This module is part of the

Memobust Handbook

on Methodology of Modern Business Statistics

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Theme: Response Burden

Contents

General section[1]

1. Summary

One of the main purposes of modern statistics is to ensure high quality data release necessary to satisfy expectations of their users and enable them to take effective political decisions. Statisticians struggle with this important problem mainly by seeking how to minimise response burden – one of the mainbarriers hampering the completion of this task. The burden can result both from the methodological design and survey management and from the respondent or technical support.

In this module we present the essence of response burden, analyse fundamental concepts related to this problem (with some original recommendations) and list the main types of difficulties which arise depending on the approach adopted. The importance and causes of the burden are discussed in detail. We also characterise the most important methods of measuring burden (both actual and perceived, also in the complex form) and their effects. In this context, we assess the efficiency of the burden reduction methods by referring to the assumptions of the Standard Cost Model. Practical examples of observed difficulties are presented. Basic and selected special methods to minimise these difficulties and international recommendations are also discussed.

2. General description

The problem of response burden is one of the main challenges facing modern statistics and a subject of interest to international organisations. It is among the key points in planning strategies of development of statistical methodology and improvement of data quality.

2.1 The essence of response burden and its typology

2.1.1 The concept and awareness of response burden

Response burden is a negative effect of the growing demand for data about the economic situation of businesses and – following this trend – a wide scope of detailed statistical surveys. Moreover, as noted by Jones (2012), these surveys should keep pace with quick and intensive economic changes. Therefore, several alternative ways of data collection are usually used (censuses or sample surveys, administrative data sources, electronic data interchange, published documents, etc.). So, in any way, businesses have to provide various data, which can generate additional burden and incur costs.

A good example of such burden recognition can be the EU Project on Baseline Measurement and Reduction of Administrative Costs (2010), which has provided credible estimates of administrative burden caused by 13 priority areas, as identified in the EU Action Programme to reduce administrative burden. The total administrative burden in the EU in years 2005 – 2007 is estimated at €102 billion[2].

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[2] Within this project an original measurement in representative samples of EU Member States was carried out and also the results of national administrative burden measurement efforts in a number of EU Member States were drawn upon. The results from these two groups of countries were then extrapolated to the EU as a whole. The baseline date for the measurement carried out by this project was July 2007. Reductions achieved between 2005 and 2007 are not taken into account in the measurement or burden reduction figures of this project.

Burden caused by statistics is estimated at €552 million. This is only 0.5 percent of the total burden. However, statistics is one of the three priority areas that cause the highest irritation.

It seems paradoxical that the relatively small burden imposed by statistics should cause so much irritation. However, statistical burden, unlike the burden caused by most other information obligations, is usually based on samples. Consequently, even though the total level of burden caused by statistics is low, the individual level of burden experienced by sampled businesses can still be relatively high. Moreover, statistical burden is unevenly distributed among businesses, i.e., typically the larger businesses are, the more surveys they get. Also, it has often been reported that respondents to business surveys often doubt the usefulness of statistical reporting requested of them (both to themselves and to society).

Of course, response burden can be unevenly distributed. That is, such burden is especially noticeable in the case of business surveys and afflicts mainly large firms, which are usually subjects of a number permanent and exhaustive surveys and obligations. On the other hand, the EU Project on Baseline Measurement and Reduction of Administrative Costs (2010) concludes that small companies suffer more from administrative burden than larger businesses (when administrative burden is expressed as the relative cost per employee or related to turnover). This is because of economies of scale (larger companies can invest in specialised staff and reporting systems).

Considering the effort required to satisfy the demand for data and relatively little time devoted to this task, which is given low priority in relation to the main activity of companies, reported dataare likely to contain more gaps and errors, as companies become increasingly unwilling to cooperate. Sometimes, these gaps can also be the result of partial or total refusal to respond, which can be motivated by various circumstances (e.g., lack of necessary time or qualified staff, difficulties in finding or estimating required data, general reluctance, etc.). Some problems in this regard can also be linked to the way surveys are designed by methodologists and implemented by statisticians (e.g., proper collection of data from other sources). Thus, NSIs should also be concerned about response burden in their own self-interest, as it seems that excessive burden can cause problems with data quality (e.g., unit non–response) and affect the efficiency of data collection (e.g., the need to remind respondents, the need to re–contact respondents for editing, etc.). **All circumstances and factors negatively affecting the quality and cost of collecting statistical data directly from respondents or other external sources (e.g., administrative registers) are regarded as** *response burden*. It is the essence of the discussion presented, e.g., by Haraldsen et al. (2013).

In order to have a comprehensive understanding of response burden, we need to identify its causes, influencing factors, effects and be aware of possible threats and methods that can help reduce inconveniences for respondents, statisticians, analysts and data users, which result from poor data quality or the work of respondents. All these issues are discussed below.

2.1.2   *Classification of response burden problems by type*

The concept of response burden is far from straightforward. There are many classifications depending on the point of view on the nature of such burden adopted by a given researcher. Listed below are the most important ones.

As was suggested by Willeboordse (1998, pp. 113–114), the concept of response burden can be interpreted in various ways, which are usually presented as four dichotomies. The following contrasts can be considered:

- **objective vs. subjective burden** – objective response burden refers directly to the actual cost of completing questionnaires by respondents; subjective burden reflects their perception. Which of the two burdens is "heavier" depends to a large extent on the perceived usefulness of statistics resulting from respondents' efforts. The distinction is in particular relevant when one compares the response burden of large and smaller businesses. While the latter carry a much larger objective burden, the former tend to be the heaviest complainers. Their subjective burden is higher, because they often do not make use of statistical data;

- **gross vs. net burden** – resulting from the quantification of response burden: net objectiveburden takes into account the "benefits" enjoyed by respondents for their contribution, gross response burden ignores them;

- **imposed vs. accepted burden** – imposed response burden assumes that all respondents sampled will fully and consciously complete the questionnaire with sufficiently accurate data; accepted response burden takes a more realistic approach: only responding businesses are accounted for, at the real completion cost.

- **maximalist vs. minimalistburden** – it is worth noting that completing a questionnaire often requires the respondent to look for and check other files, read the introductory letter and methodological hints, make necessary additional computations, etc. Thus, the actual completion time can be significantly shorter than the time needed to perform all related actions necessary for a proper completion of the questionnaire.

