Questionnaire Design for Business Surveys

A.R. GOWER[1]

ABSTRACT

This paper provides an overview of important considerations that should be taken into account when developing and designing questionnaires for business surveys. These considerations include the determination of objectives and data requirements, consultation with data users and respondents, and methods for testing questionnaires. In developing and designing business survey questionnaires, focus groups and cognitive research methods help the researcher to identify potential sources of measurement error and to understand the response process that respondents go through in completing the questionnaires. Examples of focus groups and cognitive research undertaken by Statistics Canada are provided.

KEY WORDS: Questionnaire testing; Focus groups; Cognitive research.

1. INTRODUCTION

There are many types of business survey questionnaires. Typically, a business survey questionnaire collects information about a company's employees, its inventories, inputs, products, sales, and finances. It may also involve the collection of information related to market research or client satisfaction.

Business surveys are conducted by mail or administered by an interviewer in person or over the telephone. Follow-ups to mail surveys are often conducted by telephone. New data collection technologies for business surveys involve computer-assisted interviewing, fax machines, touchtone self-response, and the electronic transmission of data.

As in other types of surveys, questionnaires play a central role in the data collection process in a business survey. They have a major impact on data quality and on the image that a survey organization projects to its respondents.

The purpose of this paper is to provide an overview of questionnaire design for business surveys. The paper discusses important considerations such as the determination of objectives and data requirements, consultation with data users and respondents, the nature and concerns of business survey respondents, and methods for testing questionnaires.

In developing and designing business survey questionnaires, it is especially important to understand the response process that respondents go through in completing the questionnaires. Therefore, this paper emphasizes the effectiveness of using focus groups and cognitive research techniques to develop and test business survey questionnaires. Examples of focus groups and cognitive research that have been carried out by the Questionnaire Design Resource Centre of Statistics Canada are provided.

2. BUSINESS SURVEY QUESTIONNAIRES

A well-designed questionnaire in a business survey should collect data efficiently, with a minimum number of errors. Moreover, questionnaires should facilitate the coding and capture of data. They should minimize the amount of editing and imputation that is required. They should also lead to an overall reduction in the cost and time associated with data collection and processing (Statistics Canada 1994).

There are many considerations that apply to the development and design of business survey questionnaires. One key consideration is the nature of the respondent population. Business survey respondents answer in their role as employers or employees of a business. How a questionnaire is completed depends on the position and level of responsibility that the respondent holds in the business organization or company. Therefore, it is critical to identify the most appropriate person to provide the information in a business survey.

Response burden is a very real concern for business survey respondents. It depends on the number of questions that are asked, the time required to complete the questionnaire, and the effort that respondents put into searching or manipulating other data sources to provide the information in the format requested.

Businesses vary in size. Large businesses may have employees whose responsibilities include completing government and survey forms. In small businesses, respondents are often the owners or office managers who may not have as much time or flexibility in their schedules to complete the questionnaire.

Information provided by respondents in business surveys typically involves the use of records or other information systems. Questionnaires often contain technical or professional terminology associated with providing financial or administrative data.

[1] A.R. Gower, Questionnaire Design Resource Centre, Statistics Canada, Ottawa, Ontario, K1A 0T6.

Another consideration is the confidentiality and sensitivity of the information that the questionnaire is collecting. In many cases, businesses are concerned about providing confidential financial information that they do not want to reveal to competitors, governments or any other party. Therefore, assurances of confidentiality should be provided. All necessary arrangements should be made for the proper handling and custody of data in order that the confidentiality of information is ensured.

3. THE RESPONSE PROCESS IN BUSINESS SURVEYS

The model of the response process is well-known for household surveys. Answering these types of questions involves comprehension, retrieval, thinking/judging, and responding (Tourangeau 1984). Respondents must first understand the question. They then search their memories to retrieve the requested information. After retrieving the information, they think about what the correct answer to the question might be and how much of that answer they are willing to reveal. Only then do they give an answer to the question.

A corresponding response model for business surveys has also been developed (Edwards and Cantor 1991). Although the business survey model is similar to the household survey model, there are differences. The major difference is that business survey respondents must normally access one or more external sources of information such as financial or administrative records.

The ability of respondents to retrieve the requested information depends upon their familiarity with and understanding of the external source of information. They must also understand the relationship between the survey questions and the external data source. Multiple sources of information may add to the difficulty or complexity of this task. Further complexities may be introduced if the respondent has to consult another individual who can provide the requested information and who, in turn, may have to use one or more data sources (Gower and Nargundkar 1991).

4. DEVELOPMENT AND TESTING OF BUSINESS SURVEY QUESTIONNAIRES

There are several basic steps that are involved in developing and testing business survey questionnaires. These steps are discussed below.

4.1 Determination of the Objectives and Data Requirements

A document should be prepared that provides a clear and comprehensive statement of the survey objectives,

data requirements, and the data analysis plan. This document is a necessary step that leads to the determination of the variables to be measured, the survey questions, and the response alternatives.

When designing the questionnaire, it is important to determine and understand the rationale for each question, how the information will be used, and whether the questions will be good measures of what is required.

