

## Comment

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### 1. Introduction

Don Dillman's article is provocative in painting its rather gloomy picture of government survey statisticians, their organisation, abilities and attitudes. The degree of provocation, however, is substantially dependent upon its title which refers to "government surveys" and suggests that the content is applicable to government statistical agencies across the world. In fact, the substance of the article is based on the author's experiences at one particular agency, the U.S. Bureau of the Census (USBC). Furthermore, within this narrower context, the article is limited to one particular aspect of the survey process, namely measurement and nonresponse error. Dillman's last paragraph refers to "the accomplishments of our nation's statistical system" which indicates his unstated, but more modest scope – U.S. agencies – and, indeed, several of these agencies may not feel entirely comfortable in being characterised by activities at the USBC. It is dangerous to generalise from a small sample, and many of my comments stem from the inappropriateness of this particular generalisation. Had the title been "Why Innovation in Handling Measurement and Nonresponse Error in Household Surveys is Difficult at the USBC" would have been much less provocative ... but, there again, it would also have had a much narrower readership and this would have been a pity as it raises a number of interesting issues.

In essence, the article conjectures that needed innovation and change in government survey organisations are difficult to accomplish and that major contributing factors are the coexistence of research and operations cultures with different value sets, and hierarchical organisational structures. The article goes on to suggest remedies including raising the awareness of the multidimensional nature of survey error, recruiting more staff skilled in cognitive methods, and modifying organisational hierarchies to facilitate better communication and problem resolution. The following paragraphs deal with these points.

### 2. Need for Innovation and Change

The implication of the abstract and opening sections of the article are that the requirement for, and difficulties of, introducing "needed innovation and change"

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are particularly pronounced in government survey organisations. I would argue that, in this respect, government statistical agencies are neither better nor worse placed than other government or private organisations of similar size. Right across the organisational spectrum, new technology is appearing at an ever increasing rate and a competitive edge is ever more important. Thus, modern management literature is heavily focused on stimulating and managing innovation and paradigm shifts, for example, through quality management (Deming 1982) or reengineering (Hammer 1990). There is nothing unique to statistical agencies about the need for innovation and change.

### **3. Operations and Research Cultures**

Dillman focuses heavily upon the notion of two distinct cultures – research and operations – coexisting within a survey organisation, and the problems which this causes. Research at the USBC may be organised so as to create two cultures but this is not universally the case. Different agencies handle research in different ways. Consider the two statistical agencies ranked at the top of the most recent Economist list, namely, Statistics Canada and the Australian Bureau of Statistics (ABS). Neither of these agencies has an organisational unit devoted exclusively to “research”; rather, activities are integrated in a way which makes it impossible to identify the two separate and distinct research and operations cultures described by Dillman.

At Statistics Canada, there is an annual budget set aside for research. It is administered by a cross functional committee with representation from the methods and systems design units around the agency. Each year, the committee identifies research priorities and activities. Members of staff express their research interests and these are matched to the priorities and activities. Assignment to research tasks is on a voluntary basis. As a general rule, staff do not work exclusively on research tasks; their research work is blended with other duties. However, a staff member may present a proposal for full-time secondment to a research activity and a few such secondments occur each year. The committee also administers a small number of full-time research fellowships open to outsiders. In addition, the agency draws quite heavily on the consulting services of university staff, both to provide general guidance and to tackle specific research problems. In particular, Jon Rao from Carleton University has spent a half day per week at the agency for many years.

The ABS has even less formal arrangements for research. Research activities may be proposed by any area within the agency during the annual planning process, and they compete with other activities for allocation of resources. The agency also draws upon the research services of other organisations. For example, the Communications Research Institute helped the agency in revolutionising its forms design (Sless 1986) and more recently has been assisting in the redesign of publications. Bo Sundgren (1991) from the Stockholm School of Economics and Statistics Sweden provided the intellectual underpinning for the ongoing data management project, involving reengineering and innovation on a major scale (Colledge and Richter 1994).

The absence of an organisational unit devoted to research does not imply a lack of research work by these organisations as their impressive lists of new procedures,

products and the publication records (Statistics Canada 1994; Australian Bureau of Statistics 1995) testify. It simply means there is no basis for a dichotomy within these agencies into the particular research and operations cultures described by Dillman.

From my perspective, the observations which lead Dillman to postulate the existence of distinct “research” and “operations” cultures can be more generally modelled in terms of two separate cultural divisions, one between “pure research” and “applied research”, and the other between “survey design” and “survey operations”.

#### **4. Pure Research and Applied Research**

Dillman indicates his personal alignment with the pure researchers when he quotes, in horror, the example of a person not supporting a research project, and saying “you’ve convinced me it’ll work. Therefore, we don’t need to test it, let’s just do it”! Based on the description given in the article, rather than being horrified, I have considerable sympathy for that person’s perspective. If something is so obvious as to not warrant testing then it should not be tested. Everything has an opportunity cost. The resources needed for testing could be better spent elsewhere. This difference of opinion can be characterised as being between a pure researcher to whom the purity of the test itself is sacrosanct and an applied researcher who must take into account the likely results of the test, the alternative ways in which resources can be spent in improving product quality, and who may accordingly trim a test back from a “carefully designed treatment factors and full factorial design.”