Taking into account the various concepts mentioned above, the following question arises: which choices should apply when monitoring response burden, either by estimates or by direct measurement. Although the general rule should be that "different concepts (apply) for different purposes", in most circumstances the following choices from the three aforementioned alternatives will be preferred (cf. Willeboordse, 1998, p. 115):

- **objective burden** –subjective burden is in some respects more relevant (e.g., as a measure of acceptance and willingness to cooperate) but it is much more difficult to measure;

- **gross burden** – net burden would require the quantification of the value of data published, which is even more difficult. Moreover, this value would differ per respondent;

- **accepted burden**, since it is more realistic than imposed burden. Still, for internal NSI use, there is one disadvantage: because only responding businesses are taken into account, increasing non–response rates can have a positive effect on response burden. To avoid such undesirable "rewards" and, consequently, a less alert attitude towards declining response rates, survey managers should be confronted with burden figures, which include hypothetical non–response burden as well; hence, the term "accepted burden" can, in fact, denote the acceptable level of response burden;

- **maximalist burden**, as being much more realistic.

According to another approach represented and developed by Hedlin et al. (2005), the concept of response burden can be divided into **actual** and **perceived** burden. Actual burden can be reflected by 'hard' measures of duration of response preparation and costs. For example, we can consider the time taken to complete a survey, the number of tasks performed, the number of staff involved in the task or the costs to the business in terms of resources allocated to the survey. The concept of perceived burden was initially developed owing to an observation that traditional measurement does not take into account factors which may affect burden and which are rather subjective, such as the amount of effort required by the respondent and stress induced by sensitive questions. This dichotomy was conceptualised by the aforementioned handbook by Willeboordse (1998). That is, quantifiable actual burdens are regarded as objective and qualitative perceived burden can be defined as subjective.

It is a commonly observed fact that high response burden usually leads to significantly lower survey quality. Indeed, given many possible causesof excessive response burden, which will be presented later in this subsection, it can result in the following attitudes of respondents:

- refusal to participate in the survey; thus, no data from it will be available,

- refusal to provide some data (item non–response),

- provision of data of too low quality, e.g., presenting rough figures, errors in estimation or computation, etc.,

- in the case of similar surveys, some data can be mechanically copied from one questionnaire to another without special concern for their methodological correctness;

- deliberate provision of false data (an extreme situation).

Excessive response burden can also contribute to a growing level of incoherence and incomparability between some variables (e.g., concerning financial aspects), whose quality is especially sensitive to response burden (cf. Młodak, 2013).

The aforementioned problems are reflected in the quality of final survey results. The higher response burden is, the more effort should be made by the statistician to ensure acceptable quality of the published results of a survey. That is, the costs (financial and personal) of conducting imputation, estimation, using alternative data sources, etc. are higher. In extreme cases even high investment outlays in this respect may not produce expected effects. The reduction of response burden is, therefore, one of the key problems of modern official statistics.

Berglund et al. (2013) noted that there is a correlation between actual and perceived response burden. That is, businesses which complain that the questionnaire is burdensome actually use more time to collect the required information and to fill in the questionnaire than businesses which claim that the questionnaire is not difficult to complete. Moreover, actual and perceived burden seen together are also highly correlated with the number of corrected values in the questionnaire. It confirms our earlier observations.

Dale and Haraldsen (2007) show the necessity and usefulness of measurements of perceived burden for individual surveys. They note, however, that the quality of its recognition depends on the number of surveys directed to one respondent. They point out a significant difference between the way the issue of response quality is treated in studies of perceived response burden and in the Standard Cost Model (SCM). The SCM focuses on regulations concerning statistical financial costs of actions which

have to be taken by businesses to meet the requirements. In other words, SCM ignores perceived (subjective) burden. Moreover, SCM is generally based on a strategic collection of units, whereas Perceived Response Burden Study (PRB) uses a statistical sample. Hence, statistical calculations cannot explain many results obtained by SCM. On the other hand, SCM – although it is generally very expensive and time consuming – provides much more detailed and precise information, whereas PRB can be used to collect more representative information, which can be easily generalised and is simply less expensive. The SCM model will be presented in detail in subsection 2.3.2. Some approaches to the observation of perceived burden are described in subsection 2.3.1.

To complete the presentation of basic concepts related to response burden we should also mention the approach developed by Fisher and Kydoniefs (2001), who assume that burden is a combination of the following factors: **respondent burden** (factors connected with behavioural and attitudinal attributes of respondents, which affect the survey, e.g., belief in the usefulness of the survey)**, design burden** (all aspects of the survey environment that are not directly associated with the respondent, e.g., incorrect sampling, frequency of contact, etc.) and **interaction burden** (a product of the relationship between respondent burden and design burden, e.g., requirement concerning memory and effort to be made, familiarity of the respondent with IT methods and tools, etc.). They argue that the perception of burden can be affected by these factors. So, the categories of actual and perceived burden can provide a good basis for a classification of response problems and an important factor in their quantification.

Haraldsen (2004) noted, however, that perceived burden is influenced by respondents' ability to answer, by the survey design and by the combination of these elements. Thus, the Fisher and Kydoniefs (2001) model does not distinguish between causes of burden and the perception of burden. In section 2.2. we will discuss a theory of causes of burden.

This subsection raises an obvious question: which system of classification of response burden can be recommended as an optimal solution for official statistics? As far as the authors of this module can tell, there are no formal documents specifying such recommendations at present. However, considering the connections between various attempts presented above, one can propose a compromise solution in this respect based on characteristic features of official statistics. What follows is our attempt at formulating such recommendations.

First, it should be remembered that response burden has two dimensions: quantitative (e.g., time and money spent) and qualitative (mainly perceived), depending on subjective opinions of respondents. We should also recognise at which stage of the survey design and implementation such burdens occur and what their nature is.

A good starting point for our recommendation will be a division of burdens into actual and perceived ones. Each of them can result from factors related to the respondent, design or interaction (for example, the difficulty of filling the questionnaire can be assessed both in terms of how much time it takes or by the respondent's subjective judgements of the level of difficulty – e.g., easy, rather easy, rather difficult, very difficult). Although this trichotomy, introduced by Fisher and Kydoniefs (2001), is applied mainly to perceived burden, it seems obvious that also these subcategories can be – in some circumstances – quantified. So, more universality is required. Within each of these subcategories one should make further distinctions depending on whether the burdens are quantifiable or not. Thus, withineach subcategory one can distinguish gross burden, for the broad category of actual burden and actually observed burden (e.g., by a post-survey based on PRB questions – see Section 2.3.1) for the

broad category of perceived burden. Moreover, accepted and maximalist options can be applied for each category of the higher level of our classification (they cover both measurable and subjective factors). Finally, our classification can be visualised in the form presented in Figure 1. The category "observed burden"refers to the level of perceived burden observed as a result of relevant study, e.g., the PRB.

