

THE CHOICE OF BLAISE IN THE FAMILY RESOURCES SURVEY

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1. Background

The Department of Social Security (DSS) has responsibility within the UK for the payment of benefits and the collection of contributions under the National Insurance and Industrial Injuries schemes; for the payment of child benefit and one parent benefit; and, on a means-tested basis, for paying (as an example) Income Support and Family Credit. It also administers the Social Fund and pays a number of non-contributory benefits which are non means tested.

In the period from April 1992 to March 1993 it is estimated that the DSS will deliver over £70 billion of benefits of which £26 billion is non-contributory benefit and thus related to circumstances rather than contributions.

It is essential that the DSS has the ability to analyse client behaviour through the availability of accurate, up to date management information. Data is required on the eligibility for benefit as well as the actual take-up of benefits.

To date the DSS has used data collected in the Family Expenditure Survey (FES) for this purpose. This, however, is considered to be inadequate as the data is collected from too small a sample for DSS purposes and it is not available until long after the date of interview. The DSS believes that its analytical powers will be increased through the availability of a new data source under the control of the DSS.

The Family Resources Survey (FRS) was launched on 1st October 1992 to meet the DSS requirements. This launch was preceded by over 2 years preparation, design and piloting. The aim is to achieve 25,000 successful

interviews from a sample of 40,000 households. Each interview will include all members of the household and is expected to take approximately 90 minutes on average.

2. CAPI

Early in the development of the FRS it was suggested that the use of Computer Assisted Personal Interviewing (CAPI) in the survey could be advantageous. At that time (May 1990) there was little experience of CAPI in the project team and no knowledge of any application approaching the size and complexity of the FRS.

However, the concept of CAPI was recognised as being in line with the objectives of the FRS:

- i) **Quality**
High quality data is desired. The interview is recognised as being very complex with a significant amount of financial data. The ability to carry out data validation at the point of capture is very attractive.
- ii) **Speed and timeliness**
CAPI offered the potential for data analysis within timescales not possible using traditional methods.
- iii) **Costs**
Overall costs could be reduced significantly using CAPI. The FRS was envisaged as being a long term project which would enable initial capital costs to be recouped by cheaper running costs.

The potential was considered great enough to spend time investigating the feasibility of using CAPI in the FRS: considering software, hardware, interviewer considerations and user experiences. An initial report by SIA Ltd recommended that CAPI was feasible if a suitable software package could be found. A trawl of the software market identified a number of packages but few that were sophisticated enough to handle the FRS. Indeed three packages were considered to be contenders : BLAISE,

MICROTAB and QUANCEPT. The DSS agreed with the recommendation recognising that if the FRS was not launched using CAPI it would only be a short while until it would have to be transferred to CAPI.

3. Software evaluation

Accepting that CAPI was feasible if software was available that could handle the complexities of the FRS, the DSS commissioned a comprehensive evaluation of the leading software packages designed to answer whether any of the packages were capable of handling the survey and, if so, whether one package could be recommended as particularly suitable for this application.

The evaluation was carried out by SCPR with support from SIA Ltd, OPCS and Toshiba. The basic methodology adopted was to develop a prototype of the FRS in each of the three packages. These prototypes were then used to test the software against a set of identified evaluation criteria including the ability to:

- accept details of selected addresses from computerised source;
- record a number of visits made to a household;
- cope with concurrent interviewing of several members of a household;
- 'loop' through questions a set number of times defined by a previous response eg. variable number of children, bank accounts, jobs etc;
- amend the number of iterations of these loops during the interview;
- handle all standard types of question eg. single response, multiple response, open response, dates, monetary values (with decimal places) and percentages;

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- incorporate text from previous questions in question text and code lists;
- deal with complex routing and routing implications of changing data;
- check ranges and ineligible formats;
- use 'hard' and 'soft' checks;
- interview several adults concurrently;
- record and calculate the interview length;
- code open responses following the interview.

