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Conducting research on the response process in business surveys

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Abstract. Measurement errors in business surveys can be a serious obstacle to achieving accuracy in economic data, yet knowledge about such errors is relatively modest. It is thus not surprising that approaches to gain this knowledge remain inconsistent and have been rarely discussed. Research into the response process has proved beneficial in revealing and evaluating the sources of measurement errors in surveys of individuals. This article proposes a blueprint for conducting research into the response process in business surveys in line with modern quality thinking. It analyzes the methodological and practical challenges of such research and illustrates them with an empirical study of the response process in a business survey conducted in cooperation with the Statistical Office of the Republic of Slovenia.

Keywords: Business survey, measurement error, qualitative research, response process

1. Introduction

Economic data have always been important for the successful performance of governments, enterprises, and other institutions, yet their relevance, accuracy, and timeliness have never been so much in the spotlight as they are in the information society. Accuracy is a required characteristic of data quality, and all other quality dimensions are judged against accuracy [25]. In business surveys, error reduction has traditionally focused on sampling errors, frame errors, and nonresponse, and to a lesser extent on measurement errors [47]. On the one hand, fewer measurement errors have been expected in business surveys because respondents are considered more competent and well equipped with business records to perform the survey task. On the other hand, the progress of sampling theory occupied most of the methodological development during the first half of the twentieth century [31]. Quality frameworks of the most prominent statistical organizations acknowledge the importance of measurement errors, but methods for assessing measurement errors and information on measurement errors required for quality reports are still inconsistent.

Most of the research exploring the sources of measurement errors in business surveys has been tentative or hypothetical rather than based on actual data collection, which is consistent with the relative abundance of pretesting and the scarcity of quality assessment research. In addition, research is often restricted to an expert evaluation of the survey questionnaire [47]. Rare on-site visits are usually dedicated to the pretesting of a new or redesigned questionnaire, which may also be limited to a subset of survey questions. It may also be difficult to reliably replicate the research because all the necessary protocol details are rarely revealed in published research. As a result, knowledge of measurement errors in business surveys is modest despite its significance.

This article systematically analyzes the challenges of designing and implementing a qualitative study of the actual response process in a business survey that aims to reveal and evaluate the sources of measurement errors. Its focus is on developing the methodology of such a study. It discusses the key issues concerning the methods of data collection, the selection of study units, the design of protocols, the logistics of data collection, and the methods of data analysis.

These issues are illustrated here with an empirical study carried out in 2005 that aimed to shed light on an actual response process from start to finish in a typical business survey, with emphasis on the business perspective to identify and evaluate potential sources of measurement errors. The business survey under study was the Quarterly Survey of Trade (QST) conducted by the Statistical Office of the Republic of Slovenia (SORS). In terms of generalizability to other business surveys, this survey is an appropriate candidate for examination because it was a mandatory recurring survey conducted by a governmental organization. The survey instrument mainly collected quantitative business data on sales, stock (i.e., inventory), and employment to track changes in totals and structures. Data collection was self-administered and conducted by mail. Nevertheless, survey staff occasionally came in direct contact with businesses, such as during nonresponse follow-up or editing. The editing staff first checked the returned questionnaires manually for missing data and major inconsistencies. After a manual double entry of numerical survey data, computerized edits were carried out and some businesses were contacted to clarify major inconsistencies or to confirm unexpected responses. Finally, subject-area specialists analyzed the aggregate data and verified any remaining critical deviations that had a significant impact on the aggregate estimates before the release (for more detail, see [4]).

Design and procedures of the QST influenced the methodology of the empirical study of the QST response process. This article argues for the decisions made in conducting the research and discusses validity issues that are especially pronounced at this early stage of systematic research into the response process in business surveys. It concludes with recommendations for survey work and future research.

2. Methods of data collection

Several methods pertaining to the qualitative research tradition can be used to examine the response process and the potential sources of measurement errors in a business survey. Data can be collected by conducting an expert evaluation, by observing the process, or by interviewing the people involved in the process. Previous research has shown that the methods are usually complementary; in spite of the overlap, one method cannot fully substitute for another because each has its own strengths and limitations [17,36]. It is therefore best to find a suitable mix of methods within the available resources and time frames. This section first provides an overview of the most common methods adequate to the study of the response process in business surveys and then describes the empirical study on the QST response process.

2.1. Scope of expert evaluation

According to Forsyth and Lessler [15], expert evaluation methods do not involve interaction with respondents and include behavior coding, expert analysis, and cognitive forms appraisal methods. Behavior coding is suitable only for interviewer-administered surveys, while an expert analysis (or expert review, desk review, or paper review) does not depend on the survey mode. It focuses on the questionnaire, indicating potential sources of measurement errors in the survey. Experts may belong to four different categories: questionnaire design experts, questionnaire administration experts, subject-matter experts, and computer-based expert systems [48].

