

INT-2032

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GENERAL
CONS/90/7
28 September 1990
ORIGINAL: ENGLISH

ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
Subregional Headquarters for the Caribbean

CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE

THE USE OF COMPUTER SOFTWARE IN THE RESEARCH
ON WOMEN IN TRADE

by

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The views expressed in this document are those of the author
and do not necessarily reflect the views of the ECLAC Subregional
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PREFACE

The United Nations Economic Commission for Latin America and the Caribbean (ECLAC), Subregional Headquarters for the Caribbean concluded a project entitled "Establishment of a Database on Selected Areas of Women's Participation in Social and Economic Development" in 1990. The project commenced in September 1986 and was funded by the Government of the Netherlands.

Within the framework of the project, computer software has been developed for the recording and storing of data collected on traders in agricultural produce in the Eastern Caribbean. The databases have been designed in the computer software Dbase 3+. They may be used on any IBM compatible computer and do not require the use of the Dbase 3+ software.

Each of the databases focuses on the collection of data on a specific group of traders and as a result data collection and analysis cannot be shared among the different databases at this stage. However, each database offers valuable insights into the characteristics of the trade conducted by the respective populations which have been recorded.

Recognizing that the databases display potential for use other than the purpose for which they were originally designed, a decision was taken to conduct an indept assessment of the computer software.

The assessment exercise sought to clarify the application of the databases, providing a basis upon which interested agencies and individuals may wish to take follow-up action which will benefit women traders.

Mr. Wayne Maughan conducted the exercise. His expert advice has contributed to an understanding of possibilities for use of computerized databases. The present document contains a report of the exercise.

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Introduction

Two computer applications were developed as a result of the research work on inter-island trade. One application is a database, the other is a data analysis system. The data base was developed to store information derived from the whole population of inter-island agricultural traders. The data analysis system was developed to analyze data captured by the researcher on inter-island trade in agricultural products and on the suitcase trade.

Database Application

Overview of Software

One of the outputs of the research project by the Economic Commission for Latin America and the Caribbean (ECLAC), Subregional Headquarters for the Caribbean, on Women in Development (WID) in the Eastern Caribbean is three electronic databases developed in dbase III+. These databases are referred to above as "The Database Application" because they are basically similar. The applications were developed to capture and manipulate data on the trafficking of agricultural commodities in Grenada, Dominica and St. Vincent and the Grenadines, respectively, by inter-island traders.

Each of the three databases captures the following, in the case of each trader:

- Name
- Sex
- Age
- Address by parish of trader and supplier
- Inscription year of membership and date
- Whether a licensed trader and year of renewal
- Whether active or inactive - 1987 to 1989
- Products traded in each year
- Source of products: own produce or purchased supplies.

Each of the three databases captures the following, in the case of each shipment of each trader:

- Point of departure
- Number of shipments by points of departure
- Destination of products
- Dates of departure
- Ships used
- Type of products shipped
- Quantities of products shipped
- Respective values of products shipped.

The software also provides the user with the ability to undertake the under-mentioned research queries:

- Number of traders, active and non-active, identified by sex - January to February 1987, 1988 and 1989;
- Number of traders in possession of licences - 1986 to 1989;
- Number of traders who are members of associations - 1986 to 1989;
- Number of shipments per person by sex - 1986 to 1989;
- Total quantity shipped, by produce - 1986 to 1989;
- Number of items and their value, by shipment, by sex of shipper, and point of departure;
- Residence of hucksters (area), by sex, (number of traders by parish);
- Number of shipments per destination, by sex of shipper, by point of departure;
- Number of traders with licence requested - 1984 to 1989.

Advanced programming of the software should facilitate access to the following reports:

- Areas of residence of suppliers, by parish;
- Number of traders who are own suppliers alongside a comparison of the number of shipments and price of produce with others.

The application provides a listing of all the data on shipments made by each trader.

Sources Of Data

Information was gathered from a variety of sources including inward and outward manifests, import and export licences, phytosanitary certificates, clearances of ships, warrants/entries for goods liable to duty and/or consumption taxes, passenger lists, crew lists, ships' files or registration books, hucksters' lists, government departments, such as agriculture, statistics, trade and industry and economic development.