4.2 Consultation with Clients, Data Users, Subject Matter Experts, and Respondents

In formulating objectives and data requirements, consultation should take place with clients and data users to fully understand their requirements and expectations. Subject matter experts should be contacted for advice and guidance.

If possible, the survey researcher should consult members of the survey population. This will help identify issues and concerns that are important to respondents, and may affect decisions regarding the content of the questionnaire. In addition, consultation with respondents will identify the language and terminology that respondents themselves use and will help clarify terminology, concepts and definitions.

4.3 Previous Questionnaires

Examining questions that were used in other surveys on the same or a similar topic provides a useful starting point in formulating the questions and response categories. In some situations (e.g., for comparing data over time), the same questions may be used. The researcher should ensure that the questions are phrased so as to provide valid, consistent, and effective measures of the variables of interest.

4.4 The Use of Focus Groups in Developing Questionnaires

A *focus group* is an informal discussion of a selected topic involving participants who are chosen from the survey population. It provides insights into the attitudes, opinions, concerns, and experiences of the participants. A focus group is led by a moderator who is knowledgeable about group interviewing techniques and the purpose of the discussion.

Focus groups provide the opportunity to consult respondents, data users, and interviewers. In the early stages of developing a questionnaire, focus groups are used to develop the survey objectives and data requirements, to identify salient research issues, and to clarify definitions and concepts.

Focus groups are also useful in testing and evaluating questionnaires (see 4.6 below). They are used to evaluate respondents' understanding of the language and wording used in questions and instructions, and to evaluate alternative question wordings and formats.

Recruiting participants from businesses poses unique challenges for focus groups. Monetary incentives or honoraria that are usually offered to focus group participants (currently in the order of $30 to $50 each) may not be appropriate for business people. Assurances of confidentiality and emphasis on the importance of the survey and their participation in the study are more meaningful. Another type of incentive that may be offered is a donation to a non-profit organization of the participant's choice. Statistics Canada often gives focus group participants a copy of a publication that is of interest to them.

Focus groups vary in size from 6 to 12 persons. The optimum size is 7 or 8 persons for business participants, although smaller groups with 4 or 5 people (called mini focus groups or mini groups) are sometimes held. Because of difficulties in finding participants from businesses, focus groups should be conducted at a time that is convenient to the participants. For business people, focus groups are often held during working hours. Focus groups are audio-recorded, and are viewed by observers in an adjoining room behind a one-way mirror. Participants are fully informed that audio-recording is taking place and that they are being observed.

4.5 Considerations in Drafting the Questions

Many considerations go into writing the questions and developing the response categories. It is important to keep in mind the objectives and data requirements as well as how the information will be collected and processed. The questions must relate to the information needs. They must be addressed to the right people in the organization or company.

The method of data collection will determine how the questions and response categories will be formulated. The question wording must be clear, and they must be ordered in a logical sequence. The questions must be designed to be easily understood and accurately answered by respondents. Response categories and time reference periods should be compatible with the business's record-keeping practices; however, this is often difficult to achieve.

The layout of the questionnaire should be attractive. The questionnaire should be *respondent-friendly* and, if administered by an interviewer over the telephone or in person, it should be *interviewer-friendly*.

The questionnaire should appear professional and "business-like". When designing the questionnaire, it should be kept in mind that businesses are asked to complete many forms and questionnaires. Completing them is not a priority. Research conducted by Statistics Canada's Questionnaire Design Resource Centre has shown that typical reactions from businesses to questionnaires are:

- "I complete the shortest form first."
- "Is completion mandatory?"
- "Is there a return deadline?"

In one Statistics Canada study (Gower and Zylstra 1990), a respondent commented that if the answer to these last two questions is "no," then "I put [the questionnaire] in my *maybe I'll get to it someday* basket!"

Respondents frequently question the value of information to themselves and to other users. Some like to receive feedback about the survey. Therefore:

- Explain why it is important to complete the questionnaire.
- Ensure that the value of providing information is made clear to respondents.
- Explain how the survey data will be used.
- Explain how respondents can access the data.

The instructions that go with the questionnaire also require attention. Research carried out by the Questionnaire Design Resource Centre has repeatedly shown that respondents read only what they *think* is necessary to read. They read the boldface print first, and then decide whether they should read further. Respondents rarely read the instructions, and usually proceed directly to the questions. They refer to the instructions only when they *think* they need help. As a result, respondents may miss important instructions and definitions. Errors in reporting are often due to a lack of clear instructions and due to respondents not reading them or not understanding them (*e.g.*, what to include or exclude). Therefore:

- Ensure that instructions are short and clear.
- Tell the respondent where to find the instructions.
- Provide definitions at the beginning of the questionnaire or in specific questions as required.
- Use **boldface print** or underlining to emphasize important items such as the reference or reporting period.
- Specify "include" or "exclude" in the questions and items themselves (not in separate instructions).

Other considerations that should be taken into account in designing business survey questionnaires include:

- Consistency of terminology, questions and response categories with standard concepts and definitions.
- Nature of the respondent population such as record-keeping practices and language ability.
- Availability of the data.
- Response burden.
- Complexity of the data to be collected.
- Comparability of results with other surveys.
- Data reliability.
- Nonresponse.