The presented proposal can help precisely systematise and present a variety of factors affecting response burden and design actions intended to reduce them.
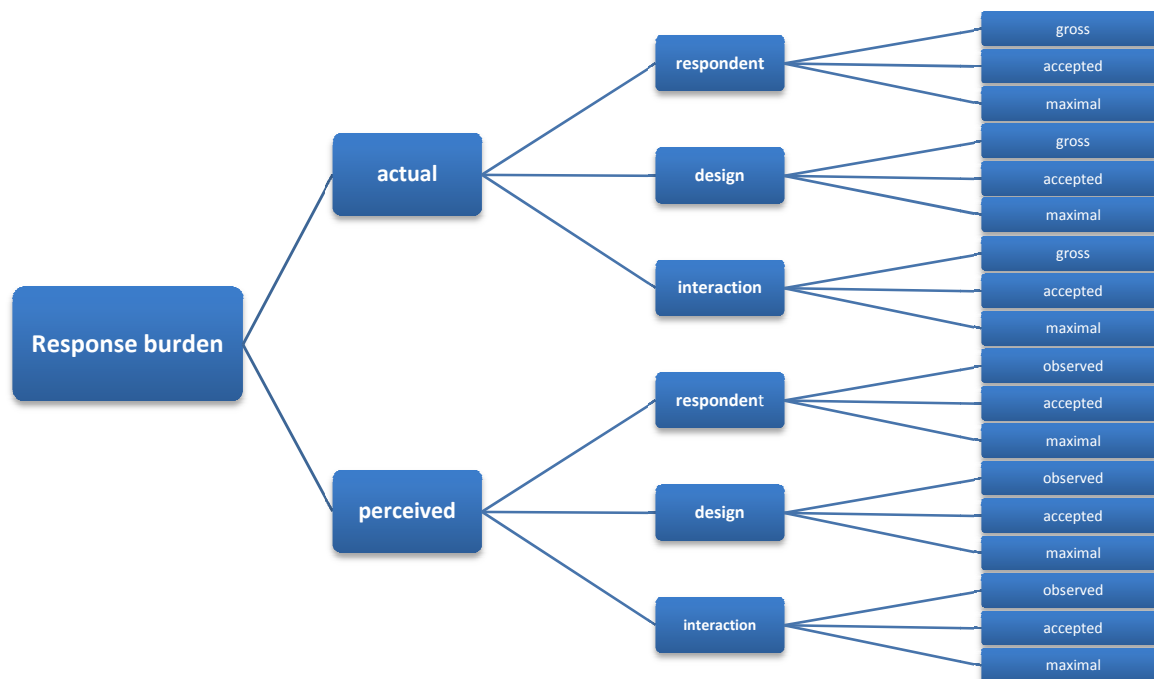

Figure 1. Suggested universal classification of response burden. (Source: Own elaboration.)

2.2   *Factors affecting response burden*

As we have mentioned earlier, the distinction between causes and the perception of burden is very important to understand the main problem connected with response burden. To overcome weaknesses described in Section 2.1., Haraldsen (2004) proposes replacing the idea of response burden with the term "*causes of response burden*", i.e., which refers to what happens at the interface between the survey instrument and the respondent's ability and willingness to respond. According to his idea, response burden and gratifications are regarded as the result of the encounter between the survey design and the respondent.

That is, perceived burden and gratifications are affected by **survey properties** and **respondent characteristics**. These factors coincide roughly with design and respondent burden according to the methodology introduced by Fisher and Kydoniefs (2001), but it is now assumed that they mutually interact. Moreover, according to Haraldsen (2004), the focus is not on the exact amount of response burden, but on whether the burden outweighs advantages and other positive aspects of the survey.

Survey properties are divided into *instrument features* and *data collection*. According to Haraldsen (2004) the former category includes, e.g.,

- the number of questions, determining the amount of information to be collected by the respondent,

- the questionnaire content, i.e., wording, requirements for information and response formats,

- the flow of questions and different elements within them, their logical ordering saves respondents' time, e.g., related questions are presented together and the respondent can use one data source to quickly complete all relevant items,

- the questionnaire layout: clear, logical, visually attractive structure and graphical arrangement of particular components of the form.

In this context Haraldsen (2004) pays special attention to the usefulness of computerised questionnaires discussing their advantages and drawbacks. These problems are presented in detail in the topic "Questionnaire Design" of this Handbook.

The data collection procedure consists of the following elements:

- the contact mode, including the type of contact form used, control of the respondent and response formats,

- the recruiting strategy, including the creation of incentives and motivation for respondents,

- administrative tasks performed before completing the questionnaire, during the process of completion responses and afterwards,

- security measures, i.e., tools and methods ensuring required confidentiality of individual responses of respondents.

As regards respondent characteristics, Haraldsen (2004) describes three main features of personality which determine the respondent's attitude to the survey. The first one is **interest in the topic of the survey**. If the topic is of no interest to the respondent, they will find no personal benefit in participating in the survey and, consequently, will either refuse to respond or provide only cursory answers. The second factor is **the competence of the respondent**. One should make sure that the respondent the survey is addressed to is fully competent to answer the questions properly. Otherwise, they can give "rounded" and "selective" answers instead of careful step–by–step processing. The last but not least feature is **availability**. That is, the quality of responses depends significantly on the amount of time and concentration the respondent is willing to devote to completing the questionnaire. In this context, one should take into account not only formal and technical possibilities of respondents, but also their personal features, such as patience, efficiency, etc. In the case of e-questionnaires, familiarity with Internet technology is also required.

Hedlin et al. (2005) discusses six main factors which are determinants of the level of response burden. They are as follows:

Survey organisation/sponsor is the first information which is taken into account by a potential respondent when they assess perceived response burden and decide whether to give a response. Usually, surveys conducted by agencies of official statistics or government (or self–government) inspire greater confidence than others and, hence, elicit higher response rates. The main reason for this is that these surveys are conducted according to special regulations (e.g., Official Statistics Act in Poland) which require interviewers and statisticians to respect rules of confidentiality and reliability of

collected data. Moreover, respondents feel that their contributions to such surveys will be used for the good of society (and hence also for their own good). In contrast, non-public statistical investigators, such as polling agencies, market research companies, individual scientists, students (e.g., who need relevant data for their diploma theses), etc. are formally not obliged to respect the norms of statistical ethic described in the legal acts (although they should also follow them to ensure high quality of collected and published information) and often make many errors while preparing and conducting the surveys. So, respondents often have no sense of security and usefulness of data which they provide is such situations.Even the anonymity of questionnaires is sometimes perceived negatively – as a method with a high risk of manipulating results.Respondents who express such concerns sometimes knowingly provide false responses and inform the interviewer about it.On the other hand, however, thanks to anonymity, respondents are inclined to be more truthful than when their answers are not anonymised. In general, from non-government surveys, academic ones usually enjoy higher response rates than, e.g., commercial ones. Hence, government support for surveys sent to businesses is desirable.