All data were not available from the sources indicated above in each country. For example, in some instances, the sex of trader was omitted from the shipping bills at the Customs Department.

The Dominica Hucksters' Association, with a register of members by sex and date of renewal of membership, provided the most complete record on hucksters.

The database focuses on the agricultural trade and combines four different aspects of data on each trader:

(a) The quantities of produce shipped by each trader of each shipment in pounds and valued in Eastern Caribbean dollars. This information was obtained from shipping bills at the Customs Department for the months of January and February, 1987, 1988 and 1989;

(b) The name of the ship, the date of shipment, and the destination of the boat. This information was obtained from the shipping bills;

(c) Information on the traders: name, sex, whether in possession of licence, membership of the Traffickers Association and years of membership. This information was obtained from the Shipping Bills as well as Licence Forms which are completed by persons shipping agricultural produce at the Department of Agriculture;

(d) Information from the Licence Forms: address of trader, first inscription date and last renewal date of huckster's licence. In the case of Dominica, the traffickers licences provided further information on the age of the trader, the products traded, name of suppliers, residence of suppliers and destination of the produce.

The manuals which were produced to accompany the respective database applications also note that not all the data are available in each country. Saint Vincent and the Grenadines recently initiated the use of a Licence Form. In the case of Grenada, there is no evidence of an operational Traffickers' Association.

Use of Application

When the application is started, the user is presented with a screen which permits a choice of any one of a number of options. These options allow the user to modify data by entering new information on traders into the database, changing information on traders which has already been entered or removing information on a trader altogether. The options permit the user to list the data entered on individual traders or to make calculations on groups of traders. The latter option is available under the "research" menu. Cross country tabulation is not possible. The database provides an option for file maintenance. This option reindexes the files. The process of indexing the files ensures that the time required for

the computer to search through the database for data is kept to a minimum.

In addition to the standard reports which the databases on agricultural traders in Dominica, Grenada and Saint Vincent and the Grenadines have been designed to produce, the data captured should allow one to report on a number of other economic aspects of agricultural trade activity.

Mechanics of Application

Each application is designed so that there should be eight database (dbf) files. Database files are being referred to as dbf files because these files carry the file extension dbf. These dbf files store the data input by the user. It is not intended that these files should be either accessed or manipulated directly by the user. These files are manipulated by a number of programme (prg) files.

On entering the name of a new trader into the database, the computer generates a code based on the first and last name. This code is the hub of the system in that it is used to find and correctly store and retrieve data relating to each trader.

Critical Examination of the Database Application

The databases which have been designed must be critically examined in terms of:

- (a) Their completeness, efficiency and reliability;
- (b) The comprehensiveness of data capture;
- (c) The facility with which it is possible to relate reports generated by the database to national statistics;
- (d) The integrity of the procedures used to generate reports;
- (e) Documentation of the database application and the facility for maintenance, modification or expansion of the database;
- (f) The ability to address reports which are not currently designed into the application.

While reports giving detailed lists of traders, including some basic data, suggest the possibility that all the databases may have been completed and that report-generation was possible, the examination of databases showed that they were incomplete. Such examination was made using electronic files accessible on the project computer at ECLAC.

It is understood that the database applications are intended to be identical, except insofar as they capture data for different countries. At least one of the databases does not have all the menu options of the other two. In addition, two of the three databases would not execute beyond the main menu offered to the user. It must, therefore, be recommended that before distribution, the programme files of the application should be carefully audited and debugged where necessary. All user options should be included to make the applications complete.

In one of the applications a most important data (dbf) file is missing, rendering the application inoperable.

It appears that there are inconsistencies in the different reports which are generated by the application. The tabulations produced by the listing option contain arithmetical errors. Because of the sophistication of the database, such errors cannot be rectified by a non-programmer and this in itself would seriously compromise the integrity/validity of the application. This is perhaps the most serious factor warranting the review of the application before its promotion and distribution is considered.

It is recommended that when the applications are eventually distributed, clearly documented user and technical manuals should be provided.