Questionnaire design experts typically focus on the wording, structure, and order of questions; the response alternatives; the navigational rules of the questionnaire; and instructions given to interviewers [22]. They may be assisted by computer-based expert systems [21]. However, business surveys often use labels instead of questions, their terminology is closely related to the contents, and the requested information is complex and technical. Therefore, it may be necessary to evaluate the questionnaire layout separately from its contents, which is the domain of subject-matter experts. The evaluation of the questionnaire layout can use the design principles for self-administered questionnaires developed and promoted by Dillman and his colleagues [12,26,39]. As Ramirez suggests [38], when consulting subject-matter experts, we should preferably use a combination of specific questions on survey items and a well-structured schedule so as to avoid the risk of a misplaced focus. He also cautions against the lack of depth in an expert's commentary, as some experts may confine themselves to problems.

Questionnaire administration experts typically include experienced interviewers. Interviewer debriefing can provide useful insights into the response process. However, interviewers rarely administer business surveys. Questionnaire administration experts are thus often overlooked in business surveys, although direct contacts with business respondents occur, for instance, during respondent selection, telephone reminders, and follow-up. In fact, Rowlands, Eldridge,

and Williams [40] suggest using interviews with data-editing staff as a cost-effective means of questionnaire evaluation. They hold that data editors obtain a useful insight into the business perspective on the questionnaire's completion, though their contacts are confined to somewhat problematic businesses that failed the validation check and they may lack an adequate understanding of the underlying issues because of inadequate training.

Although in practice an expert analysis may be the only evaluation of a questionnaire, the procedures and outcomes of expert analysis have not been well documented [47]. To standardize an expert review in establishment surveys, questionnaire appraisal (or cognitive forms appraisal, questionnaire appraisal coding system, or expert appraisal) may be used [16]. With this type of questionnaire evaluation, codes are developed on the basis of a survey response model and assigned to question features that are likely related to measurement errors [29]. Standardization can be particularly helpful in comparisons, but it may reduce the openness to unexpected problems.

Evaluation of an ongoing business survey may also incorporate a systematic review of completed forms, which consists of examining errors, handwritten comments, crossed-out words and numbers, and so on, which provide information on the response process such as the presence of multiple respondents or misleading design (see, e.g. [20]). This is a relatively cheap and easy evaluation method for paper self-administered business surveys, as it can be done any time after the survey and places no burden on businesses.

2.2. *Feasibility of observation*

The most straightforward method for studying the response process is to observe it as it is happening. Despite the reliability of structured observation based on a predetermined schedule, it may be more advantageous to be open to the discovery of unexpected elements [3]. Observation as a stand-alone method was not widely practiced in business surveys, because of their prevalent self-administration mode, until the advent of Web surveys, which are exposed to usability testing. Because business surveys usually involve the retrieval of data from records or from other people, conducting an observation of the response process in a laboratory setting is unreasonable. In such a case, the only option that will provide any insight is *in situ* observation of the response process [20,24]. It is technologically possible to capture interactions with records or between people in their entirety: video recording and computer data logging may produce the best type of field notes, with every detail perfectly registered. Yet management may view such documentation as an unacceptable intrusion into daily activities or as violating confidentiality. Moreover, the additional cost of such documentation may be nonnegligible and the abundance of collected data may reduce any immediate insights. As a result, observation alone usually offers only partial insight.

Conducting observation has disadvantages with or without technological support. One of them is the usual unfamiliarity with the file storage system or software, which calls for complementary methods such as interviewing. Another unavoidable drawback is potential reactivity. It is important to understand how the observer (and the recording device) affects the situation and which factors contribute to the observation, as objectivity is illusory [1]. Last but not least, observation is time consuming.

2.3. *Capacity of interviewing*

The purpose of interviewing is to collect information directly from the people involved in the process of responding to a survey. Debriefing respondents in a response analysis survey is inappropriate if we want to follow the exploratory path. A better option is to adopt a qualitative research interview.

Previous research on the survey response process in surveys of individuals relied heavily on cognitive interviewing. Although various techniques can be found under the umbrella of cognitive interviewing, they all produce verbal reports [10]. The verbal material beyond a simple survey response is then used to evaluate whether the questions are capturing information as intended [5]. Two techniques are most commonly associated with cognitive interviewing: thinking-aloud interviews and verbal probing.

In a thinking-aloud interview, respondents are encouraged to verbalize their thoughts while answering the survey questions [49]. As Ericsson and Simon argue, the main characteristic and strength of thinking-aloud interviews is that they minimize the elapsed time between the inception of a thought and its reporting, and so they capture thoughts in the respondents' short-term memory that may otherwise be lost (as cited in [15]). Because the interviewer intervenes minimally, the information provided may be unexpected and thus especially valuable [48].

However, the task of answering questions in a recurring business survey does not possess those character-

istics that have been cited in the literature as enhancing the validity and efficacy of the thinking-aloud technique, namely, being verbal, novel, interesting, and engaging; having an emphasis on problem solving and decision making; and involving conscious, higher-level, long-enough verbal processes [48]. It can be assumed that the recurring character of a survey brings routine and automatic unconscious processing into the response process, which means that respondents do not think a lot or enough about the task and retrieve some information directly from memory. The task is not completely verbal; it requires the processing of numerical, symbolic, and graphic information in addition to the reading or scanning of a considerable amount of written text as well as interacting with business records. The only promising feature of the task is that it emphasizes problem solving and decision making. Therefore, it seems only appropriate to use such interviews with those people who are to fill out the questionnaire for the first time.

