

Data capture in the 80's*

M. Brighton

DRS Data and Research Services Ltd.
Milton Keynes

Abstract

This paper argues that social and economic pressures plus the rapid development of electronic devices will, through the present decade, produce a significant shift from face to face interviewing at private addresses, towards centralised interviewing, postal surveys, telephone surveys, qualitative research and direct data capture via specialised event recorders. The advantages of postal and telephone surveys will come to be better appreciated, and improved techniques will be adopted in both. The use of increasingly sophisticated and cost effective electronics equipment will at first extend and improve existing techniques of data capture, but by the end of this decade electronic developments will have brought about fundamental and permanent changes in the way data can be collected.

Survey research data capture techniques are going to change dramatically in the next decade, but this change can be expected to come about as the result of any single development in facilities, fashion, or philosophy. In fact these techniques will come about gradually, as a result of the changing pattern of commercial incentives and disincentives that face the individual and corporate researcher. By far the biggest disincentive is going to be the increasing difficulty and cost of arranging traditional face-to-face interviews at the home of the respondent, plus a growing awareness of the technical disadvantages of this technique.

Face-to-face interviews

For many years the survey research industry has been able to exploit a large pool of suitable labour in the form of middle-aged and middle-class housewives, keen to supplement the family income, and, because of their domestic background and duties, requiring employment which has flexible hours and little or no prior training. The rôle of market research interviewer has been suitable for such people; in many cases it was probably the only job that would fulfil their requirements. That is why the survey research industry has, for so long, been able to employ capable and mature and intelligent women to do demanding, and often boring and unpleasant work, for remarkably low pay. But all that is

*This is a revised version of a paper read at the Convention of the South African Market Research Association, Sun City, October 1980.

changing, and will continue to change. The move away from rôle playing marriages, the increasing proportion of working housewives, the greater flexibility being offered by other industries in the adoption of flextime systems, and the growing problems of visiting private homes in a society which is becoming more violent and more conscious of privacy — all these will play their part. By the end of the present decade sending competent interviewers, in their own cars, to talk to the inhabitants of tenement flats, on dark, wet evenings, will be too expensive a proposition for most research agencies.

As the difficulties of attracting and keeping good interviewers mount, there is a danger that the standards of interviewing will fall. At the same time the limitations and disadvantages of the face to face interview will become more apparent. The main technical limitation is, of course, that the interviewer is an unwanted variable in the research process, either through wilful or careless misrepresentation of the respondent, or because he/she has an unwitting influence on the respondent's answers. Both problems have been recognised for a long time but relatively little work has been done to try and measure them. During the next few years it will become increasingly easy and inexpensive to measure this "noise" factor, with high precision, automatically, and in every survey.

It is unlikely that the major research suppliers will compete with each other in the use of such techniques, but it can only be a matter of time before some independent bureau recognises the commercial advantage of offering a fieldwork quality measuring instrument to research buyers.

Such a service would require only that the punch cards or data tape for the survey (with respondent identity omitted, if need be) be handed to the test agency, together with a questionnaire lay-out. An automatic programme could then measure interviewer variability and award the survey a fieldwork quality score, and relate this to average quality scores for surveys in that product field, or of that size, or conducted by that agency, or whatever. It should not be surprising if that initiative is not taken in the next two or three years, and, as the service would probably be both fast and cheap, it should not come as a surprise if the research buyers do not use it as a lever to try and lift the standard of fieldwork. It may even do just that, but first it will identify, with greater clarity than before, the disturbing size of the variance introduced by the interviewer. In so doing, it will help to make alternative methods of data capture seem more favourable than hitherto. What are these other methods?

Qualitative research

Hopefully there will be some increase in the amount of qualitative research done as a result of the good public relations which the qualitative research practitioners are now collectively producing, and which might be expected to produce a better appreciation of the

advantages of this set of techniques. It is also likely that, as the cost and difficulties of fieldwork mount, there will be an increase in qualitative research as a substitute for small sample surveys. This trend seems most probable. If the research budget that bought a small field study in the 70's will only buy a few group discussions in the 80's, then that, rather than nothing, is what some buyers will prefer.

