was established in 1964. Its functions over the years have expanded to meet the ever increasing demand for statistics for development planning, policy formulation and for other purposes. The CSO is self-accounting, centralized, and responsible for the overall coordination of Zambia's statistical activities. It is also the focal point in the country for the development of statistics. Over the years, the CSO has grown and expanded. It now employs about 400 professional and subprofessional staff and has developed several time series concerning national income, balance of payments, employment and earnings, construction output and indexes of building material prices, wholesale and consumer prices, industrial production, mineral production, agriculture, fisheries and forestry production, etc.

Like most African statistical offices, the Zambian CSO in the past has not paid adequate attention to the development of social statistics in general or household statistics in particular. Thus the household sector is the weakest aspect of national statistics in Zambia, in spite of the fact that the household as a composite social, demographic, and economic unit is at the centre of the development process. It is at the household level that important decisions are made – decisions on production, consumption, size of family, etc. Since 1983, a pro-

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gramme to redress this imbalance in the development of statistics has been formulated and is in the initial stages of implementation. This programme is discussed later in the paper.

2. Organization of the CSO

Administratively, the CSO is under the National Commission for Development Planning. Other Ministries/Departments of government have small statistical units for the collection and compilation of statistics, primarily from the administrative records of the parent agency, which include the Ministries/Departments of Agriculture, Health, Education, Mines, Labour, and the Cabinet Office. These statistical units together with the CSO constitute the Unified Statistical Service under the umbrella of the Department of Census and Statistics which is headed by the Director of the CSO. The Unified Statistical Service was created in the Zambian Civil Service in 1976 to ensure standardized and cost-effective government statistical work by statistical personnel in the Civil Service.

The CSO is divided into five branches which in turn are subdivided into divisions. The branches are: Economic Statistics; Information and Data Processing; Administration and Field Surveys; Agriculture, Consumption, and Prices; and Population, Labour, and Training.

In addition to this, the CSO has a Provincial Statistical Office (PSO) in each of the eight provinces and each PSO is headed by a Provincial Statistical Officer who is assisted by Senior Statistical Officers, Statistical Officers, and Assistant Statistical Officers. The CSO has had no Permanent Field Organization to handle data collection and such things as recruitment, training, and supervision of a cadre of permanent field staff, collection of data, and scheduling of field work. Ad hoc field staffs have in the past been recruited for each survey, and then disbanded upon the completion of the survey. This has not been a cost-effective way to conduct surveys.

3. Past and Ongoing Programmes of the CSO

The programmes of the CSO have been varied since its inception.

3.1. Censuses and Surveys

(a) Censuses

Following independence in 1964, Censuses of Population were conducted in 1969 and 1980 on the basis of complete coverage, and in 1974 on a sample basis. A Census of Agriculture was carried out on a sample basis in 1970–1971 as part of the 1970 World Agricultural Census Programme, to be followed by another census in 1982–1983. The latter census was postponed due to lack of funds.

(b) Economic Surveys

A number of periodic enquiries of economic establishments have been carried out mainly by means of a mail questionnaire. Such enquiries are about the only surveys that could be meaningfully conducted with mail questionnaire in sub-Sahara Africa. In most of them, nonresponse was found to be a major problem. Examples of these surveys are: an annual census of the service sector (wholesale, retail, and related service trade); an annual census of industrial production; a quarterly enquiry of construction output in the private sector; a monthly enquiry among selected establishments in the mining, manufacturing, and electricity sector to establish production trends; an annual census of commercial farms (data on area, production and sales, inputs, and capital formation); and a monthly enquiry on prices among selected establishments and market outlets. Several ad hoc surveys of establishments are carried out from time to time.

A large scale manpower survey is planned for 1986.

(c) Household Surveys

The CSO has carried out a number of subject-specific and other household surveys generally

on an ad hoc basis and, moreover, with no plan for repeating them. There are only two surveys that have been carried out on a non-ad hoc basis by the CSO. These are the Annual Agricultural and Pastoral Surveys and the Household Budget Surveys. The Annual Agricultural and Pastoral Surveys were started in 1972 but had to be suspended in 1978 to divert resources to preparations for the 1980 Census of Population and Housing and the Agricultural Census planned to follow soon after. Plans are under way to reinstitute and improve these surveys, using data and other information from the said censuses. From 1981 to 1983, the CSO carried out longitudinal household budget surveys on a panel of 100 households in three cities in order to monitor the earnings and spending patterns of households, in particular how they are being affected by inflation, on a continuous monthly basis. An inducement honorarium of about $ 2 was given to respondents and a further $ 2 to those who could fill in the expenditure notebooks themselves. The effect of the honorarium was to minimize sample attrition. The longitudinal surveys were preceded by ad hoc household budget surveys in 1974–1975 and 1975–1976.