The design of the questionnaire should also take into account any administrative requirements of the survey organization. For example, Statistics Canada's policy on informing survey respondents (Statistics Canada 1986) requires that key information be explained to respondents. They must be informed about the main purpose(s) of the

survey, the major intended uses of the data, the requirement to respond (compulsory or voluntary), confidentiality protection, and any joint collection or data sharing agreements. At Statistics Canada there are also other administrative or legal requirements. For example, the Official Languages Act of Canada requires that questionnaires be made available to respondents in both official languages (*i.e.*, English and French).

4.6   The Use of Cognitive Methods in Testing Questionnaires

Questionnaire testing is essential to developing effective questionnaires that collect useful and accurate data. Cognitive research methods, sometimes referred to as qualitative testing, are especially useful in testing questionnaires.

Cognitive methods provide the means to examine respondents' thought processes as they answer the survey questions. They are used to ascertain whether or not respondents understand what questions mean and thus help assess the validity of questions and identify potential sources of measurement error. Cognitive methods also provide the opportunity to evaluate the questionnaire from the respondent's point of view. They focus on issues such as comprehension and reactions to the form. This brings the respondent's perspective directly into the questionnaire design process. The use of cognitive methods leads to the design of respondent-friendly questionnaires that can be completed easily and accurately.

In business surveys, cognitive methods are used to investigate the relationship between the respondent and the external information source. They are also used to study the influence that this data source has on the response process. These methods provide the means to assess the compatibility of question wording, time reference periods, and response categories with the business's record-keeping practices.

Cognitive testing methods (Gower 1993) include:

• *In-depth interviews*: The technique involves one-on-one interviews (sometimes called retrospective think-aloud interviews). For a mail questionnaire, respondents first complete the questionnaire as they normally would. An interviewer observes the process, noting the sequence in which the questions are answered, reference made to instructions, and the types of records or other persons consulted. The interviewer also notes the time required to complete sections, and corrections or changes made to responses.

The interviewer then conducts the in-depth interview and obtains information about the respondent's experiences and impressions in completing the form. The follow-up discussion typically involves a question-by-question review of the questionnaire with the respondent to discuss any problems or difficulties that were encountered

while completing the form. The interviewer probes to see how the terms and concepts were interpreted by the respondents, how and why they chose the responses, and how information was recalled.

For an interviewer-administered questionnaire, the questions are first asked by an interviewer either in person or by telephone. The in-depth follow-up discussion takes place following this first interview.

• *Concurrent think-aloud interviews*: These are also conducted one-on-one. The respondent is asked to "think aloud" while answering the questions, commenting on each question and explaining how the final response was chosen. The observer may probe the responses to get more information about a particular statement or to clarify the process through which a response was chosen.

The success of the concurrent think-aloud interview technique depends on the respondent's ability and willingness to articulate and express thoughts aloud. The observer may sometimes have to help the respondent in this task by gentle prompts such as: "what question are you answering now?", "what are you thinking now?", "please explain how you chose the answer", or other probes to clarify the respondent's thoughts. When a respondent is reluctant to verbalize thoughts, the observer may decide that the better approach is to handle the interview as an in-depth interview and proceed accordingly.

Think-aloud interviews are very useful in obtaining respondents' reactions to questionnaires. They are especially helpful in identifying areas of the questionnaire where respondents have difficulty. They also help the researcher understand the process through which the questionnaire is completed.

• *Focus groups*: As described in 4.4, focus groups are used to evaluate respondents' understanding of the language and wording used in questions and instructions. The questionnaire is usually administered before the focus group session, in person, over the telephone or on a self-completion basis.

During the focus group session, the moderator reviews the questionnaire with the participants and discusses any problems or difficulties that they may have encountered when completing the form. Focus groups stimulate and encourage thoughtful analysis of the questionnaire during group discussions of individual participants' comments. They are especially useful in providing suggestions and recommendations for improvements.

• *Paraphrasing*: Paraphrasing is used in one-on-one interviews and focus groups. Respondents are asked to repeat the question in their own words, or to explain the meaning of terms and concepts that are used in the survey questions and instructions.

Paraphrasing helps determine whether respondents read and understand the instructions and questions correctly. Paraphrasing is especially helpful in identifying question wording that is too complex or confusing. It also identifies situations where respondents do not comprehend all the important components of the question (*e.g.*, the reference period).

4.7 Pretesting

Pretesting is a fundamental step in developing a questionnaire. It usually involves a small number of field interviews that are carried out to identify problems with a questionnaire. The entire questionnaire or only a portion of it may be tested.

Pretests are useful for discovering poor question wording or ordering, errors in questionnaire layout or instructions, and problems caused by the respondent's inability or unwillingness to answer the questions. Pretests are also used to suggest additional response categories that can be precoded on the questionnaire. Pretests provide a preliminary indication of the interview length and refusal problems.