The other common variety of cognitive interviewing, verbal probing, presents itself as a suitable approach for people who are already participating in the survey. Verbal probing is administered after the response has been provided. Interviewers tend to use expansive probes designed to obtain additional narrative information and confirmatory probes to check their understanding of the respondent's answers; however, traditional cognitive probes to induce interpretation of terms, thought processes, and answers are used modestly [5,6]. In fact, Gerber [18] proposed using in-depth interviews separately or immediately after cognitive interviewing to collect information on how respondents use concepts and terminology. This ethnographic interviewing provides a means to extend our understanding of the phenomenon under study with the respondent providing supplemental background, cultural, and other contextual information.

A specific approach designed to test self-administered questionnaires, which business surveys usually are, is the Three-Step Test Interview, which combines thinking-aloud and verbal probing (see [23]) to best exploit the comparative benefits of both techniques. Such interviews consist of first observing the actual completion of the questionnaire with the help of concurrent thinking aloud, conducting a focused interview to remedy any gaps from the first part, and finally carrying out a semistructured interview to elicit experiences and opinions.

Another form of interviewing is the use of vignettes, as Stettler, Willimack, and Anderson suggest [42]. Vignettes elicit a respondent's potential response to hypothetical situations while also revealing the conceptual boundaries of the domain [9]. They are most practical and efficient in the case of intensive targeting of a few identified key comprehension issues [48]. Reinterview or post-enumeration studies to identify measurement errors and reconciliation studies to explain them are not a viable option in most business surveys because respondents generally keep a copy of the completed questionnaire. In business surveys where the response process includes several people, group interviews can be an efficient way to collect information from a particular business (see [43]). However, the method may not be the most efficient from the business perspective because of the different roles, and it may reduce participants' openness. Focus groups have an excellent place in the development of multiple meanings and perspectives, and in unveiling tacit norms and normative assumptions [27]. However, their application to respondents in business surveys is limited because of difficulties in setting and respecting meeting dates [41]. They also may be inappropriate to tackle response process issues because of memory loss and confidentiality issues.

2.4. Methods used in the study of the QST response process

Selection of methods took into account the relative effectiveness and efficiency of the methods as well as the available resources and time frames. I decided to use a mix of expert evaluations, observations, and interviewing methods to shed light on the QST response process from diverse perspectives. This required the development of a range of approaches.

The expert evaluations relied on the insights from representatives of all of SORS's survey-related activities (people involved in activities after fielding the questionnaire and subject-area specialists) and two accounting experts with an economics background. Data were collected through interviews, except for evaluation of the questionnaire layout, which was carried out separately as a desk review. Although the questionnaire appraisal was not formally used in the QST study, its coding system was consulted before designing the interview protocols. The semistructured interview with the SORS representatives aimed to acquire information on the conduct of the survey, its development over time, and problems encountered in the past.

The protocol for subject-matter experts was developed separately in line with recommendations by

Ramirez [38]. To capture the most information, the experts were asked to think aloud when commenting on the questionnaire item by item and to focus on question meaning, question clarity, and data availability in businesses. Afterward, they were asked to assess their navigation through the questionnaire. After this first part of the interview, the second part of the interview tried to clarify any unclear comments, follow up on interesting ideas, probe those survey questions that were already considered problematic, and related conceptual issues.

Another method used in the QST study was *in situ* observation. The method was selected despite that it is time consuming, because it may provide some detail about the response process and some information that other methods may not capture – because that information is, for instance, perceived as irrelevant, unimportant, or self-evident. However, *in situ* observation was used only in a few cases with a relatively uncomplicated response process and without video recording, because of limited resources and the comparative efficiency of other methods. Its extent depended on the amount of data that respondents had retrieved before the visit.

The qualitative research interview was selected as the primary method of investigation in the businesses. The interview for people already familiar with the QST questionnaire mainly relied on retrospective probing and ethnographic interviewing. The interview for people new to the QST questionnaire was based on the Three-Step Test Interview. Although vignettes were not planned because the study focused on an actual response process rather than hypothetical situations, the idea of hypothetical probing was retained and used with items considered nonapplicable to the business.

The research design could have been improved with examination of completed QST questionnaires, but the first round of manual editing made it difficult to reliably distinguish between respondents' and editors' input.

3. Selection of study units

3.1. Selection of businesses

The selection of businesses aimed to cover the heterogeneity of response processes; it did not aim to construct a representative sample from which to generalize on a statistical basis. Business size may be defined as the single most important business characteristic that is assumed to influence or be related to the characteristics of the response process [35]. Because business size is related to the specialization of work and the fragmentation of knowledge [44], it can be expected that larger businesses have more complex response processes than do smaller ones and a greater variety in the response process because of various organizational issues. It was therefore sensible to opt for businesses of different sizes and to include several larger businesses.

There is no standard procedure for determining sample size in qualitative research. One approach is to continue collecting data until no new information emerges and the saturation of categories is reached, which has been criticized because it is again difficult to justify [8]. In exploratory interview studies, the sample sizes tend to be small, "around 15 ± 10" [28]. The number of units in previous related studies varied considerably (see Table 1).