Postal surveys

The same economic pressures will also lead to an increased use of postal surveys, which hopefully will lead to a better use of this technique. There will be an increased urgency to achieve higher response rates in postal surveys and this will lead to more experimentation and eventually to a more integrated set of detailed techniques designed to make the completion of postal questionnaires less complex, less intimidating and more rewarding (for a more detailed review of such techniques, both in postal and telephone surveys, see Dillman, 1978).

Part of the effort to produce more palatable questionnaire layouts will lead to a much greater concentration on the designing of good selfcompletion questionnaires, making them less esoteric, more attractive, more simple, more readable, and more rewarding to complete. In some cases the use of optical mark readers will help this process by freeing the questionnaire design from the constraints imposed by subsequent key punching requirements, thus allowing new formats, such as continuous scale marking, to be employed. An increasing number of survey research departments and agencies will invest in their own optical mark reading equipment, which, like computers themselves, will continue to become more reliable, more powerful, and less expensive.

Telephone surveys

Like postal surveys, telephone surveys will initially come to be used more frequently because they are less expensive than the more traditional field studies, but, as in the case of postal surveys, those who use them will come to realise that they have their own inherent advantages, and will come to introduce improvements which will exploit these and help to reduce the disadvantages. Electronic gadgetry is likely to play a significant rôle here. There will be a move towards random digit dialling which will help to overcome the sampling inadequacies of published telephone lists. Despite current Post Office restrictions we may see the slow introduction of computer controlled dialling so that non-responding numbers can automatically be dialled again at different times of the day, thus providing a better chance of securing high initial response rates, with minimum interviewer involvement.

The advantages of a centralised telephone facility will come to be more widely recognised and the large agencies will invest in these. Centra-

lised facilities will facilitate much closer interviewer supervision and allow a much shorter feedback between interview difficulties and question amendments; so it will become easier to control interviewer variance associated with difficult or ambiguous questions. There will also be better opportunities to vary and develop the questionnaire in the early stages of a survey. Alongside these developments will come an increasing awareness of the ability of telephone surveys to produce very fast answers indeed on topics where that is appropriate, and answers which will stand the scrutiny of subsequent and more comprehensive research. To begin with, much work will be done using telephone panels which will be more cost effective than ad hoc telephone surveys in many, though not all, circumstances.

The centralised telephone facilities will inevitably lead to a new type of interviewer with new skills and requiring a different set, and in some ways a less demanding set, of characteristics. A whole range of people, who would not be suitable for door to door interviewing, will turn out to enjoy and be very good at telephone survey work. To take one example only, this will become an occupation for which a large proportion of disabled people will not be disadvantaged.

As the centralised facilities produce a more highly and differently specialised interviewer, so these specialist skills will extend. To begin with, the interviewer will probably record the answers on conventional questionnaires, which will be punched or optically scanned as they are today; but progressively the telephone interviewer will relate to the respondent via a video display unit and a keyboard. The video display unit will present the interviewer with the correct questions, automatically handling all filters, and the respondents' answers will be keyed directly in by the interviewer. Because computer time will be relatively cheap, it will become economic to tabulate the results as they come in, so that when answers to particular questions reach a given level of statistical significance, that question can be automatically dropped from the questionnaire presented to the interviewer on his or her screen. This will minimise the number of redundant questions asked, and thus improve the cost effectiveness of research, and also improve response rates.

Centralised interviewing

Those interviewers who continue to carry out face-to-face interviews will more often do so in centralised locations rather than at private homes. These will include shopping precincts — a trend which is already widespread in America and is being made more attractive by the development of indoor shopping precincts in this country. There will also be an increase in the use of hall tests, and probably in the use of specially equipped mobile research vehicles. Both in hall tests and in mobile interviewing centres there will be an increased use of on-line

computer terminals or stand-alone computers to make the job of interviewing easier, and to make the job of responding more fun, and less interviewer biased.