4. Problems

The following major problem areas associated with the development and sustainment of data collection systems for Zambia have been identified.

4.1. Organizational Problems

While the Unified Statistical Service has been running reasonably well, it has experienced some problems. One of the main organizational problems encountered is the general tendency for government Ministries/Departments to run their statistical units independently of the CSO. In some cases this has caused delays in appointments of staff and duplication of statistical work, circumstances that the Unified Statistical Service was initially created to avoid.

4.2. Infrastructural Problems

The social and economic infrastructure in Zambia is not one that allows for the rapid development of capabilities for data collection and dissemination, as we will see below.

(a) Personnel

Qualified professional as well as lower level personnel, prerequisites for implementing systems of data collection are in short supply. It is still difficult to recruit qualified people as enumerators and supervisors for large-scale surveys and censuses. Generally there is a shortage of cartographic skills and qualified and experienced personnel in the area of data processing. Administrative data continues to be collected, tabulated, and processed by lay clerks who are not equipped to perform these tasks.

Often, expatriate personnel have been recruited or international organizations (like UNDP, FAO, USAID, etc.) have provided experts to do a number of tasks, which has not helped to develop national capabilities for performing the said tasks.

(b) Field Organization

Associated with (a) above is the problem of creating a permanent field organization. Under the National Household Survey Capability Programme (NHSCP) which the CSO has already begun implementing, a number of surveys will be carried out continuously on an annual basis. In order to benefit from the experience accumulated by enumerators currently employed on an ad hoc basis, it is important that the CSO employs field staff on a permanent basis. The CSO currently employs 100 enumerators throughout the country as temporary staff. After working for a certain period, some of them become frustrated after their realization that they are not part of the

main establishment of the survey organization and therefore are not qualified for civil service privileges and benefits such as salary increments and promotional opportunities.

(c) Resources

Limitation of human, financial, and physical resources has affected and continues to affect the quality, scope, and coverage of the work of the CSO. For example, in order to ensure effective supervision of the field work, the CSO and its provincial offices need adequate transport. By the CSO's reckoning, each of the nine provinces requires at least three vehicles in good working condition. The CSO, however, faces an acute vehicle shortage. Each province, for instance, can count on only one vehicle in good working condition.

Shortage of funds earmarked for statistical activities remains a daunting problem. This situation does not permit the expansion of establishments, or employment and retention of qualified and skilled personnel. The CSO has suffered desertions by its professional staff in particular due to the low government pay compared to pay offered in the quasi-public and private sectors of the economy. The problem is even more serious given the fact that it is generally the more skilled, experienced, and educated who are leaving the CSO after its heavy investments in their specialized training. And, of course, the high turnover of staff does not augur well for the objective of institution building.

Lack of funds has at times also led to the disruption of CSO survey programmes and cancellation or postponement of others. For example, during the 1983–84 agricultural year, the agricultural survey was only partially covered due to shortage of available funds to buy fuel and to pay subsistence allowances to field workers. In addition, despite the fact that a pilot census of agriculture was conducted during the 1981–82 agricultural season, it became necessary to postpone the main decennial and second agricultural census in the country scheduled for 1982–83 due to lack of funds.

(d) Data Processing

The problem of data processing arises as a result of a shortage of skilled personnel in the area of data processing and due to lack of adequate computer facilities at the CSO, of documentation on operational statistical systems at the CSO, and of user co-ordination. The CSO has been using the Central Data Processing Bureau at the Ministry of Finance for analysis of its data. The Ministry of Finance has an IBM 4341 computer which all government ministries and departments, including the CSO, are supposed to use. Unfortunately, statistical work has invariably been given low priority and this has resulted in long delays in processing data from the CSO and of their timely release. It is no wonder that most reports from computerized statistical systems are not up to date, as shown in Table 1 below.