The second factor is *publicity*. That is, social attitudes to surveys can foster a better "climate" and "atmosphere" of motivation and willingness to respond. Based on their literature review Hedlin et al. (2005) show that significantly lower response rates can result from the specific character of a survey (e.g., addressing survey correspondence directly to specific persons rather than to respective enterprises or households, asking potentially difficult questions, etc.) or from political and economic conditions which contribute to a more reluctant participation in surveys. That is, the 'public climate' surrounding a large, repeated and well–known survey (e.g., the national census) may give rise to an atmosphere of motivation and willingness to respond rather than a specific, single survey. It is well-known that the respondent's opinion about the usefulness, advantages and convenience of participating in a survey is determined by many factors, such as the current political situation, trust in institutions, economic conditions (especially the standard of living), etc. Loosveldt and Storms (2004) use the general term 'survey-taking climate' covering all circumstances affecting the attitude of respondents. Such an attitude has a great impact on the final quality of surveys and the usefulness of their results. In general, the negative attitude leads to an increase in the probability of refusals.

Loosveldt and Storms (2004) present their methods of assessing respondents' attitudes based on a special drop-off questionnaire concerning respondents' attitude towards a conducted survey and compare its results with the doorstep reaction of respondents (i.e., during direct contact). We will describe them broadly in Section 2.3.

One of the most important factors in this typology is the *implementation strategy*. It refers to a combination of factors, such as the initial contact and re-contacts with respondents, low cost of return of information and the clarity of the questionnaire and ease of its completion. Respondents also want to avoid double collection of data: providing the same information that has already been collected in another survey (possibly merely using a different structure of classification) is perceived as a waste of people's time and effort and is often regarded as irritating. For example, a cover letter explaining the objectives and usefulness of the survey, sent prior to (or together with) the main survey questionnaire can persuade the respondent to participate; a kind reminder indicates the respondent's importance for the interviewer. Also, the first direct contact of the respondent with the interviewer may affect the scope and quality of the received response. If the interviewer is nervous or awkward, the respondent may perceive the survey as very burdensome. Nowadays, when electronic means of communication

play a key role in contacting respondents, the initial contact, which should demonstrate special attention paid by the interviewer to the respondent and their responses, increases the sense of their importance and contributes to the growth of response quality. The last remark is also connected with *follow-up communication,* which should be undertaken to clearly appreciate the effort and expenses that have gone into gathering complete and high–quality statistical data. This presence of this stage usually increases the response rate. Measures aimed at *reducing the cost* of response for the respondent, e.g., the use of electronic transmission or pre-paid envelopes (in the case of paper-based surveys), contribute to a positive reaction to the survey. Another factor that matters is the *questionnaire appearance*. A questionnaire may be perceived as not very user-friendly if it's inconvenient (i.e., it is printed on a large piece of paper – in traditional surveys – or displayed in a small window or contains too small fonts – in the case of e-forms), graphically inconsistent (which leads to initial confusion), too complex (contains a row–column layout requiring additional effort to combine rows and columns), and if technical elements (i.e., marks and symbols used during processing) are too prominent and when instructions are too complicated.According to the old Roman adage "longusiterest per praecepta, breve et efficax per exempla"[3], it is better to replace, whenever possible, *long description in the instructions or notes* with clear examples. Especially, if additional or advisory information is presented on a separate card or incorporated in the question, respondents will avoid having to look back and forth through the questionnaire for the explanation, which would be strongly discouraging; any complication in this respect contributes to an increase in survey non–response.

The level of non–response may also be connected with the **questionnaire length**. This feature is usually negatively correlated with the level of response rate. Forms that are too lengthy can discourage the respondent from completing them, because this requires more effort. On the other hand, some respondents may actually appreciate the effort made by survey authors in preparing a comprehensive questionnaire and feel the importance of the survey. It is therefore necessary to find a healthy balance in this respect.

The content of the questionnaire, i.e., the **question comprehension** is also important. Asking troublesome or difficult questions can discourage the respondent – especially if they are not convinced of the usefulness of gathering such data or data security. This may be the case with financial or strategic data or questions containing many options (categories, rating scales, etc.). On the other hand, however, providing a greater number of possible answer options can actually decrease the perceived response (cognitive) burden by helping respondents to produce more informed answers.

The sixth major factor is the **mode of data collection**. A lot depends on respondents' preferences – increasingly more respondents prefer the more efficient methods of answering (online questionnaire, e-mail or automated phone, etc.) than traditional ones (such as paper forms). It is worth noting that response burden is proportional to the burden experienced by the respondent. In other words, the more complex the surveyed issue is and the more effort is required of a respondent to prepare an answer, the greater the resulting error (and burden). Two elements play an important role here: the interview method (paper, phone – CATI, e-questionnaire – CAII, personal – CAPI, etc.) and the questionnaire design. A good questionnaire design reflecting key connections within and between data and their validation is the factor leading to a significant reduction in response error, but it is often achieved at

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[3] The long road goes through advices, the short and efficient one – through examples (Latin).

the expense of a higher burden imposed on the respondent. Therefore, when designing a questionnaire it seems reasonable to follow the rule of the "golden mean", finding a balance between the degree of necessary data verification and the level of questionnaire complexity. Paradoxically, a questionnaire that is too sophisticated and requires too much duplicate information may discourage a respondent and, therefore, negatively affect the completeness and quality of collected data. However, in surveys concerning sensitive issues (such as financial information, planned economic strategies, etc.), the use of face-to-face contact produces better results than an on-line questionnaire[4]. Of course, modes of data collection can vary, i.e., at various stages of the survey the mode can be changed. This strategy can be very useful, e.g., in a situation, when the respondent has given no response using the basic method. So, the researcher can try to obtain response by other means, such as phone, fax or traditional registered mail. Web-based data collection reduces the amount of paperwork and the cost of processing and improves timelines and quality of collected data. One should, however, take into account technical possibilities of the respondent and the extent to which e-questionnaires can be read using the respondent's current IT tools. In some cases, the response may actually entail additional expenses for the purchase of equipment and software or even web access. Thus, traditional methods cannot be completely dropped.