In the QST study, a sample of 25 businesses was selected systematically across all business sizes from the QST panel. After the sample was selected, it was verified that the sample well covered the geographical location as well as the various combinations of economic activities (trade as the only, main, or secondary activity), trade activities (retail, wholesale, and commission), and merchandise (e.g., food and beverages, textiles, furniture, books, motor vehicles, fuels). These variables may be related to the survey response process through different regulations, taxation, competition, and other aspects of the business environment. Responding early, on time, or late with regard to the deadline may also indicate some characteristics of the survey response process, such as data availability, so the usual timing of survey response was checked in the first telephone contact with the businesses to be sure to have representatives of all businesses in the sample.

The initial sample included none of the largest players in the Slovenian trade. This was the reason for the second round and the purposive selection of seven businesses that were among the largest in a particular trade activity or in trade as a whole. Furthermore, a request was made to the SORS to randomly select ten businesses that had not already completed the QST questionnaire.

3.2. Selection of research subjects

Once the businesses were selected, it was necessary to determine who to include in the QST study if more than one person participated in the response process and when to use observation as a method of inquiry. The request for an on-site interview was addressed to the person with the main role in completing the QST

Table 1
Number of units in previous studies related to the response process in business surveys

Study reference	Number of units
Babyak et al. (2000)	2 to 15 interviews, and exceptionally 50 interviews, for testing industry-specific business questionnaires
Edwards and Cantor (1991)	24 semistructured in-person interviews about the record-keeping system and questionnaire completion
Eldridge et al. (2000)	35 in-depth interviews for testing a business questionnaire
Giesen and Hak (2005)	11 on-site visits with observation and debriefing interview, and 12 on-site retrospective focused interviews
Hak et al. (2003)	5 and 24 on-site visits with a combination of observation and focused interviews about the response process and the response burden in two surveys
O'Brien (2000)	8 cognitive interviews with business respondents
O'Brien et al. (2001)	5 cognitive interviews with business respondents
Stettler et al. (2001)	17 and 40 cognitive interviews for testing two questionnaires
Sudman et al. (2000)	30 group interviews about the response process in business surveys
Willimack (2003)	31 and 9 on-site interviews in one as well as 45 on-site interviews in another questionnaire testing

questionnaire in a particular business. In addition, an attempt was made to contact all the participants in the businesses of the second round. Because the role of other people was relatively minor, telephone interviews were conducted with them.

The observation was planned for a few of the early on-site visits to include any unexpected information in subsequent examinations and for a few businesses across the rest of the period. It was also intended in the new businesses to observe their original struggles in completing the QST questionnaire. If they had refused observation followed by an interview, a sole interview was requested. Observation was directed only to the person with the main role in completing the QST questionnaire to avoid a serious disruption of the natural flow of the process.

4. Designing protocols for businesses

4.1. Steps in gaining cooperation

The designing of the contacts faced two key challenges: they had to incorporate elements to gain the cooperation of and to motivate the person to reveal as much information as possible on the designated topic. Gaining cooperation relied prevalently on Dillman's elements of the Tailored Design Method and the underlying theory of social exchange [12]. It also considered the six psychological factors promoted by Cialdini: (1) reciprocation, (2) commitment and consistency, (3) social validation or social proof, (4) authority, (5) scarcity, and (6) liking [7]. An important dilemma in this study was how to exploit the authority of the SORS to obtain participation and, at the same time, to convey independence from SORS to gain insights into the potentially sensitive adequacy of questionnaire completion.

The approach consisted of four steps. First, SORS sent an advance letter to alert the contact people in the selected businesses. The appearance of the advance letters with the typical SORS layout (i.e., the SORS logo, stamp, and signature of the general director) tried to communicate the presence of a legitimate authority in the research, and the text clarified that the Faculty of Economics at the University of Ljubljana (FELU) would conduct the research independently of SORS. As Dillman suggests [12], the letters were personalized, concise, positively worded, and tried to trigger anticipation and interest without too much detail. They provided the respondents with essential information about the QST study. They stressed the confidentiality of data, the importance of participation, and the expected benefit in the form of an easier survey response. They anticipated future activities and concluded with an acknowledgment.

The next step consisted of a short telephone conversation with the contact people who were to be the actual respondents of the QST questionnaire. The aim of the conversation was to obtain consent for cooperation and to acquire some information on the response process required for the efficient planning of data collection, particularly on the people involved in the process, the time spent filling in the questionnaire, and the timing of the next filling-in session. The protocol incorporated several elements of the aforementioned theory of social exchange, such as the benefits for businesses in improving the questionnaire and in reducing a high response burden. In the introduction to the conversation, the interviewer immediately sought to establish trust by exposing two legitimate authorities, FELU and SORS. The former also aimed to invoke other exchange relationships arising from its reputable status in higher economic and business education. If the respondents refused cooperation or exhibited uncertainty, several reasons were offered to convert or prevent the refusal. If this did not seem to work, the strategy was to postpone the final decision to the next telephone call. All the bur-

den of the future contacts remained with the researcher to avoid inconveniencing respondents.

