

**Data Processing Experience
With 2000 Census Case of
Zambia**

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Designing of the Census Instruments

It was planned that the 2000 Census data would be captured using Optical Mark Reading (OMR) Technology. The traditional questionnaire was therefore not to be used because of this change in data capturing strategy. A scanable type of Census questionnaire was designed to enable the use of OMR technology.

The design of the OMR scanable Census questionnaires was an interactive process involving CSO, Examinations Council of Zambia (ECZ), and Data and Research Services-UK. This process started with the production of a traditional (conventional) type questionnaire, which was later converted to a scanable form. The suitability of this type of questionnaire was tested during the Pilot Census. The questionnaire was in two parts, i.e. Form A for all Household, Housing and Agriculture Information and Form B for Personal information on each individual in the household.

Printing of the Census Instruments

The contracted printers of the Census forms were the Data and Research Services (DRS) of the United Kingdom. DRS were the contracted supplier of scanning equipment and scannable forms to the Examinations Council of Zambia, and it was from this background that they were identified to supply forms for the 2000 Census exercise.

Outsourcing of Resources for scanning

An agreement was reached between Central Statistical Office and Examination Council of Zambia that the forms will be scanned using their scanners and personnel. Because of their experience in scanning examination papers for the country it was easy for them to scan the census forms. The capacity was already built at ECZ, so instead of CSO inventing the wheel it was prudent for CSO to utilise the available capacity from another government wing. This decision saved CSO's time and resources, and therefore, concentrated on other critical areas. It was realised that a lot of resources in terms of equipment and human were needed if CSO was going to scan the forms by themselves. Personnel to handle the machines and the software needed to be trained within a short time. However, with this arrangement only basic skills of how to operate a scanner were needed.

Hence, training for Scanner Operators was conducted at ECZ from 11th to 12th January 2001. Categories of staff included OMR Operators and Manual Editors. A total of 54 OMR Operators and 10 Manual Editors were trained altogether. The scanning of questionnaires started on 15th January, 2001 and was expected to be completed in April, 2001.

In collaboration with ECZ, CSO put logistics in place; the coded questionnaires were kept at Government Printers and were being transferred to ECZ province by province and in batches for scanning. The work schedule at ECZ was done in shifts, Day and Night. Forms which could not be scanned were sent back to CSO for manual data entry.

Coding/Shading of the Census Questionnaires:

The coding of the Census Questionnaires was done in the field by enumerators under the Supervision of field supervisors. One to two weeks was/were allocated to this exercise after the completion of data collection.

Editing of the Census Data:

Editing is a continuous process throughout the scanning exercise. Rejected forms were checked for errors that might have arisen due to incorrect or insufficient recording of information in the field. Trained Questionnaire Editors then made corrections accordingly, and the forms were re-scanned. Completely rejected forms were forwarded for manual data entry.

SUMMARY OF PROBLEMS/CONSTRAINTS

Although the 2000 Census was successfully conducted, there were a number of problems/constraints encountered during the field operations and data processing thus:-

- (a) The postponement of the Census resulted in work continuing into the rain season. This had a negative effect on the movement and operation of the enumerators, which delayed data collection. And furthermore posed a great challenge during scanning exercise.
- (b) The non-completion of the mapping exercise led to situations where an enumeration area was too big to be handled by one Enumerator. This resulted into a number of Enumerators and Supervisors being overburdened with work. In some cases, these areas were split, bringing in a lot of inconsistencies in Geocodes
- (c)
- (d) Miscoding of the barcode led to a good number of orphan questionnaires.
- (e) The storage facilities were not that conducive for keeping questionnaires, the place was humid.
- (f) Dysfunctional rate of Scanning Machines at ECZ was very high , it derailed the work progress.
- (g) The machines used were not capturing the image of the forms, posing difficulties during editing.

RECOMMENDATIONS:

In view of the problems/constraints experienced in the field and during data processing the following recommendations are therefore made:-

- (a) Census exercise should be conducted during dry season to avoid questionnaires getting soaked.
- (b) The Census Mapping Exercise should be completed, and maps frequently updated. Materials should be sent
- (c) That CSO begin discussions with ECZ on the scanning of 2010 questionnaires.

CONCLUSION:

The scanning of 2000 Census of Population and Housing was conducted successfully. This success was attributed to the team work exhibited by EZC and CSO and other al Census staff, despite a few set backs here and there, The ECZ deserve thanks for their co-operation and support given to CSO.