Also of importance were the ease-of-use for interviewers; the capacity of the software in terms of numbers of questions; the ability to interface to other software for analysis and the support given by the software's distributors.

The software evaluation was carried out using approximately six man-months of researchers and programmers time. Additionally, significant support was given by the software suppliers and a small "field-test" was carried out using experienced interviewers.

The conclusion of the evaluation was that only one package - Blaise - could be used for the successive implementation of the FRS. A summary of the main findings is:

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Software	Strengths	Weaknesses
BLAISE	'Table' format enabling many data items to be displayed on the screen	Inability to compile whole questionnaire in a single program
	General ease of use	Concerns over user support
	Robustness when answers are changed	
	Ability to handle real numbers and real arithmetic	
	Wide range of output formats	
MICROTAB	Quality of customer support	Doubts about ability to recover data after making amendments
	Efficient handling and storage of hierarchical data	Relative difficulty of moving around within the interview
	Facilities for summary screens	Restriction on the size of the serial number
QUANCEPT	None	Insufficient facilities for handling and manipulating numeric data Unable to handle questionnaire of desired length

4. Hardware and communications

Following the decision to proceed with CAPI using Blaise software the DSS was keen to ensure that maximum benefit was gained from the investment in technology. Each interviewer was to be equipped with a computer and was essential that the appropriate hardware was chosen for the FRS interview and also for any other associated tasks.

A number of detailed logistics concerning the running of the survey were dependent upon the field agency selected to carry out the interviewing which at this time was not known. However, it was important that in the planning and budgeting of the project that the DSS was aware of technical options and considerations.

A thorough review of the technical issues surrounding the decision to use CAPI was commissioned, in particular looking at:

- i) Functions that could be carried out in the field using the PC.
- ii) Data Communications.
- iii) Hardware Specification.
- iv) Approximate Costs.

A report on this review concluded:

- i) Obviously the main function of the PC in the field is to carry out the interview itself but it was recognised that in addition to this it would be feasible, if desired, to:
 - a) Receive sample addresses directly from the survey managers via telephone lines;
 - b) Transmit program updates similarly;
 - c) Edit and code the data collected on the PC following interview;

- d) Transmit data via telephone lines to a central database;
 - e) Record and transmit other data such as pay and expense claims.
- ii) The interviewers should all have a modem for data communications; Either internal or external modems could be used. Internal modems have the advantage of always being with the PC should they be transferred between interviewers, external modems cause less of the drain on battery power.

The modems should meet industry standards MNP4 and MNP5 for error correction and data compression but it is not important that they have fast transmission speeds as relatively small amounts of data will be transferred.

At the point of data receipt similar modems are required. It was recommended that these modems be linked to a sophisticated modem management system and controller to log and check all data transfer.

- iii) Initially the choice of hardware was between laptop and palmtop machines. It was quickly recognised that laptop machines were necessary for reasons of ease-of-use particularly with regard to keyboard size.

Having chosen laptop computers it was decided by the DSS to use Toshiba products. There are particular advantages in Toshiba equipment with regard to use in a CAPI environment - the machines can be left 'switched-on' between interviews - and also being one of the market leaders in portable equipment the DSS could be assured of the quality and service they desired.

Various specifications of PC were considered. It would be possible to run the application on an 8086 - based floppy drive machine (ie. a low specification) but there were some considerations:

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- i) The survey program would eventually be very large and the faster 286-based machines may be advantageous.
- ii) Because the machine could be used for a number of functions a hard disk would be useful and would remove a number of potential problems arising from using floppy disks only.
- iii) Hardware suppliers are no longer manufacturing low specification machines and it was recognised as a potential risk to choose a machine that may be discontinued early in the project.

Because of these considerations it was decided to recommend to the eventual research company that the machines to be used should be Toshiba, 286-based with a 20 Mbyte hard disk.

- iv) A cost comparison between running the FRS using CAPI and traditional methods was carried out. This showed that the savings made in printing, postage, data preparation and administration more than covered the initial outlay on hardware, software and training after three years.