The pretest sample can range in size from 20 to 100 or more respondents. If the main purpose of the pretest is to discover wording or sequencing problems, only a small number of interviews may be required. More interviews (50 to 100) are necessary to determine pre-coded answer categories for open-ended responses. Respondents for pretests are usually selected purposively rather than randomly.

The questionnaire for a pretest should be administered in the same way as planned for the main survey (*e.g.*, interviewer-administered in person or by telephone). A pretest of a mail questionnaire is more effective if interviewers are used. Interviewers can be used to deliver the questionnaire and, later, to discuss any problems. The questionnaire designers should observe as many pretest interviews as possible.

Pretesting is not as effective as cognitive methods in evaluating respondents' understanding and the difficulty of the response task. Pretesting only indicates whether there is a problem. Without further investigation, it does not identify why there is a problem nor how it can be corrected.

Debriefing sessions with interviewers often occur in conjunction with a pretest. Interviewers involved in a pretest can identify important problem areas where the questionnaire can be improved. When existing questionnaires are redesigned, it is useful to consult interviewers to get their input into the redesign process. Interviewers have excellent insights into the logistics of administering the questionnaire and how it affects respondent cooperation.

Behavioral coding also can be conducted at the time of pretesting. The interview is audio-recorded, following which the interviewer and respondent behaviours during the interviewer-respondent interaction are coded and analyzed. Behavioral coding provides a systematic and objective means of examining the effectiveness of the questionnaire. It also helps to identify problem areas such as an interviewer failing to read the question as worded or a respondent asking for clarification of the question or response task.

4.8 Formal Testing Methods

Formal testing methods are quantitative in nature. They are designed to provide a statistical evaluation of how the questionnaire performs. Pilot studies and split sample testing are two commonly used types of formal testing methods. These methods are more suitable for large scale and continuing surveys because of the significant cost involved in implementing them and analyzing the results.

A *pilot study* is conducted to observe how all the survey operations, including the administration of the questionnaire, work together in practice. A pilot study is a "dress rehearsal". It duplicates the final survey design on a small scale from beginning to end, including data processing and analysis. It allows the survey researcher to see how well the questionnaire performs in relation to all other parts of the survey. There are some problems that can only be identified when all phases of the survey are tested together. For example, typographical errors and problems with question wording or concepts that need further clarification may be identified during interviewer training. The data processing phase may reveal keying problems with the precoded item numbers and/or answer categories (DeMaio 1983).

Normally, the questionnaire should be thoroughly pretested before a pilot study takes place. A pilot study is usually not the time to try out new questions or approaches. If previous testing has been carried out, it is unlikely that the pilot study will result in major changes to the questionnaire. The pilot study, however, does provide the opportunity to fine-tune the questionnaire before its use in the main survey (DeMaio 1983).

Split sample testing is conducted to determine the "best" of two or more alternative versions of the questionnaire. Split sample testing is also referred to as a "split ballot" or "split panel" experiment. It involves an experimental design that is incorporated into the data collection process. A split sample test can be designed to investigate issues such as question wording, question sequencing, the location of sensitive items, and data collection procedures. In a simple split sample design, half of the sample is selected at random and might receive one experimental treatment and half, the other. In a test that involves two experimental treatments, a 2×2 factorial design might be used with each of the two treatments in each experiment being tested on half of the sample (DeMaio 1983).

A split sample design can also be used in continuing surveys that assess trends over time and compare results across surveys. In these types of surveys, there often is a concern that any change in the questionnaire or procedures may affect other data items besides the items being added or revised. In these cases, a split sample design may be used with a random sample of the respondents receiving the "old" questionnaire and the rest, the "new" questionnaire. Comparisons with earlier data can still be made by using the old questionnaire for most or part of the sample (DeMaio 1983).

4.9 Review and Revision of the Questionnaire

The questionnaire should be reviewed by someone outside the project team. Reviewers could include subject matter experts or persons who have experience in designing questionnaires. A review can take place at any or all stages of the questionnaire development process, causing revisions in the questions and response categories.

Questionnaire design is an iterative process. Throughout the whole process of questionnaire development, revision and testing, changes will be made continually to improve the questionnaire. Objectives and information requirements are stated, evaluated and decided upon, data users and respondents are consulted, proposed questions are drafted and tested, questions are reviewed and revised, until a final questionnaire is developed.

5. APPLICATION OF FOCUS GROUPS AND COGNITIVE RESEARCH METHODS TO TEST BUSINESS SURVEY QUESTIONNAIRES

Statistics Canada has found that focus groups and cognitive research methods are very useful in developing and testing business survey questionnaires. These methods provide the opportunity to understand the cognitive processes involved in formulating responses to survey questions. They bring the respondent's perspective directly into the questionnaire design process and lead to the design of respondent-friendly questionnaires (Gower and Nargundkar 1991).

Statistics Canada's applications of focus groups and cognitive research methods for business surveys include the developing and testing of questionnaires for the following surveys:

- Survey of Employment, Payrolls and Hours (Bureau 1991; Goss, Gilroy and Associates Ltd. 1989; Goss, Gilroy and Associates Ltd. 1990).
- Census of the Construction Industry (Gower and Zylstra 1990; Price Waterhouse Management Consultants 1990).
- Wholesale and Retail Trades Survey (Noonan 1992).