It should be noted that it is also possible to view the database application primarily as a method for storing data on individuals engaged in agricultural trade. In this circumstance, the application may be viewed as a directory of hucksters, best suited to the information needs of the respective hucksters' associations

Important Considerations in Establishing Database

One of the observations concerning the database application was that a proper systems analysis appears not to have been done to determine flows, reliability and relative importance of information, so that there is the possibility that the application is not properly focused. There is no indication as to who the database was designed for. It may well be naive to expect that some agency will want to or has the resources to go through all the documents necessary to maintain the database. However, the application would seem to have the potential to be of considerable value to the Hucksters' Associations.

As a general rule, the establishment of a database must always be carefully planned. This planning is even more important when the database is to be established using computer technology and will be used by several persons. In particular, much planning must go into the specific area of focus of the database. For example, firms commonly establish databases on the personnel employed.

To be effective, a database must have a clear focus: what information is to be captured, who will use it, how the data will be captured, how information is currently stored, etc. An effective database is based on the needs of a user or group of users, and such needs must be carefully determined in conjunction with the users before the application is designed.

Data Analysis System

Overview of Software

The electronic files which have been developed as part of the overall consultancy in research on women in the inter-island trade, include software developed by an independent consultant for the purpose of analyzing data collected from sample surveys, undertaken among both the agricultural and suitcase traders. A complete manual explaining the purpose of the software and how it is to be used is not available and as a result conclusions had to be drawn on the basis of experimentation. The preliminary manual which was available states that the software has not been completed in that the user cannot access all of the menu options provided. The software developer indicated that all the menu options which were needed to undertake the data analysis required by the contractor were available. Some of the printed reports on the inter-island trade substantiate this claim.

Use of Application

The software presents the user with a hierarchical system of menus. Essentially, the software allows the user to enter and manipulate data to produce tables of statistics on the suitcase or agricultural trade as required, and on the basis of a number of predetermined variables. These tables compare the relationship between one variable and another; the variables must be selected by the user. It appears that these variables were originally determined by the requirements of the questionnaires on the agricultural and suitcase trades, respectively. The user may elect to generate up to 20 tables from the electronic data file on the agricultural or suitcase trade and the variables selected for comparison.

The software was not developed for general distribution to the islands in which data collection took place, nor for use by any institution. Indeed, if this were so, then there would have to be a training component for the use of the software. In fact, the software was developed for use by the researcher on Women in Development at ECLAC, Subregional Headquarters for the Caribbean, and it was a "one off" exercise, in that after the analysis of the data and conclusion of the report by the researcher, there was no apparent proposal to use the software on a continued basis.

One can readily appreciate the utility of software, which will facilitate the analysis of data and generation of reports on large amounts of data fairly quickly. Indeed, there is evidence that extensive use was made of the software by the researcher. It needs to be borne in mind, however, that the software was custom designed for the specific needs of the research work on women in inter-island trade and it is not entirely intuitive. Potential users would have to be trained in the use of the software. In any event, there would hardly be a need for the use of the software unless the specific survey for which it was used is to be replicated.

Conclusions and Recommendations

Database Application - Reports

The potential for generating reports on the characteristics of the inter-island trade, which may be published will be determined by the completeness of the data entered in the database applications. Should that data are collected and entered, then it will be possible to generate the several tables available under the "research" menu.

Reports on the basis of these tables may then be prepared.

The databases have the potential to provide government agencies and researchers with information within the following areas:

- Socio-economic characteristics of traders;
- Extent to which supportive social services such as day care and toilet facilities are necessary;
- Extent to which ancillary services such as cold storage, chill rooms, warehousing, overnight facilities, security for goods, personal safety, first aid and medical services are required;
- Constraints to expansion of trade: e.g. post harvest losses, poor packaging, turn around time, and availability of credit;
- The relationships between the agricultural trade and the suitcase trade.

It will however be necessary to augment the software.

Data Analysis Application

The information which is generated by the data analysis software provides a "snapshot" of the women in inter-island trade.

The software may be used for processing data captured for updating the survey.

Training in the use of the software will be required.

Tuesday, July 31, 1990