Increased use of electronic equipment

As traditional interviewers become more expensive and more unreliable and more difficult to hire and keep, electronic gadgetry will become cheaper and more reliable and more commonplace. If the reader doubts this, let him or her think for a moment about what has happened to calculators in the last 10 years, or about the cost of computing power. Despite a decade of raging inflation, the same money can buy a computer with more than ten times the capacity of a similarly priced one of ten years ago. The application of electronic equipment will not just be the application of the computer, although the computer will play a significant rôle. There are half a dozen other kinds of electronic equipment, including specialised computer peripherals, that seems likely to make an impact on data capture in the next decade.

First (though not in order of importance) is the specialised terminal, the Robot-interviewer. Terminals (or mini-computers) are better at organising filters and better at "asking" difficult questions than are human interviewers. They also introduce considerably less bias. It can be expected that these devices will become very much more sophisticated in the next few years, whether they are linked to large mainframes or whether they are small dedicated computers. Their use will become easier as an increasing proportion of the population become familiar with computers and video display units. Early examples will use a conventional, or only slightly modified keyboard. Later devices will have their own specialised, easy to use keyboard, plus the facility to respond by "touching" items on the screen, or by speaking a limited vocabulary from a displayed list.

A second area in which electronic equipment will play a major rôle will be that of point of sale cash registers. As more retail outlets move over to point of sales systems, which identify by optical or magnetic scanning means, the price and the identity of all commodities purchased, it is only a matter of time before the entire nature of retail audit work changes. By the end of the present decade the retail research agency may well become a clearing house for the purchasing and redistribution of information collected by individual manufacturers. Many large retailers will use their own internal computing systems and software to produce statistics that are currently being produced for them, from samples of their own shops, by traditional retail audit methods. Moreover, with an increase in the use of credit cards/accounts, analyses by consumer type may soon follow. The cashless society is just around the corner.

Another area in which electronic gadgetry will make a major impact, and has already started to do so, is that of specialised data loggers. These

have been around for at least the last decade in the form of television viewing meters, but the principle has only just begun to extend from there. The current generation of television viewing meters can simultaneously monitor the operation of all television sets in a household, have the capability of recording who is watching, though with the active co-operation of the viewer, and can send the information directly down telephone lines to the research agency's computer. What is being done to television viewing now, will soon be done, for example, to motorist panels. Black boxes in car boots will record times, speeds, and petrol consumption, so that, combined with diary information, there will be much more complete information about vehicle usage than has previously been available. Another early area to benefit from the application of event recorders will be the domestic consumption patterns of oil, gas and electricity, by time of day, by weather conditions, by type of house, by appliance, and by area. Such information will be crucial to future energy planning needs, but it is not currently available in anything like the detail that is required. Nor can it be gleaned by conventional interviewing techniques.

By the end of the decade it is probable that optical character recognition will also be playing a significant rôle, not in the sense of capturing open-ended, hand-written information, but certainly by giving the researcher a convenient means of capturing simple alpha numeric codes to identify housewives, people, brands, etc.:

The electronic questionnaire (the robot punch girl?), whilst currently too expensive, will also soon be with us. This device will allow the interviewer to key the respondent's answers directly into a very small solid state memory, which will store all the day's work and allow it to be transmitted down the telephone line from the interviewer's home that evening. The main early pressure for this is likely to be the increased speed of communicating the results back to the office, particularly if our postal system continues to lag behind its electronic sibling; but within the next 10 years, electronic questionnaires, probably in the form of black boxes temporarily attached to respondents' television sets and linked directly by telephone lines to head office, will be interactive devices providing the interviewer with filters, prompts and brand lists for easier recording purposes.