- National Training Survey (Kennedy and de Groh Consultants 1992; D.R. Harley Consultants Limited 1993).

These studies involved the application of one or more of the following methods: focus groups, in-depth interviews, concurrent think-aloud interviews, and paraphrasing. All studies were carried out under the coordination and general direction of Statistics Canada's Questionnaire Design Resource Centre (Gower 1991).

Each of the studies has demonstrated the importance of and benefits to be gained from consulting with members of the target population before developing and finalizing the questionnaire. The studies have provided valuable insights into the response process and have identified various factors that contribute to measurement errors in business surveys. These factors include the respondents' perceived value of the information, their perception of response burden, the compatibility of questions with their record-keeping practices, the placement and use of instructions, the availability of data, and the complexity of the response task (Gower and Zylstra 1990).

Highlights from two of the studies, the Census of the Construction Industry and the National Training Survey, are discussed below.

5.1 Census of the Construction Industry

The annual Census of the Construction Industry was designed to provide comprehensive statistics on the construction industry in Canada. The target population consisted of establishments whose main revenue was derived from construction activity. There were two separate questionnaires for (a) General Contractors and Developers and (b) Trade Contractors and Sub-Contractors. The questionnaires, which were mailed to respondents, collected data on revenues and costs, labour data, and output distributions.

The questionnaires used in 1988 for the Census of the Construction Industry were redesigned for the 1989 survey. The main objectives of the revision were to reduce the content and response burden and to respond to the need for major improvements to the existing questionnaires.

A pretest of the revised questionnaires took place to obtain the reactions of contractors (Statistics Canada 1989). The pretest indicated that the revised forms were well received and understood by respondents. Some areas for further improvement such as changes to question wording and the clarification of certain instructions were identified.

To learn more about how respondents would view the revised questionnaires and to ensure that response rates and data quality would be maximized, further testing of the questionnaires using focus groups and cognitive methods was carried out in early 1990. This phase of testing was designed to obtain in-depth information on the following issues:

- How respondents felt about the questionnaires.
- The process that respondents went through to provide the information.
- The layout, presentation, and readability of the questionnaires.
- The extent to which respondents read and understood instructions and questions.
- Problems encountered by respondents while completing the questionnaires.
- Whether instructions and definitions were necessary, understandable, and useful.
- The accuracy of information provided by respondents.
- The use of estimates by respondents and their accuracy.
- The types of records from which information was obtained.
- The compatibility of the questions and response categories with respondents' record-keeping practices.
- Response burden in terms of time and effort.

The scope of the research included both the General Contractors and Developers questionnaire and the Trade Contractors and Sub-contractors questionnaire. Approximately 50 construction firms participated in the study. They were chosen to represent the types of respondents who completed the Census of the Construction Industry questionnaires. Twenty-five in-depth interviews, 16 concurrent think-aloud interviews, and 2 focus groups were conducted in Ottawa, Montréal and Toronto. All one-on-one interviews took place at the respondent's place of business.

A very interesting finding from the study was that there were two distinct groups of respondents. The first group of respondents included the president or vice-president of a company, who often had to consult other individuals to complete certain questions. It took these participants 35 to 45 minutes to complete the questionnaire. They were more likely to make estimates based on their familiarity with the company and were less concerned about accounting for differences between the questionnaire and the source of information used to complete the form.

On the other hand, respondents such as office managers, accountants and comptrollers took 75 to 90 minutes to complete the questionnaire. These respondents were much more concerned with detail and providing accurate answers. They were more likely to use multiple sources of information and to make calculations in answering the survey questions (Gower and Zylstra 1990; Gower and Nargundkar 1991).

Many respondents indicated that completing the questionnaire was not a priority. They viewed the survey as only one of the many forms and questionnaires that they had to complete each year. Many participants indicated that they often waited for the follow-up telephone call, and some even preferred, to answer the questionnaire over the telephone. They said that, over the telephone, they could

make estimates "off the tops of their heads" instead of carefully completing the form, and this required much less time and effort on their part.

The response burden was more perceived than real. Upon completing the questionnaire, many respondents remarked that it took surprisingly less time and was easier to complete than they had anticipated.

A common theme that emerged during the interviews and focus groups was the perceived value of the information being collected. Respondents wanted to know the purpose of completing the questionnaire and often questioned the value of the information to themselves and to other users of the information. Therefore, a major finding of the research was that the value of providing the information must be made clear to respondents. They wanted to know how the survey results were going to be used. They were also interested in learning how they could access the data.

Overall, the questionnaires were very well received by respondents. They appreciated the "business-like" appearance and approach of the questionnaires. Many were familiar with completing previous questionnaires for the Census of the Construction Industry. They felt that the redesigned forms were an improvement over the previous versions because they seemed shorter and less complicated. This was positive feedback and reassurance for the survey managers who designed the new questionnaires (Gower and Zylstra 1990; Price Waterhouse Management Consultants 1990).