Table 1. Computerized Statistical System and Last Report Produced

System	Last report produced
Household Budget Survey	1974
Vital Statistics	1975
External Trade	1980
Migration Statistics	1982
Index of Industrial Production	1982

Because of such delays, the CSO has had to resort in some cases to manual analysis of data series, for example, the agricultural survey data and the public finance statistics.

Table 2 gives the present operational and non-operational computerized statistical systems at the CSO.

Table 2A. Operational Computerized Systems

Series	Volume
External Trade	Estimated volume of 35 000 records per month.
Vital Statistics	Estimated volume of 8 000 records of births, 1 500 for deaths and 200 for marriages per month.
Migration Statistics	Estimated volume of 10 000 records per month with more than 10 million records per decade.
Household Budget Survey	Data collected monthly.
Index of Industrial Production	Mail questionnaires sent to 230 companies.

Table 2B. Nonoperational Computerized Systems

Series	Problem
Public Finance	Abandoned in 1978 for manual processing due to untimely system reports and lack of system maintenance support from the Data Centre. Attempts to revive the system in 1984 failed.
Labour and Manpower Statistics	Attempts to computerize the system were made in 1978 but due to retarded progress in receipt of output reports (first received in 1981), the idea was abandoned.
Agriculture and Fisheries	Maintenance of these systems failed due to departure of originators both at CSO and Data Centre, and also due to frequent scratching of tapes.

The manual statistical systems within the CSO are:

(i) Wholesale and Retail Prices (about 6 000 records per annum)
(ii) Distributive Trade (about 12 000 records per annum)
(iii) Nutrition and Related Statistics (about 6 000 records per annum)
(iv) Census of Production (about 11 000 records per annum)
(v) New Registration of Vehicles (20 000 – 25 000 records per quarter).

In order to maximize the benefits from its integrated survey programme, the CSO should have an appropriate electronic computer support system to facilitate timeliness in data availability. At the least, the CSO initally should install a number of microcomputers to be used as demand terminals linked to the computer at the Data Centre via telephone lines. This will provide some limited computing power at the CSO when the main computer is unusable because of problems at the Data Centre or in the telecommunication link. Such a development would give the CSO the opportunity to make maximum use of the main computer, while smaller data sets would be locally processed.

(e) Frame creation and maintenance

For censuses and agricultural surveys conducted in the early 1970's, the primary sampling units, called Basic Areas, were rather large both geographically and in numbers of households. On the average they contained 3 000 people. There was a noticeable tendency among enumerators to make incomplete lists of the households within the Basic Areas. This led not only to biased samples but also to underestimation of population values. The cartographic maps prepared for the 1980 census were inadequate in many respects and need updating.

(f) Printing

It is imperative that results from censuses and surveys are published for the benefit of users after they have been processed and analysed. In this regard, one of the important functions of the CSO is to disseminate statistical results. This is mainly done through the publication of the CSO's Monthly Digest of Statistics and other specialized publications. Since its inception, the CSO has continued to experience

delays in publishing regular and specialized reports through the government printer. For example, the Statistical Year Book was last printed in 1971.

(g) Programmes

The ad hoc nature of the statistical programmes which in the past have been carried out has not furthered the objective of building an enduring capability and a permanent field organization. Moreover, for data collection purposes, these programmes have not been cost-effective.

The CSO has been very much aware of the above and other problems. The solutions to most of them lie in the development and sustainment of an enduring capability for census and survey taking which the CSO embarked on in 1983.

5. Building Enduring Capability for Census and Survey Taking

Since the successful completion of the 1980 Census of Population and Housing, the CSO has embarked on the implementation of an *Integrated Programme of Household Surveys* under the auspices of the United Nations National Household Survey Capability Programme (NHSCP) that is slated to span the period 1983–1988.

It is expected that the programme will:

- provide in conjunction with censuses and other sources a continuing flow of co-ordinated and integrated data needed for the formulation, implementation, and monitoring of National Development Plans; and
- enable the CSO to build a durable national capability for conducting household surveys on a regular and continuing basis and contribute towards achieving self-sufficiency in national statistics.