One more area of difficulties concerning response burden is connected with discrepancies between the time when survey data are transferred to NSIs and rules applied in accounting systems and the timetable of wage and salary payments in different economic entities. For instance, in Poland data concerning the previous month must be submitted by the 5th business day. As a result, it is difficult to obtain data from accounting systems, where most recent transactions are not recorded because of delays in submitting invoices. This inconvenience significantly increases response burden.

The next problem concerns wages. Owing to certain regulations, some companies pay salaries by the 10th business day for work done in the previous month. Consequently, on the day of reporting, wages are not accounted for. The lack of required data is one of the most evident examples of response burden and forces companies to invest extra time and effort into preparing estimated data to fulfil the reporting obligation, which increases gross burden.

The lack of clear-cut and uniform definitions of concepts can also lead to a misunderstanding of ideas and force companies to contact statistical agencies conducting surveys to seek clarification of all doubts concerning ambiguous concepts.

Another Polish example of inconvenience concerns a very burdensome survey – enterprises employing over 49 people are obliged to submit monthly reports and the obligation automatically continues in the following year if the number of employees at the end of the previous year (on the last day of November) isn't lower.

2.3   Measurement of response burden

In this subsection we will present the most important methods of observation and quantification of response burden. First, we will describe the main indicators enabling the assessment of actual and perceived burden. These burdens can be recognised on the basis of special surveys including both

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[4] For example, a student of one of the authors of this module, as part of her diploma thesis, has conducted a poll of strategies used by businesses in Kalisz (Poland) concerning employment of disabled persons. Despite a lot of effort made in preparing the online questionnaire no selected entity responded and thus she had to contact each of them face-to-face.

measurable quantities and subjective (i.e., categorical) observations. Next, the fundamental model for the assessment of actual burden, used within the European Statistical System, i.e., the Standard Cost Model, is characterised. Finally, we try to formulate a universal recommendation in this respect.

2.3.1 Indicators of response burden

The problem of measuring response burdens can be perceived as related to the observation of respondents' attitudes, costs and errors. The former one is much more difficult to accomplish owing to the subjective nature of this problem. Dale and Haraldsen (2007) analyse the methodology ofPRB survey and suggest formulating two PRB core questions, which can be used to recognise whether respondents perceived the target survey as burdensome or not. If they did, they will need to answer another two questions specifying reasons and their perception. These answers will provide minimum knowledge about the perceived and actual burden, indicate where problems occur and how one can try to overcome them. Dale and Haraldsen point out that the actual burden is usually measured by the time necessary to fill the questionnaire and introduce two more questions concerning the time needed to collect required information and one to assess the time necessary just to fill the questionnaire. This approach takes into account the fact that some businesses could have multiple respondents and hence it provides a complete indication of the amount of time spent by the business (total) and by particular respondents. A complete collection of proposed questions is presented in Table 1.

Table 1. The PRB Core Question Set, for monitoring changes over time.

Dimension	Indicator	Question	Response categories
Perceived burden	Perception of time	Did you think it was quick or time consuming to collect the information to complete the questionnaire?	Very quick, Quite quick, Neither quick nortime consuming, Quite time consuming,Very time consuming
	Perception of burden	Did you find it easy or burdensome to fill in the questionnaire?	Very easy, Quite easy, Neither easy nor burdensome, Quite burdensome, Very burdensome
Actual burden	Time to collectinformation	How much time did you spendcollecting the information tocomplete the questionnaire?	Number of hours, Number of minutes, Did not spend any time on this at all
		How much time do you think the business spent on collecting the information to complete the questionnaire?	Number of hours, Number of minutes, Did not spend any time on this at all
	Time to complete questionnaire	How much time did you spend on actually filling in the questionnaire?	Number of hours, Number of minutes

Dimension	Indicator	Question	Response categories
Perceived causes of burden	Reason for time consuming	What were the main reasonsthat you found it timeconsuming?	Had to collect information from different sources, Needed help from others in order to answer some of the questions, Had to wait for information that was available at different times, Other reasons, please specify
	Conditions for burden	What conditions contributed to making the questionnaire burdensome to fill in?	The high number of questions, Messy presentations made the questionnaire hard to read, Unclear terms and explanations of terms, Questions that asked for complicated or lengthy calculations, Available information did not match the information asked for, Difficult to decide which response alternative was the correct answer, Other reasons, please specify
Motivation	Usefulness for own business	Do you think that the statistics from this questionnaire are useful or useless to your business?	Very useful, Fairly useful, Neither useful nor useless, Fairly useless, Very useless, Don't know
	Usefulness for society	Do you think that the statistics from this questionnaire are useful or useless to society?	Very useful, Fairly useful, Neither useful nor useless, Fairly useless, Very useless, Don't know

Source: Dale and Haraldsen (2007).

It is worth noting that the question about conditions for burden provides a number of specific options. In contrast, the answers to the question about usefulness are very general and do not include any possible aspects of usefulness. It would, therefore, be useful to formulate a set of more informative answers in the future.

Dale and Haraldsen (2007) also describe a procedure focused on core questions that can be recorded in order to monitor how response burden changes over time. They present a more analytical approach that is designed to explain what causes response burdens, what effect these burdens have on the response quality and what can be done to reduce response burden. According to the study, there are

three key reasons why statistical organisations would want to carry out response burden surveys: to monitor perceived response burden over time, to evaluate changes that have been made to the questions and/or questionnaire and to evaluate changes that have been planned or made in the mode of data collection.In order to monitor perceived response burden over time, if there are no other changes to the survey, the core version of the PRB question set is recommended, otherwise (i.e., in the case of a mode switch, i.e., adding or removing several questions, changing several questions or redesigning the whole questionnaire) the authors propose a longer, analytical version of the aforementioned set. A PRB survey is also recommended before as well as after the changes. This will enable the institution which conducts the survey to measure the impact on perceived response burden. The document also provides examples of visual design for paper and web questionnaires. The model constructed by Hedlin et al. (2005) is used to identify a socio-psychological, causal model and to discuss how different components of this model could be measured and analysed. In addition, the authors present an overview of the sampling in a PRB.

Of course, if several people participate in providing information or completing a questionnaire, the situation is slightly more complicated. In this case, Haraldsen et al. (2013) suggest a stepwise variant of the survey: if the main respondent declared that other people provide assistance in preparing necessary data, the respondent is asked to specify the amount of time spent on pre-collection of relevant information, the number of supporters and the total amount of time they devoted to collecting data/completing questionnaire.