The study identified many specific findings about how the questionnaires could be improved and made more "respondent-friendly". While the pretest provided valuable feedback about response rates and the completeness of reporting, the focus groups and cognitive research added significantly to these findings by providing in-depth, first-hand information about *how* and *why* respondents reacted to the questions as well as about *how* and *why* responses were chosen.

Figures 1 and 2 illustrate a few of the specific findings and how the questionnaire was improved based on these findings (Gower 1993). Figure 1 shows parts of Sections 2 and 4 of the 1988 version of the questionnaire for General Contractors and Developers, *before testing*. Figure 2 shows the corresponding parts of the final version of this questionnaire, *after testing*.

Section 2 – Statement of Income

On the final version of the questionnaire (Figure 2):

- A statement is provided at the beginning of Section 2, telling respondents that they could include their company's Financial Statements. On the version of the form (Figure 1) that was tested, many respondents missed this instruction because it appeared on a separate page of instructions.

Figure 1 (*before testing*): 1988 Census of the Construction Industry (General Contractors and Developers), Statistics Canada

SECTION 2. STATEMENT OF INCOME		Dollars (Omit cents)

REVENUE

2.1 Revenue from construction contracts . . . .   `101`

2.2 Other operating revenue, please specify:

Type		Value	
102		103	$
104		105	
106		107	
108		109	

Total   `110`

2.3 **Total gross operating revenue** (sum of items 2.1 and 2.2) . . . .   `111`

2.4 Accounting method is: 1 ☐ completed contract

                        2 ☐ percentage of completion

DIRECT COST

2.5 Work in progress, opening (add, if required for direct cost calculation) . . . .   `112`

If direct cost detail is not available, please report percentages of total (item 2.15, sum should equal 100).   **Percentage**   or

2.6 Sub-contracts . . . .   `113`

2.7 Materials and supplies used (adjusted for change in inventory) . . . .   `114`

2.8 Wages paid to hourly-rated employees (gross, before deductions for income tax, pension plans, insurance, etc.) . . . .   `115`

2.9 Direct salaries paid to site supervisors, etc. (gross, before deductions for income tax, pension plans, insurance, etc.) . . . .   `116`

2.10 Employee benefits (employer contributions not included in 2.8 and 2.9, such as pension plans, insurance, etc.) . . . .   `117`

   `118`

2.11 Land . . . .

Cost includes (please check):   1 ☐ undeveloped land
                                    2 ☐ services, carrying charges, etc.
                                    3 ☐ serviced lots

2.12 Repair and maintenance of machinery and equipment . . . .   `119`

2.13 Equipment rental (without operator) . . . .   `120`

2.14 Other direct cost . . . .   `121`

2.15 **Total direct cost (sum of items 2.6 to 2.14)** . . . . **100** `122`

2.16 Work in progress, closing (deduct if required for direct cost calculation) . . . .   `123`

2.17 **Total direct cost charged to contracts (item 2.5 plus 2.15 minus 2.16)** . . . .   `124`

SECTION 4. LABOUR FORCE

4.1 For wages paid to your hourly paid labour force, reported in item 2.8, please report hours worked:

`201` [____] hrs.   or average hourly rate: $ `202` [____] / hour

N.B.: Reported figure should be hours worked, i.e. one hour overtime paid at time and a half should be counted as one hour.

4.2 For direct salaries paid, reported in item 2.9 please provide average annual number of employees:

`203` [____] employees

4.3 For overhead salaries paid, reported in item 2.19 please provide average annual number of employees:

`204` [____] employees

Figure 2 *(after testing)*: 1989 Survey of the Construction Industry (General Contractors and Developers), Statistics Canada

SECTION 2. STATEMENT OF INCOME `201`					Dollars (Omit cents)

Instead of completing this section, you may include your company's Financial Statements, together with your otherwise completed questionnaire. *If financial statements are included, go directly to Section 3.*

REVENUE

2.1 Revenue from construction contracts . . . . `202`

2.2 Other operating revenue, such as sales of materials, land sales, project or construction management, rentals of equipment and buildings, snow removal, consulting engineering fees. *Please specify*:

Description

	`203`	`207`	
	`204`	`208`	
	`205`	`209`	
	`206`	`210`	

2.3 **Total gross operating revenue** *(sum of items 202 and 207-210)* . . . . `211`

2.4 Please check accounting method used: 1 ☐ complete contract `212`
2 ☐ percentage of completion

DIRECT COSTS

2.5 Work in progress, opening *(add, if required for direct cost calculation)*. Work in progress is defined as inventory of uncompleted and unbilled construction work done . . . . `213`

Only if direct costs detail is not available, please estimate percentages of total direct costs *(item 234, sum should equal 100)*

	Percentage	**or**	Dollars
	`214`		`224`
2.6 Sub-contracts *(include equipment rental with operator)*	`215`		`225`
2.7 Equipment rental without operator	`216`		`226`
2.8 Materials and supplies used *(adjusted for change in inventory)*	`217`		`227`
2.9 Wages paid to any hourly-rated employees *(gross, before deductions for income tax, pension plans, insurance, etc.)*	`218`		`228`
2.10 Direct salaries charged to contract and paid to permanent staff, such as foremen, site supervisors, etc. *(gross, before deductions for income tax, pension plans, insurance, etc.)*	`219`		`229`
2.11 Employer portion of employee benefits, such as pension plans and insurance. *(Report only if employee benefits are not included in wages and direct salaries above)*	`220`		`230`
2.12 Cost of land included in sales	`221`		`231`
2.13 Repair and maintenance of machinery and equipment	`222`		`232`
2.14 Depreciation charged to contracts	`223`		`233`
2.15 Other direct costs *(any other direct costs not separately reported above, such as pre-constuction costs, site costs, fees, advertising, fuel, etc.)*	**100**		`234`

2.16 **Total direct cost** *(sum of items 224 to 233)* . . . .