(a) Development of an Integrated Programme of Household Surveys

This programme is being developed around agricultural households with *annual agricultural surveys* at its core. Accordingly, the CSO is to resume its annual agricultural and pastoral surveys which were temporarily suspended in 1978, and it will do so on a nationwide scale. Other surveys are envisaged under this programme and the sequence in which they are carried out will be determined by the urgency with which the data is required, by operational and resource constraints, and by substantive relationships between different subjects. These surveys include a national *labour force survey* covering a modest sample of 10 000 households planned for 1986; a *multi-round demographic survey* again intended to cover a modest sample to be carried out over a two-year period in the form of rounds at six-month intervals, beginning around 1986; and a nationwide *household budget survey* planned for 1986. The last survey will cover even a smaller sample, of the order of 3 000 households.

(b) Capability Building

The CSO has embarked on a number of programmes aimed at building the capability for implementing the above integrated system of household surveys and censuses.

(i) *Staff.* In April 1975, an In-service Training Programme in statistics was started at the CSO as part of its efforts to develop statistical skills among its sub-professional staff as well as among such staff in statistical units of other government ministries and departments. The programme is organized at two levels: at *primary level,* training is given to staff engaged in collection, compilation, and scrutiny of primary data; and at *intermediate level*, training is given to staff engaged in supervisory activities who assist professional staff. The teaching is in the main done by the professional staff of the CSO.

The CSO has had to depend on centres outside the country to meet its training needs at the professional level. The

necessity for practical training has been very real and this has guided the CSO in its choice of training centre for its professional staff. The Dar es Salaam Statistical Training Centre in Tanzania (for diploma) and the Institute of Statistics and Applied Economics at Makerere University in Uganda (for degree), both training centres under the Statistical Training Programme for Africa (STPA), have come some way towards meeting the CSO's training needs at the professional level. Many established posts at CSO, however, either remain vacant or are filled by expatriate staff.

In addition to training, plans are under way to increase the number of field staff, albeit gradually, and to change their terms of employment from temporary to permanent. The gradual increase of field staff means that it will not be possible to cover a large sample of households, at least in the initial stages of the programme. Hence for most characteristics, the CSO will have to be initially satisfied with estimates at the national level (with urban-rural breakdown) and only on a selective basis at the provincial level.

(ii) *Data Processing.* This is another area where capability building will be done. As has already been pointed out, the arrangement for CSO to share computer facilities at the Ministry of Finance has proved to be a serious bottleneck in the past. A Data Processing Unit is already in operation at the CSO, set up when the 1980 Population and Housing Census was conducted. The Unit currently has a skeleton staff as follows:

1. Data processing adviser (USAID sponsored)
2. Systems analyst (1)
3. Computer programmers (4)
4. Data entry operators (23) – temporary staff
5. Data coders/editors and scanners (6) – temporary staff
6. Data archive clerk (1) – temporary staff.

The unit has acquired both data processing equipment and computer applications software. Through UNFPA assistance to the said census, the Unit has acquired 19 (key boards) data entry stations with one matrix printer since March 1983. The equipment consists of an IBM 5280 Data Distributed System (programmable and nonprogrammable). Newly arrived for the Unit is an ICL DRS 20 model 150 micro-computer consisting of one system unit (250 k), three key statics, and one matrix printer. The micro-computer has been installed and is currently in use. The Unit is also expecting six or more micro-computers. The unit has acquired five statistical program packages (CONTENTS, CONCOR, SPSS, XTALLY, UNIEDIT) and one report-generating package (FILETAB).

(iii) *Cartographic Unit.* A census mapping project was launched in 1977 as part of the preparations for the 1980 Census of Population and Housing. It was decided to divide the country into smaller Standard Enumeration Areas (SEA's) with well defined boundaries and population sizes between 300 to 600. Since the 1980 census, the need to improve and update cartographic maps has been felt. Such improvements should add villages, localities, and permanent features to the outside boundaries of the SEA's. These proposed improvements will herald the creation of a master sample to be used for future survey work. A cartographic unit has been set up at the CSO to ameliorate problems of area frame construction and maintenance. For censuses and agricultural surveys conducted in the early

70's, the primary Sampling Units called Basic Areas were rather large, both geographically and in terms of the number of households. They had an average population of 3 000 people.

(iv) *Printing.* A Printing Unit has been set up at the CSO to handle some of the in-house jobs. It is hoped that this will ameliorate the problem of delays in printing regular reports.

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