The simplest method of modelling ofthe respondent's decision whether or not to participate in the survey is the leverage-salient theorem (cf. Haraldsen et al., 2013). The theorem assumes that the respondent's attitude results from the interaction of several factors and their final balance. Thus, various survey aspects or participation arguments are visualised as hooking weights of different size on the leverage and the distance from the seesaw fulcrum to a given weight represents the importance of a relevant aspect to the respondent, while the size of the weight represents how salient this aspect is made.

Moreover, it is noteworthy to mention at this point a paper by Loosveldt and Storms (2004). Their special contribution (also mentioned briefly in section 2.2) is an original "General Attitude Towards Survey Scale" consisting of seven statements expressing attitudes about a survey. They are so universal that they can also be effectively used for purposes of business statistics. They are as follows:

- Surveys like this are a waste of time for people participating in it.
- By means of surveys like this one can express their opinion.
- Results of surveys like this are useful to make policy decisions.
- Surveys like this are an invasion of people's privacy.
- Everyone is obliged to cooperate with surveys like this.
- Results of surveys like this are mostly correct.
- With surveys like this the government gets a good picture of what's going on in the population.

Each of the statements can be evaluated using a five point response scale: 1 – completely agree, 2 – agree, 3 – neither agree nor disagree, 4 – disagree and 5 – completely disagree. To obtain a higher score for a more positive attitude, this scale was finally reversed. The individual respondent's score was computed as a mean of responses for particular questions; as a result, comparisons between participants and refusals are positive.

Of course, it is much more difficult to study attitudes of refusers. However, one can obtain at least partial information on their attitudes by re-contacting them (e.g., by CATI). It is very important in business statistics, where direct contact with respondents is especially intensive. Hence, respondents' reactions during direct contact are not affected by specific experiences of an interview and it is easy to register reactions of all types of respondents. In this case, information concerning negative reactions about time, interest, knowledge, privacy, research, etc. was collected. Loosveldt and Storms (2004) conclude that the measurement using the former manner will be less biased in a positive direction than in a face-to-face interview, although the latter one can provide more information about opinions of respondents and refusers.

Vorgrimler, Bartsch and Spengler (2012) analyse the problem of administrative burden for businesses caused by statistical obligations in Germany and a solution leading to overcoming most difficulties in this field. For this purpose a special barometer of burdens has been developed. It is based on the Standard Cost Model and enables the measurement of statistical burden over time both with and without the influence of short-term economic effects. Of course, this barometer is also a good tool to observe effects of actions taken in order to reduce burdens.

Response burden can also be measured indirectly by relevant indicators of response. That is, the high level of non–response may suggest – if no other significant circumstances occur – discouragement of respondents to reply due to the observed (in previous rounds of the survey) or expected large effort required to collect relevant data. More precisely, response rates provide a general picture of the scale of observed problems (i.e.,**unit response rate** – the ratio of the number of units for which data for some variables have been collected to the total number of units from which data are to be collected and **item response rate** – the ratio of the number of units which have provided data for a given data item to the total number of units from which data are to be collected or to the number of units that have provided information at least for some data items). Moreover, there are also other specific response rates, e.g., design-weighted response rates or size-weighted response rates. Remind that Hedlin et al. (2005) noted that the lower response rate in a given survey conducted on a relatively small population could be explained by the lack of 'census climate' during this study (the publicity factor – see Section 2.2). A discussion and recommendation concerning the complex assessment of the non-response problem can be found in the document by Eurostat (2009).

2.3.2 Standard Cost Model

The Standard Cost Model (SCM) provides a simplified, consistent way of estimating administrative costs imposed on businesses by regulations. The aim of this method is to reduce administrative burdens in the business environment by adopting a policy based on costs of regulations.

The advantage of this method is the possibility to measure burdens at different levels of the legal system – by analysing a single regulation or its segments, evaluating selected areas of legislation or performing a baseline measurement of all legislation in a given country. Another benefit is the

opportunity to assess existing regulations or results of new or amended laws, which came into force. Furthermore, the SCM approach is suitable for ex-post measurement of implemented regulations as well as for ex-ante examination of anticipated administrative burdens.Thanks to this approach, it is possible to assess the consequences of new regulations before their implementation.

Administrative cost (burdens)

Businesses have to comply with many administrative requirements and obligations imposed by law. Most of them are to do with the reporting obligation. We can consider statistical reporting as a kind of information obligation imposed on businesses to provide information and data on economic activity to the public sector.

Because of the increasing demand for new or more detailed information, it is very important to constantly make an effort to examine existing and future costs of surveys not to impose unnecessary burdens.

The SCM can also be applied to estimate the cost of statistical reporting incurred by businesses.

Components

SCM splits regulations into detailed components (cost and quantity parameters), which can be measured.

The cost parameters used in the SCM measurement include:

> **Time**
> Number of hours/minutes it takes a business to perform an activity.
> **Tariff**
> Internal cost (hourly pay for employees plus overhead and non-wage costs per hour).
> External cost (hourly rate for external services, which perform administrative activities).

The Quantity parameters used in the SCM measurement include:

> **Population**
> This refers to the number of businesses to which the regulations apply.
> **Frequency**
> The number of times that a business delivers required data per year.

Acquisitions

In addition, certain necessary expenditure may be included, for example stationery or postage costs.

Structure
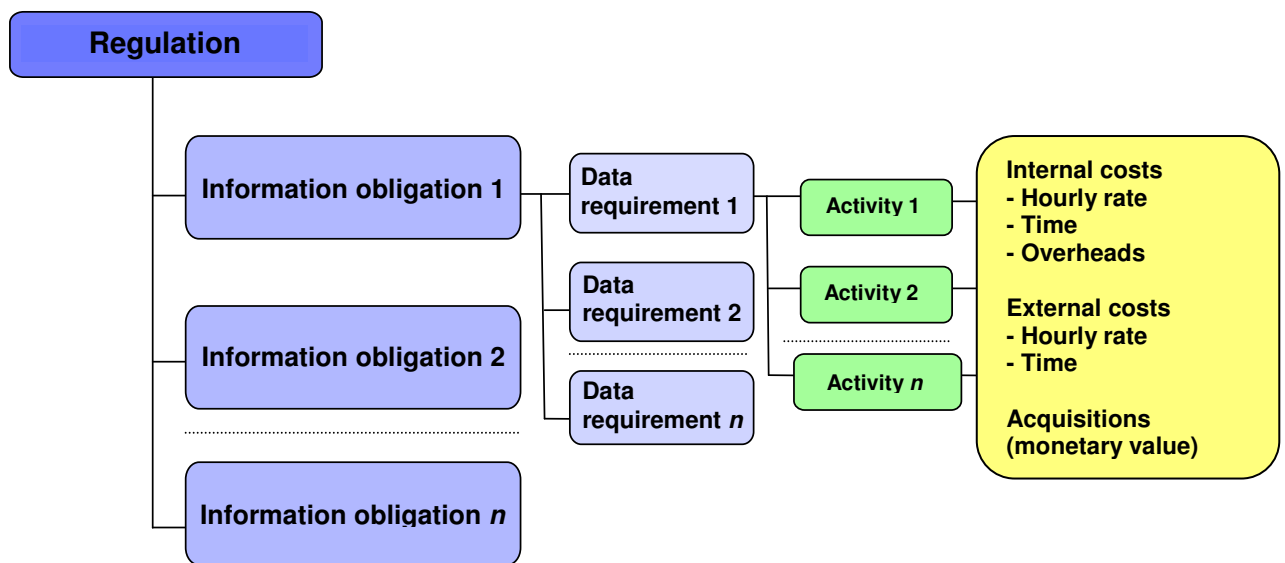
Represented by the following figure.