In the middle of the period between the first telephone contact and the predicted filling in of the QST questionnaire, a second informative letter bearing only the FELU logo was sent to respondents by their preferred means of communication. It briefly repeated the main points of the advance letter concerning the study, its usefulness, and confidentiality issues. It served as minutes of the telephone conversation quoting the agreed-on date of the next telephone contact. It expressed a positive regard by providing the researcher's contact information and an acknowledgment of the willingness to participate in the research, thus building up a relationship with respondents.

The second telephone call was made approximately one week before the probable date of completing the questionnaire, depending on the agreement with the respondent in the first telephone call. Its aim was to ask for final confirmation of the on-site visit or to determine another date to verify the status of filling in the QST questionnaire. An approximation of the length of the on-site visit had to be given as well. In the case of observation, the respondents knew the time needed to complete the questionnaire. Approximately a full hour to one-and-a-half hours was planned for the interview.

4.2. Protocols for the on-site visits

All contacts before the actual on-site visit had already provided a foundation for building a relationship with respondents. The on-site introductory verbal exchange had to create a relaxed atmosphere but also convey some key points. The respondents were thus asked about their business activity, which also provided some background information and helped in the evaluation of the subsequent answers (see [11]). The researcher also communicated the importance of the research, the independence from SORS, the confidentiality of the collected data, and a request to record the conversation.

Mentioning the independence from SORS and granting confidentiality were not supposed to suffice for dealing with potential sensitivity issues. According to Lee, a distinction must be made between sensitive questions and sensitive answers (as cited in [48]). The interview questions were not considered sensitive, while the same could not be claimed for the respondents' answers. For instance, if respondents completed the questionnaire carelessly or intentionally ignored the instructions, they might be reluctant to admit this. It was therefore necessary to maintain a neutral interviewer approach with no overt reactions to the respondents' answers and to focus on the defects of the questions and not of the person. The argument that many other businesses had problems with the QST questionnaire or some parts of it and that some questions could be problematic in certain activities had to be exposed at least once to relieve the respondents of any potential embarrassment, especially in the presence of other colleagues.

After the introductory conversation, the focus moved to the last process of answering the QST questions before the on-site visit. To gather information on the cognitive processes, the protocol included probes on question comprehension, data retrieval, judgment of the response adequacy, and communication of the response. It also adopted the characteristics of expansive or ethnographic interviewing to collect contextual information on the organization of the response and people involved, the role of authorities, and the information system. In the end, it addressed the statistical reporting itself. All the protocols tried to foresee and address as many possible reactions and developments as possible.

In those cases where an observation was conducted, the protocol was interrupted after the introductory conversation. The observation was unstructured and thus did not follow any prescribed checklist. It was instead open to learning new insights. A respondent's intermediate explanations and questions were kindly acknowledged but minimized. After completion of the questionnaire, the implementation of the protocol continued, though it was adjusted for any gaps and findings from the observation.

4.3. Specifics for businesses new to the QST

The previously mentioned protocols were adapted to fit the businesses that participated in the QST for the first time. In businesses that were not obliged to complete the QST questionnaire, difficulties in obtaining consent for participation were expected, as the rewards were less likely to be realized in the short term.

The response process in these businesses was studied using the Three-Step Test Interview (see [23]). The respondent was therefore observed during the self-completion of the questionnaire after being instructed to think aloud as much as possible. The interview afterward first addressed the gaps in observational data and then moved to the same contextual issues as with people familiar with the QST.

5. Logistics of data collection

The logistics of data collection mainly concerned the efforts invested to recruit people involved in the response process in the business, other preparatory activities, and implementation. Previous experience with the involvement of business respondents in research activities was mixed. Several researchers pointed out the difficulties in gaining access to business respondents and in organizing events or activities with their participation [24,41,42]; yet others reported full cooperation [32]. It thus seems that an adequate approach placing considerable attention to the respondents' burden and motivation could tackle the problems at least to some degree. Unfortunately, detail about the recruitment step is often missing. In the QST study, all large businesses agreed to cooperation immediately, while much more effort was needed for the small and medium enterprises to give their consent.

The planning of field research had to take into account the imposed survey deadlines on the one hand, and the business activities and priorities on the other hand. The goals were to be present for the observation of the response process and to minimize the elapsed time between the survey response and the on-site interview. In addition, businesses for observation had to be spread across the field period to include early and late respondents. For this reason, the businesses first contacted all received a request for observation until the planned spread was achieved.

The majority of respondents predicted the filling in relatively well. The impediments to minimizing the elapsed time included the respondent's occupation with more important and urgent duties, and absence from work. In some rare cases, however, the request to conduct the interview as soon as possible after the questionnaire's completion was misheard, forgotten, or ignored, thus creating a lag.

Preparations for every on-site visit were intensive and consisted of careful reviews of the available information collected through telephone calls and retrieved from commercial databases and the businesses' home pages. It was left to the respondents to determine the place of the interview so that they would feel at ease. In fact, after observation, it was natural that the interview followed in the same room regardless of the presence of any others. Caution against the presence of others is suggested especially with sensitive questions and questions that may produce a social desirability effect [45].

Detailed information on other people involved in the response process was collected during the on-site interview with the main respondent. A serious drawback of this approach was the time that elapsed between their involvement in the response process and the interview, especially because it was generally a minor task, while an advantage was that the others were unaware of the research and therefore completed the task as usual. The latter was considered a priority in this research.