It is at this stage difficult to predict whether the impact of specialised terminals linked directly to the agency's computer will play a greater rôle than small stand along dedicated micro-processors. Both will probably have a rôle to play. Certainly by the end of the 80's small and inexpensive computers, no bigger than a convenient briefcase, with fold-up screens and keyboards, will be easily capable of taking the interviewer and his or her respondent through an elaborate questionnaire, filters and all, and not only storing the resultant answers, but instantly adding them to the other interviews collected, to display the tabulated results to date. Today's relatively clumsy versions cost about R4 000.

The most significant development of all has already begun outside survey research. It now seems inevitable that by the end of the decade a very large number of homes will be equipped with Prestel-type facilities. In this sort of arrangement the television set will be used as a communicating device with the respondent, and the telephone line will be used as the means of transmitting information, in both directions, from and to the agency's computer. A small "intelligent" black box is all that is needed to provide this link. Within the next few years, such a system might well be much more systematically developed.

Perhaps many homes will have a television set able to receive a separate survey research channel. A central Quango, not unlike the BBC, might act as a clearing house for collecting and organising the questions to be broadcast on this channel and for charging the various government or commercial agencies for the collected answers. Each home would be known, not by its address, but by its socio-demographic profile, and each respondent in the household would identify himself or herself before beginning to answer questions, which would either be presented on the screen, or presented audibly, or both. The informants will probably be motivated to take part in this exercise from sheer curiosity, particularly if the only means of looking at the next question is to answer the previous one. Perhaps there will also be an incentive scheme in which the broadcasting licence fee is automatically reduced by an amount which depends upon the quantity of information provided by the household, plus some consistency measure to discourage blind responses. The answers from each household will probably be stored temporarily in the "black box" attached to the television sets (more probably built into future television sets) and then polled by the central computer at night time.

If all this seems like a wild prediction, it is worth pointing out that it is not suggested that the market research world will find the necessary resources to invest in such developments, but that it is extremely likely that a national electronic post, or extended Prestel system, will provide that investment for us, so that we will simply need to ride on the back of it. That technology, though still costly, exists today.

The consequences of this last development seem to me to be more important than any of the other individual developments that have been discussed so far. It may well revolutionise data capture for the industry. It could also have a number of other very important consequences. It may make the production of research results much faster, because the whole process will be automated, with powerful computers processing yesterday's questions overnight, to produce answers, via other people's terminals, next morning. It should make very large sample sizes relatively inexpensive, and therefore routine, allowing increased accuracy in data. It may well lead to a more educated public in terms of questionnaire design; a public that will come to recognise and under-

stand leading questions, and bad questions of all kinds, and will reject them where appropriate — but also a public who will become familiar with, and able to handle intelligently, a progressively standardized set of questionnaire layouts. One has only to look at traffic signs, or television generally, to realise that the general public, if educated slowly and persistently, is capable of understanding and responding intelligently to very sophisticated information formats. The interviewer bias will, of course, disappear in this research environment. Research may also become much less expensive, by being less labour intensive, so that all sorts of organisations, both commercial and social, which currently make little or no use of research, will come to avail themselves of the facility.

If, as I think may happen, the influence of the Data Protection Committee makes it illegal to collect name and address information from such panels, then this development will not be at all ominous, as some researchers seem to think. It will not be “big brother” watching us; rather it will be us watching “big brother”. When questions can be asked of the general public quickly and inexpensively, by a wide range of organisations, and when the answers can be disseminated widely and quickly, then those who make inaccurate or tendentious statements about commercial or political situations, opinions or facts, or who act in the face of public opinion, will do so at their peril. We will all know what we (collectively) think, want, believe and do. That development will make for a much more open society, with major implications for politicians as well as for product managers.

Reference

Dillman, D.A. (1978) *Mail and telephone surveys – the total design method*. N.Y.: John Wiley.