Figure 2. Structure of the Standard Cost Model. (Source: ISCM, 2003.)

How to get all this information

All components to measure administrative burdens can be obtained during interviews with a small (deliberately chosen according to relevant characteristics) number of businesses which are subject to a specific reporting regulation. Using the above parameters, we have to ask how much time and money they spend to perform each administrative activity that is required to fulfil a given information obligation. After collecting the data, we can perform the next step by standardising the amount of time and money spent on performing each activity within each segment of business and calculating costs incurred by businesses as a result of the imposed regulations.

Standard Cost Model – computational pattern

The cost parameters combined with quantity parameters enable us to estimate the total cost. The burdens are calculated by multiplying Price and Quantity.

Price = Time × Tariff

Quantity = Population × Frequency

Combining these elements give the basic SCM formula:

Activity Cost = Price × Quantity = (tariff × time) × (population × frequency)

SCM example

For example, an administrative activity takes 3 hours to complete (time) and the hourly cost of one member of staff in the business completing it is £10 (tariff). The price is therefore 3 × £10 = £30. If this requirement applied to 100,000 businesses (population), each of which had to comply twice a year (frequency), the quantity would be 200,000. Hence the total cost of the activity would be 200,000 × £30 = £6,000,000.

Source: Measuring Administrative Costs: UK Standard Cost Model Manual

The SCM was implemented in the United Kingdom (UK). According to the Prime Minister's Instructions on the Control of Statistical Survey, on behalf of UK government departments, the measurement of burdens was made by a consultancy company – Price Waterhouse Cooper (PWC). SCM involved examining, by a face-to-face questionnaire, a small group of businesses of varying type and size within the sample. The aim of the survey was to find out how much time and money businesses spend on each activity for each obligation imposed by law.

The method of collecting information on response burdens used by PWC posed a problem connected with ensuring adequate information concerning statistical surveys conducted by the Office for National Statistics (ONS). Hence, for purposes of ONS a paper questionnaire was developed with 17 questions and more detailed breakdowns, among others on types of activity and external costs. Some of them were required for the SCM calculations, but some referred to perceived burdens. The pilot SCM focused on nine surveys conducted during the period 2006 to 2009. On the basis of information gathered some values were calculated according to the following formulas:

Overall survey cost=(sum of weighted cost per questionnaire x survey frequency) × an uplift factor for re-contacting businesses

Mean cost per questionnaire=(sum of the weighted cost per questionnaire / survey sample size) × an uplift factor for re-contacting businesses

and therefore respondent burden cost (SCM formula) was estimated as:

Respondent Burden Cost=(weighted mean cost per questionnaire + uplift for re-contacting business) × number of questionnaires in survey sample × survey frequency

where:

cost per questionnaire=[(internal cost + overhead - adjustment for business-as-usual + external cost]

The adjustment for business-as-usual was employed when the information for a statistical survey was already held for the business's purposes, according to following rules: when "all information was already held, the adjustment was a 90% reduction; if some information was already held – a 40% reduction, and if none, no adjustment was made.

The weighted mean response burden per questionnaire was the average compliance cost of the business that corresponds to the review survey sample, where the review sample design is taken into account." (Frost et al., 2010)

As a result of using the SCM model some figures appeared representing the cost incurred by businesses to fulfil governmental obligations. Also some findings were formulated concerning this method of calculation.

First editions of the SCM showed that there was a necessity to redesign the questionnaire and to introduce a lot of changes. Despite the reduction in the number of main questions – from 17 to 10 – the paper method of gathering information was still debatable. It took respondents a long time to provide all required information concerning burdens on a statistical survey, even more than the participation in the survey which was assessed. Furthermore, some questions posed a significant problem to respondents. The main difficulty was to break down their time into parts corresponding to

different actions. The method also appeared to be impractical and ineffective for some respondents involved. For example, taking into account 'business-as-usual adjustment' resulted in some cases in non-realistic amounts of time devoted to completing the questionnaire.

Additionally, this method seemed to be very burdensome not only for businesses but also for data producers. The level of information gathered using SCM was significant and hugely resource-intensive – the process of calculating respondent burden required too much time and work. Consequently, the advantages – usefulness of information – were out of proportion to the effort put into its gathering and compiling.

Taking into account experiences from the pilot study of SCM, ONS leans towards a less resource intensive and simplified model. Variables which pose a problem in precise estimation and evaluation should not be taken into calculation to avoid measurement error. Also, implementation of the SCM approach should not saddle respondents with further burdensome requests for information. As a result, only two main pieces of data are necessary to implement SCM: time spent to complete the questionnaire and external costs resulting from the participation in statistical surveys. The adjustment of gathered data concerning the time taken to re-contact businesses to verify responses should be made by data producers. This way of proceeding should be more proportionate and robust for parties involved.

ONS also formulates an opinion that the approach to measuring burdens should focus on observing changes in burdens over time rather than measuring their actual level.

Summary of the SCM

The Standard Cost Model is a tool enabling us to work systematically towards reducing the response burdens for businesses by:

- creating awareness among statisticians about the level of response burden

- constantly monitoring response burdens

- setting out a strategy of reducing existing burdens

- minimising the response burdens in future undertakings (surveys)

- simulating ex-ante the burdens effects of new surveys in order not to impose unnecessary response burdens and design solutions where costs and benefits are more carefully balanced.

We should remember that SCM was developed to give only an indication of administrative burdens, and it is not intended to give detailed or exhaustive information.