2.17 Work in progress, closing *(deduct if required for direct cost calculation) For definition of work in progress see question 2.5 above* . . . . `235`

2.18 **Total direct costs charged to contract** *(item 213 plus 234 minus 235)* . . . . `236`

SECTION 4. LABOUR FORCE

4.1 Please report hours worked by your hourly paid labour force *(whose wages were reported in item 227)*:

N.B.: Reported figure should be hours worked, i.e. one hour overtime paid at time and a half should be counted as one hour. Figures for hours worked may be obtained from payroll records or Workers Compensation Board reports.

`401` hours

Only if hours worked are not available,
please report average (straight-time) hourly rate:

`402` $ / hour

4.2 Please report the average annual number of direct salaried employees *(whose salaries were reported in item 228)*:

`403` employees   *Exclude owners and partners of unincorporated businesses*

4.3 Please report the average annual number of overhead salaried employees *(whose salaries were reported in item 237)*:

`404` employees   *Exclude owners and partners of unincorporated businesses*

4.4 Number of professional engineers included in item 404:

`405` engineers

- Reference is made to line numbers (*e.g.*, 202 and 207-210) instead of item numbers (*e.g.*, 2.1 and 2.2). Although the line numbers are actually data code numbers, respondents viewed them as line numbers because they appeared similar to the common and well-known use of line numbers on the Canadian Income Tax forms.
- Important information such as definitions and what to include are provided in the items themselves instead of on the Instructions page.
- Respondents are only required to report estimated percentages if detail about direct costs is not available. This choice has been made clearer by printing "**or**" in large and bold print.

Note that, in completing Section 2, respondents consulted the following types of records: financial statements, on-line accounting systems, progress or work-on-hand billings, project reports, general ledgers, working papers, and audit statements.

Section 4 – Labour Force

On the final version of the questionnaire (Figure 2):

- Question 4.1 includes information that "hours worked" may be obtained from "payroll records or Workers' Compensation Board reports". During the think-aloud interviews, respondents noted that they consulted these types of records for the information.
- Clarification is provided that "average hourly rate" is to be reported "only if hours worked are not available".
- Important information and instructions are included in the question items. For example, during testing, most respondents did not exclude owners and partners in reporting the numbers of employees in items 4.2 and 4.3 (even though this was specified on the Instructions page).

5.2   National Training Survey (NTS)

Two separate research studies, each involving the application of focus groups and cognitive research methods, have been used during the development and testing of the questionnaire for the National Training Survey (NTS).

The purpose of the NTS is to collect information on employee training and development in the private business sector. Respondents are asked to provide data on the type and volume of training, the number of trainees and their occupational groupings, the characteristics of the businesses providing training to their employees, and the amount of money being spent on this activity. In large businesses, respondents are the persons involved in the human resource planning and training areas of their company, while in smaller businesses they are typically the owner or chief executive officer.

At an early stage in developing the questionnaire, focus groups and in-depth interviews were held with representatives from small, medium and large companies. These methods were used because Statistics Canada felt it was important to consult representatives of the business community to ensure that their interests and concerns about training were considered in the design of the NTS questionnaire.

The focus groups and interviews evaluated the clarity and appropriateness of terminology and concepts associated with the training of employees within a business establishment. The study investigated respondents' understanding of terms such as "formal training" and "informal training" as well as their ability to use these terms to categorize their training activities.

Findings from this early phase of testing illustrated the importance of consulting with respondents before finalizing the terminology and concepts used in questionnaires. The findings from the study provided the survey project team with important information and insights into how the survey questions should be worded and how response options should be categorized.

For example, a significant finding from the focus groups and in-depth interviews was that many companies did not use the terms "formal" or "informal" to describe training activities and did not see the advantage or need to differentiate between the two terms. Many also perceived that there was no clear distinction between the terms "formal" and "informal" that would enable easy categorization of training activities.

The study helped the survey designers understand how respondents interpret terms and concepts. Participants provided suggestions on the appropriate terminology for them. For example, although they had difficulties with the terms "formal" and "informal," participants were able to provide characteristics to define these terms. They described formal training as having "a formal structured curriculum or course outline with a beginning, middle and an end; that it has known objectives or clearly defined goals; that it has an evaluation component; .... [and] that [it] has a dollar cost." On the other hand, most participants perceived "informal training" to be on-the-job training having no structure, often involving learning by observing. "Lack of evaluation" was another characteristic often suggested to define informal training.