Although all the themes had to be covered in the interviews, there was some flexibility with the question sequence. The interview concentrated on those QST items that were actually filled in. A couple of hypothetical probes were subsequently included to tackle all response categories of an item that had been identified as potentially problematic. In fact, it turned out that respondents did not always understand all items and therefore decided to ignore them, which sometimes led to measurement errors.

The final number of businesses included in the study from the existing QST panel was 27, compared to the initial sample of 32 businesses. Only one business out of four that were new in the panel and became legally required to participate in the QST cooperated, as a result of inadequate timing of questionnaire delivery; and two businesses out of six not in the QST panel consented to a visit. Because none of the latter two engaged into the actual data retrieval, they were not included in the final analysis, though nothing contradicted other findings.

The main lesson learned from the implementation is that more insights into the first completion of the questionnaire could be useful for understanding a respondent's experience and successive response processes. This may be achieved by including a larger sample of businesses that will participate in the studied survey for the first time or by systematically searching for already participating businesses that will change their respondents for the next reporting period. It does not, however, seem efficient to spend resources on businesses not legally required to report data, because of their low motivation to actually fill in the questionnaire.

6. Analysis of results

Qualitative research typically produces a wealth of data. This section presents methods of data analysis in the QST study and the sort of results they produced. It also discusses validity issues of findings based on the proposed qualitative approach.

6.1. Methods of data analysis

Data on the response process collected through the observations and interviews were recorded in the form of researcher's notes and memos. The major part of the interviews was also tape recorded and transcribed. The transcription was not completely naturalized (see [37]). It departed from a verbatim transcription when the conversation referred to unrelated issues (e.g., a telephone call), when the emphasis was on action and the words had to be put in context (e.g., retrieving data from the records), or when some noise prevented clear recording (e.g., in offices with more than one person).

The analysis of these data was time-consuming because it required an intensive immersion in the data to transition from topics, questions, and data to answers or propositions (see [30]). In spite of several available methods, the central task of finding an approach resides with the researchers and their research questions [28]. Most important, the process has to use credible, reliable, and replicable methods explicitly and systematically [33].

The main themes of interview protocols served as a starting point for the process of data organization and later data reduction. The transcribed text was cut into segments. Relevant segments were attributed to the theme(s) they addressed and to the particular aspect they illuminated within a theme. For instance, the study was interested in people involved in the response process, so all segments of text addressing this theme were gathered and then attributed to the person's particular role. The result was a comprehensive matrix that offered the possibility of examination by theme, by aspect, and by business. Further structuring of aspects within the themes was used to generate initial codes and crystallized through iterations. In subsequent rounds of text inspection, the coding became focused on and oriented toward the detection of patterns. At this point, the available material was reexamined to shed more light on the findings and to revise them accordingly: relevant parts of the interview transcriptions and notes from observations and interviews to relive the situation and get context data, and memos to check enlightening remarks and ideas. Some themes also required the examination of transcriptions, notes, and memos from interviews with various experts. The patterns were pulled together into concepts and constructs with the help of various displays and with regard to previous study findings. Results were clustered around the sources of measurement errors and then integrated into a model of the survey response process, though the reverse order is also possible (see [19]).

6.2. Varieties of results

Qualitative research into the response process of the QST contributed to a further improvement in the typology of sources of measurement errors in business surveys and the model of the survey response process (see [4]). In addition to these theoretical contributions, the research findings also have practical implications. They were an impetus for a reflection on the QST instrument. Although the QST study did not produce quantitative indicators of measurement errors, it provides argumentation that cannot be disregarded. This was, for instance, the case of a survey question requesting a breakdown of wholesale turnover by buyers (retail, big intermediaries, manufacturing, wholesale, and final users). This breakdown was neither (readily) available in business records nor understood well, but that remained unnoticed in editing procedures. Data availability that accounting experts had already questioned led to the use of only one category of buyers or to the repeated use of the same, initially estimated, percentage breakdown by buyers, with percentages defined down to two decimal digits. All respondents who were asked to interpret the five categories of buyers finally exhibited some uncertainty, and those who reflected on the ideal data provided various solutions (e.g., classifying buyers by tax criteria, main activity, or institutional sectors; classifying every buyer's intention regarding the merchandise). As a result, SORS took immediate measures after consulting the main user of information, the Department of National Accounts; the question was simplified to fewer categories of buyers and its periodicity reduced.

Other problematic questions, for instance, were breakdowns of wholesale turnover by 30 and retail turnover by 39 commodity groups. The breakdowns represented a challenge for all but the most specialized businesses. Respondents had problems classifying their merchandise and matching their own groups with the requested ones. This resulted in unwanted practices in smaller and larger businesses: recourse to the option "other," assignment of whole turnover to a single group, and an invariable percentage breakdown used quarter after quarter. SORS decided for further research before revising the instrument, as this problem did not have straightforward solutions.

Another practical contribution consisted of two seminars organized for people involved in business surveys at SORS. The seminars informed staff about the research findings and provided an opportunity to discuss the findings and problems, exchange ideas, and indicate possible solutions.