Typically, the mission of a government survey organisation is along the lines “We assist and encourage informed decision making, research and discussion within governments and the community by providing a high quality, objective and responsive national statistical service” (This happens to be the Australian Bureau of Statistics (1994), mission statement). Thus, a prime objective of a government survey organisation is to produce good quality statistics. In accordance with modern management theory, “quality” must be defined by clients not by the organisation. Quality is “all aspects of the statistics service which influence the usage and the users consider important” according to Eklöf and Lindström (1995) at Statistics Sweden.

Though a survey organisation has a special responsibility for ensuring its statistical products are of appropriate accuracy for the purposes for which they are needed, accuracy is not the only element of quality. Fecso (1989) summarised the four constituents of quality in the context of survey organisation products as relevance, accuracy, timeliness, and cost. Pure researchers tend to have a narrow focus upon accuracy at the expense of the other aspects, particularly cost, whereas an effective allocation of agency resources requires a trade-off between all components of quality. Thus, while Dillman may deplore the dilution of test procedures by impressionistic evaluations, is he taking into account that the resources saved by reducing the scope of a combinatorial experiment on data collection methods might be more profitably spent on improving agency program quality in other ways, for example, conducting an additional survey (addressing relevance), or modifying data capture procedures (to improve timeliness)?

For effective achievement of its mission, a survey organisation requires applied research driven by practical problems and considerations, aimed at improving quality in all aspects. Pure research belongs primarily in universities where, in contrast to survey organisations, staff and students have the mandate to investigate without regard to the probable payback. Of course it is sensible to have some flexibility. An organisation should make the best possible use of its pool of talent, and, if by some accident of personalities and circumstances, an excellent pure researcher finds him/herself a member of a survey organisation, the organisation may consider it worthwhile to make special allowance and give free reign to the researcher's particular talent. The Statistics Canada internal fellowship arrangement even provides a formal basis for such an arrangement. However, this should be the exception, not the rule. Pure research and the culture which accompanies it is out of place within a survey organisation, and, in the absence of substantial numbers of pure researchers, there can be no cultural dichotomy within the agency between pure and applied research.

## **5. Survey Design and Survey Operations**

Most of the examples that Dillman cites as indicative of separate research and operations cultures I would characterise as the difference between "survey design" including applied research and "survey operations." Typically, this form of cultural dichotomy is reinforced by organisational arrangements – designers and operations staff are in separate organisational groups. Designers, specialising in survey methods, tend to move from one survey to the next, while operations staff, specializing in data content, tend to stay with a particular survey or group of surveys. In some agencies, and Statistics Canada and ABS are two examples, there is a further breakdown of operations staff into subject matter specialists and processing specialists. Inevitably there is a tension in the demands made by these groups of staff, and I share Dillman's concern that one set of views may be allowed to dominate. However, in the specific case of ensuring that the factors affecting measurement and nonresponse errors are properly understood and taken into account, I do not think the picture is generally quite as bad as Dillman suggests. Statistics Canada has had a well respected and much consulted questionnaire design unit for nearly ten years. As previously noted, the ABS has received assistance from the Communications Research Institute in improving its forms design procedures. Statistics Netherlands is pushing ahead fast with experiments in electronic collection of economic data which raises some new issues in measurement and nonresponse error as noted by Keller and Stol (1994).

In this context, it is also important to recognise that sampling and non-sampling errors are not the only contributors to product quality, or lack of it. There are trade-offs to be made in the treatment of the many factors which contribute to quality in all its aspects. Dillman's focus on accuracy to the virtual exclusion of other quality components is evident in the section on core value systems which begins with a list of the sources of error but contains no mention of relevance, timeliness, or cost.

## **6. Hierarchical Organisational Structures and Communication**

Dillman refers to the hierarchical organisation of survey organisations and the

corresponding difficulties of introducing innovation and of horizontal communication. While not wishing to deflect attention from the need to deal with such issues, I do not believe that problems stemming from old management styles are restricted to government organisations in general or to statistical agencies in particular. In fact, these problems are widespread, as evidenced by important thrusts within total quality management philosophy aimed at organisational delayering, assigning tasks and responsibilities to lowest possible level, and improving communications. Nor is there any evidence that survey organisations are particularly behind others in seeking solutions.

For example, the use of matrix management for design, development and implementation projects was introduced at Statistics Canada in 1975. It is built into project structure and funding and is so much a part of organisational culture that it is not even explicitly referred to, just taken for granted. As regards communications, in 1993 the ABS introduced Lotus Notes as the basic communication medium throughout its central and state offices. Lack of horizontal communication is absolutely not a problem. Discussion databases invite contributions from all directions. In fact the volume of information at staff members' fingertips is almost overwhelming, and handling this is a more serious issue than encouraging information flow.

## 7. Solutions

I do not argue with the remedies which Dillman advocates; bring in behavioral and social scientists to address measurement and nonresponse errors; ensure operations staff are aware of these errors, and facilitate communication. My basic comment is that they do not go far enough. It is worth promoting an awareness of the factors affecting quality in all its aspects, along the lines of the quality models developed by Statistics Sweden (Eklöf and Lindström 1995) and the U.S. Bureau of Labor Statistics (1994).

In summary, while not wishing to detract from the basic messages that Dillman is espousing, I hope I have shown that the situation is not quite as gloomy as the article generally indicates. Indeed in the very last paragraph of his article, Dillman makes the same point.

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