Another interesting finding was that many participants made a distinction between "training" and "developmental or educational activities". The term "training" was not seen to cover all the activities that employers provide to support employee development. Some participants viewed "training" as job-specific and related to job productivity, and "development" as related to increasing the knowledge base of the individual (Kennedy and de Groh 1992).

After the draft NTS questionnaire was developed, it was tested using focus groups and concurrent think-aloud interviews. Representatives of a variety of businesses as well as a mixture of small, medium and large firms participated in the study. The study examined the following issues:

- The most appropriate person within a business to respond to the survey.
- How best to reach respondents.
- The process that respondents went through to provide the information.
- The way in which respondents understood the questions and instructions.
- Respondents' reaction to vocabulary and the groupings and classifications of occupations in the survey.
- Whether the information sought in the survey was readily available.
- The types of records from which information was obtained.
- The compatibility of the questions and response categories with respondents' record-keeping practices.
- Whether the reference periods requested in the survey corresponded to the record-keeping practices of respondents.
- Response burden in terms of time and effort.

Seven focus groups and 26 interviews were conducted in Ottawa, Toronto, Montréal, and Vancouver. In the final report (D.R. Harley Consultants Limited 1993), the Contractor reported many findings and made several recommendations to improve the questionnaire.

As in other studies of business surveys, a major finding was that many participants questioned the purpose behind the survey. They wanted to know why the information was being collected and how the survey results were going to be used. A strong theme that emerged throughout the focus groups and interviews was that respondents wanted to know "What's in this for me?"

Some participants suggested that the data be aggregated nationally, provincially and by sector so that they could compare themselves to other companies in their areas of business and in their part of the country. As one respondent said, "I would want the data to be specific to our industry with the volume and type of training that's being provided . . . . It should allow us to compare ourselves to others in our sector – number of employees being trained and the percentage of payroll being spent on employee training."

Many small and medium-sized business respondents found the questionnaire too broad and the level of detail too complicated for them to answer. In their opinion, the questionnaire was designed for larger organizations. For example, many small businesses felt that they could not fit themselves into the categories provided by the questionnaire. They felt that much of their training fell into the "unstructured" category, and that the questionnaire was not capturing this aspect of training. However, at the same time, there were other respondents from small and medium-size businesses who commented that the questionnaire was thorough and complete.

The larger businesses also had difficulty with the level of detail being requested by the survey. The major problem was that they keep training records by type of training that employees receive rather than by the occupational category of the people being trained.

Overall, a variety of record-keeping practices were observed. Some businesses keep excellent records on training, while others do not. Participants, who did not keep good records or whose records did not contain the requested information, found the questionnaire difficult to answer. Others, who had sophisticated records, could manipulate their data to fit the questionnaire. The one exception was the questions on training expenditure for which they found it difficult to provide detailed information. Global figures were more easily available, they said. Many businesses indicated that their training records were not centralized, thus making the questionnaire more difficult and requiring longer time to complete. They said that they would complete what they could, and then coordinate the completion of the rest of the questionnaire by forwarding it to many parts of their organization.

Although many participants were initially overwhelmed by the size and apparent complexity of the questionnaire, they found it easier to complete than expected. Many found that the thoroughness of the questionnaire actually made them remember many training activities that they would not ordinarily have reported on.

Most participants felt that the questionnaire should be shorter. But they also suggested adding a few more open-ended questions about future training. In terms of response burden, respondents (especially in medium-sized and large-size companies) found that the questions about training expenses, training hours, and the numbers of employees trained by occupational categories would require hours of work to compile.

Differences were found in the time it took respondents to complete the questionnaire. Small businesses took between 10 minutes and 1 hour to complete the questionnaire. Large businesses, on the other hand, estimated that it would take about 2 hours to complete the questionnaire (D.R. Harley Consultants Limited 1993).

6. CONCLUDING REMARKS

This paper has provided an overview of questionnaire design for business surveys. As the paper has pointed out, many considerations go into designing business survey questionnaires. They include the survey's objectives and data requirements as well as consultation with data users and respondents on the nature and concerns of the respondent population. Other considerations are response burden, the method of data collection, the availability of data, and the use of records, as well as the need for testing the questionnaires.

Specific design issues that should be taken into account include the instructions, the clarity and readability of the

questions, the logical sequencing of the questions, the compatibility of response categories and reference periods with respondents' record-keeping practices, and data processing requirements. The questionnaire should be respondent-friendly and interviewer-friendly.

To ensure the collection of accurate and useful data in business surveys, it is important to understand the response process that respondents go through in completing a questionnaire. Focus groups and cognitive research methods are very effective ways to study this response process and to test questionnaires. They provide the opportunity to consult directly with respondents and, thereby, to bring their ideas, concerns, and suggestions into the questionnaire design process.

Looking towards the future, research and experience should lead to improvements in the methods and approaches that are currently used to develop and test business survey questionnaires. An important area that requires more research and development is the relationship among the questionnaire, the respondent, and the external information source as well as the influence that this relationship has on the response process and the accuracy of reporting.

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