6.3. Validity issues

All steps and choices in designing the research, collecting the data, and conducting the data analysis were carefully documented, thereby creating the chain of evidence and enhancing the reliability of findings. Whenever possible, different sources of evidence addressed the same element of the response process (i.e., the same potential source of measurement errors) to enable triangulation. It must be kept in mind, however, that much of the data in qualitative research are context bound, which makes triangulation difficult or even problematic [34].

In the on-site visits, nearly all respondents quickly overcame any initial tension or discomfort. The protocols stressed the importance of following the usual procedure of the questionnaire's completion and foresaw the sensitivity of the topic but dealt with it successfully. The evidence supporting this conclusion consists of several admissions during the second part of the interview and some corrections of previous "politically correct" answers or behaviors. For instance, a respondent who was observed while filling in the questionnaire changed her strategy after my insistence that she carry out the task as usual: instead of retrieving some data, she provided estimates from memory based on previously reported data.

The effectiveness of on-site visits can be boosted by having one person conduct discussion and another person observe nonverbal behavior and take notes. However, in such a case, it may be more difficult to create a relaxing atmosphere to deal with sensitivity issues.

The chief drawback of interviewing concerned the time that elapsed between the filling in of the QST questionnaire and the on-site visit. This time had to be minimized so that respondents forgot the minimum of information. The significant efforts invested in scheduling the on-visits paid off, as half of the businesses worked on the questionnaire on the day of the on-site visit, though they were at different stages of completing the questionnaire. Longer time gaps could have deteriorated the recall, but three factors worked against this: the advance announcement of the impending on-site visit and the recurrence of the response process both enhanced the encoding of associated memories, and the accompanying working papers figured as excellent memory cues.

An important validity issue concerns the extent that the study findings can be generalized, given the specifics of the present research. The first impediment to generalization was the sample, which was too small and nonrepresentative to concede a statistical inference. The second impediment were the specifics of the QST with regard to its mode, recurrence, periodicity, questionnaire length and complexity, topics covered, mandatory character, and so on. However, the present research relies on analytical generalization (see Stake, as cited in [28]). It is therefore necessary to examine the specifics of selected businesses and the selected survey and judge them against businesses with other characteristics.

Participating businesses varied from microenterprises engaged in one narrowly defined trade activity to the largest businesses with a mixture of trade and nontrade business activities. The businesses also differed with regard to legal personality, origin of capital, geographical location, group participation, involvement in international activities, and organizational culture. In addition, the data were collected for two reporting periods (i.e., the last and the first quarter of the calendar year) to incorporate differential burdens imposed on businesses from regulatory authorities and management. Some respondents also worked in accounting firms, so they likely behaved similarly when completing other types of questionnaires for other types of businesses. Therefore, the selected businesses may figure as representatives of many nonselected ones. Nevertheless, some caution is necessary when applying the findings to "pure" nontrade businesses and across borders to environments with different institutional contexts and business environments. Furthermore, the research does not provide a conclusion about the few businesses that refused participation in the study because they were overworked.

The QST study is applicable to self-administered surveys, though those conducted on the Web or in any other electronic version must consider the impact of technology on the response process. The analogies with interviewer-administered surveys are, however, limited. There was also more focus on the recurring response process than on the first- or only-time response process. However, quarterly periodicity may be perfect for an analysis of recurrence, as its effects become strong enough to be captured compared to annual or less frequent surveys and weak enough to be traced before becoming too fast a routine.

The actual length and complexity of the QST questionnaire depended on the multiplicity of business activities, so the completion of the questionnaire could range from very simple and quick to demanding and time consuming. The QST covered several topics that determined the occupation and number of people in-

volved in the response process. In some cases, one respondent providing all the necessary data handled all questions; other cases required the coordination of different data providers. The generalization may thus be made to both situations. Although the QST mainly engaged accounting staff, it was not limited to them. It also involved people from financial, advertising, and personnel departments, as well as a few technicians. The study may thus provide useful insights for business surveys involving people with economic and other backgrounds; it may fail to do so only with very specific topics.

This research addressed only marginally the effects of the QST's mandatory character and governmental sponsorship. The findings may still apply to nonmandatory and nongovernmental business surveys, but considerable caution is necessary given the expected differential perceptions of the survey request and disputable motivation for participation and accurate completion. Business surveys also represent a special type of organizational and establishment survey. The range of similarities may provide solid foundations for the application of the findings to other types of organizational and establishment surveys. The differences, however, need to be taken into consideration.

7. Recommendations for survey work

This section gathers some general recommendations for how to conduct qualitative research on the response process in business surveys.

– *Use multiple sources of evidence to shed light on the response process from different perspectives, especially from a description given by the people involved in the response process in the business and statistical organization, from an observation of the response process, and from several experts with different experiences.*

A well-considered combination of experts may provide a satisfactory examination of the response process in business surveys and may be relatively cheap and easy to achieve without burdening businesses. Subject-matter experts may be indispensable in highlighting substantive and terminological issues; questionnaire design experts may be essential in evaluating if the survey instrument communicates its contents well; and questionnaire administration experts may be helpful for providing feedback from the businesses and other experiences with them. A review of completed forms may suggest where and how measurement errors occur.

Nevertheless, only fieldwork seems to enable a comprehensive insight into the response process from the business perspective. In this regard, observation has a limited potential if it is not supported by audio and video recording as well as electronic tracking, given the intensive interactions of business participants with various devices. However, the comprehensive tracking of an employee's activities is a sensitive issue because of the considerable intrusion into that person's privacy and business confidentiality. As a result, interviewing still is the most powerful method for collecting data on the actual response process. If the respondent is performing the task of answering survey questions for the first time, the thinking-aloud technique may be most effective. If the respondent is familiar with the task, only retrospective probing seems appropriate. In both cases, the addition of ethnographic interviewing may be valuable for providing more insights into comprehension and the use of economic concepts and conditions from the business environment.

Observation should not be totally discarded even without technological support and despite a probable modest ratio between time consumption and the amount of data collected, as it may provide unexpected information. It seems especially important in combination with interviewing for at least two reasons, both of which enhance the validity of collected data. First, it minimizes the elapsed time between the actual response process and reporting about it. Second, it relativizes the information collected during the subsequent interview because it enables a comparison of the interviewee's and researcher's perceptions of the same issue, such as the invested effort and time, and the conduct of activities.

– *Select businesses of different sizes but check variability in other characteristics likely to influence the response process. Select people new to the survey task and those familiar with it. Focus on people who provide data with the particular purpose of answering survey questions, but do not completely exclude other business participants from the study.*

Size of a business is considered the main determinant of the survey response process, but other characteristics may also be relevant, particularly kinds of economic activity, outsourcing of the survey task, timing of the survey task with respect to the deadline and other legal requirements, legal personality, origin of capital, geographical location, group participation, involvement in international activities, organizational culture, and so on. Response process also changes with recurrence,

which makes it important to study businesses that participate in a survey for the first time and new respondents in previously participating businesses in addition to recurrent respondents. Although respondents are those who eventually carry out the survey task, the inclusion of a few other business participants such as authorities may provide new insights.

– *Gain cooperation of business participants by exploiting each of several contacts with them to build a relationship and justify the research.*

Research involving businesses requires that sufficient time is allotted to gain the cooperation of business participants. More effort may be necessary for small and medium-sized enterprises. The differential motivation for cooperation can be explained by the social responsibility of the larger businesses and the limited resources of the smaller ones. Also, it seems beneficial to expose the rewards of participation for the business. Because participation in research necessarily represents a cost to businesses, it is crucial that their burden is reduced to the minimum whenever possible.

– *Include businesses responding early and late but always minimize the elapsed time between the survey response process in the business and the data collection to ensure validity of the collected data.*

Once consent is obtained, plan for the timing of on-site visits. On-site visits need to be scheduled when the process will be going on or right after the task has been completed. Because business participants may not comprehend the importance of such scheduling for the validity of findings, the researchers should emphasize it. It is also necessary to include businesses that respond at different times, as this may be related to the source of measurement errors.

– *Design protocols for on-site visits thoroughly and prepare to deal with sensitivity and confidentiality issues.*

The available time on-site must be used wisely to acquire comprehensive information on the response process and relevant context. Obtaining a candid insight into the response process may be challenging if the questionnaire was not completed (entirely) in line with instructions and if sanctions apply. It is therefore necessary to relieve the respondents of any potential embarrassment and sanctions by relativizing problematic practices. Conducting research in cooperation with an independent and trustworthy institution may further reduce this problem. Confidentiality issues may be addressed by focusing exclusively on the processes producing survey data and not on the data themselves. However, some information on the relevant context may still be classified, so granting confidentiality seems indispensable.

– *Document all steps and decisions made in research and allow sufficient time for analysis that can be conducted by sources of measurement errors and by response processes.*

The engagement in the preparation and implementation of fieldwork should not compromise the documentation practices and data analysis. Good documentation allows the reconstruction of all research activities and the durability of the collected data to exploit the usual richness of qualitative data. Audio recording appears to be indispensable for ensuring high-quality transcriptions, though notes and memos are important as well. Analysis of collected data by survey questions seems most natural, but it may prevent absorption of the big picture and detection of general patterns that could be added to the body of knowledge on measurement errors in business surveys. It is therefore recommended to analyze the data by all sources of measurement errors and by separate response processes.

– *Learn and train. Disseminate findings.*

The quality of qualitative research highly depends on the ability of researchers. It seems vital that researchers who study the response process in business surveys have enough methodological and domain knowledge as well as communication skills. New insights can be particularly beneficial and effective if incorporated in training staff at the survey organization such as questionnaire administration experts and if conveyed to all other relevant parties.

8. Conclusion

To summarize, the evaluation of measurement errors starts with the identification of their sources in the survey response process. To obtain an in-depth understanding of the response process, this article advocates the use of qualitative research methods. However, such methods have strengths and weaknesses, and researchers must be aware that the business environment and specifics of business surveys usually impose additional methodological and logistical challenges on the research design and implementation. In the future, more research on methods and other procedures is

needed to determine their strengths and shortcomings as well as their cost-effectiveness for studying the response process of different types of business surveys in various business environments.

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