So it is very important to compare the quantitative aspect to the qualitative one. Two dimensions of burdens – objective (concerning the actual cost) and perceived (concerning the willingness to cooperate) are the basis for an overall assessment of response burdens.

The implementation of SCM by ONS provides a very important lesson, which can be useful for statisticians within ESSnet. Firstly, a survey on response burden should not be the source of more burdens and obligations for survey participants and, secondly, it seems more important to monitor changing levels of burdens over time rather than calculate their actual costs.

Further information on administrative burdens is also available at the SCM Networks website[5]:
www.administrative-burdens.com

2.3.3   Recommendations for measuring response burden

At the end of this subsection, we wish to formulate some guidelines about the use of the models of response burden measurement in the practice of official statistics. First of all, we will make a short overview of the existing literature presenting most important problems observed in NSIs in this context.

The models and solutions presented in previous subsections are elements of a general concept called Cost Benefit Analysis, introduced by Prest and Turvey (1965) and discussed by Haraldsenet al. (2013). It treats respondent burden as an effect of participating in a survey, which can generate both costs and benefits for users and institutions conducting the survey. That is, the cost of a survey is divided into respondent burden costs and survey organisation costs. The benefits can be viewed both in terms of user perception and as a change in quality. So, this model and measurement of all its parts can be recommended as a widely applicable solution that helps to perceive various aspects of response burden in a complex way – as part of a statistical survey strategy.

Rainer (2008) argues that the system used in most NSIs is highly desirable to document the burden caused and to monitor the effects of the efforts and measures taken in order to meet the reduction goals. The experience of statistical institutions in various EU member states shows that the actual response burden caused by official statistics is quite low compared to the total administrative burden. Thus, the real problem with response burden is that there is no strict correlation between a reduction in actual and perceived burden[6]. Rainer formulates some principles which could constitute conceptual guidelines for establishing a measurement instrument of the actual response burden at the EU-level; these guidelines are based on the currently applied practices, especially in Austria (the "response burden barometer" was mainly developed in cooperation with the Austrian Economic Chamber and the results have been published in an annual article in the bulletin of Statistics Austria and on the homepage of Statistics Austria since 2004). To avoid recall problems, they postulate performing response burden measurement right after the response action. Rainer suggests that the measurement should cover obligatory as well as voluntary data collection from businesses. He believes that voluntary reporting is treated by NSIs in the same way as obligatory reporting in terms of contact and reminder procedures; thus, since a specific survey might be obligatory in some member states while not obligatory in others, the voluntary factor of a survey seems to be necessary.

Giesen and Raymond-Blaess (2011a) provide the final deliverable of Work package 2 of BLUE-Enterprise and Trade Statistics (BLUE-ETS), which concerns the measurement and reduction of response burden at National Statistical Institutes (NSIs). It involved a survey of 45 NSIs from all European and some non-European NSIs. On the basis of this study one can observe that most NSIs do not seem to have a central place where knowledge of various response burden reduction actions and response burden measurement methods is coordinated. Giesen and Raymond-Blaess also note that

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[5] A booklet – *The Standard Cost Model – a framework for defining and quantifying administrative burdens for businesses* was published in August 2004. This manual contains a detailed description of the Standard Cost Model method and how to apply it.

[6] Although – as we remember from section 2.1.2 – there is usually a correlation between actual and perceived burden (cf. also Berglund et al., 2013).

there is a large variation in the extent to which NSIs have implemented actions that can reduce response burden in their business surveys. It is difficult to conduct research on how actions aimed at response burden reduction actually affect three crucial aspects: response burden, data quality and the costs of producing statistics as well as how actions aimed at response burden reduction may have different effects for different businesses, depending on characteristics such as size class, industry or previous experiences with responding. According to Giesen and Raymond-Blaess (2011a), Eurostat should initiate the development and implementation of a standardised methodology for response burden measurement, research concerning business data collection methodology must move on from qualitative, explorative research to quantitative and preferably experimental research designs, effects of actions intended to reduce response burden should be monitored, reviewed, documented and published and burden reduction measurement and burden reduction actions should be coordinated within NSIs. Using data collected during this survey, Giesen and Raymond–Blaess (2011a) discuss problems connected with a systematic development of knowledge about efficient and effective methodologies for response burden reduction in business surveys. Continuing this matter, Giesen, Bavdaž and Haraldsen (2011) show that most NSIs conduct measurement of response burden using various methodological approaches but most of them have some kind of response burden measurement. In their opinion NSIs should move towards standardisation in order to provide good quality and comparable response burden data; they also discuss some issues that need to be solved in order to accomplish standardisation. These conclusions confirm the problems indicated by Rainer (2008).

Summarising, it is obvious that each NSI should have a central unit coordinating the measurement of response burden and equipped with the relevant knowledge to overcome difficulties. But the question remains how to construct the design of response burden measurement. It seems that an optimal solution is to do this after response collection is finished. Both actual and perceived burden should be quantified. For each group of burdens it should be indicated whether the survey is obligatory or voluntary. The actual burden measurement should be a combination of SCM and response indicators and quantities expressed in the relevant row of Table 1. Perceived (subjective) burden can be measured on the basis of a special survey with questions similar to those listed in the relevant cells ofTable 1. It is also a good idea to include a question about the usefulness of the survey for the development of the country and regions, i.e.,whether surveys of this kind help the central and local government to obtain a good picture of issues they are interested in.

In general, a complex measure of response burden of a given survey can be presented in the following form

$$\mu = \frac{\theta}{\Theta} + \sum_{i=1}^{p} \sum_{j=1}^{p_i} q_{ij} \varphi_{ij},$$

where θ is the cost of conducting a survey for businesses, obtained using the SCM model, Θ denotes the total cost of conducting this survey, q_{ij} is the value of j–th category in the i-th question concerning perceived burden (i.e., we assume that i-th question as p_i options of answer ordered from 0 to $p_i - 1$ in inverse relation to their burdensome character; for example answers to the question from Table 1: *Did you find it easy or burdensome to fill in the questionnaire?* have $p_i = 5$ and will be quantified as follows:0 – very easy, 1 – quite easy, 2 – neither easy nor burdensome, 3 – quite burdensome, 4 – very burdensome) and φ_{ij} is the percentage of a given answer in surveyed businesses. The measure μtakes

values from $[0, \infty)$. Of course, the situation where $\mu = 0$ is impossible in practice (otherwise, e.g., all businesses would have no cost of filling the questionnaire – which is nonsense). The greater the measure, the higher response burden. This approach seems to be more efficient than the simple solution proposed by Haraldsenet al. (2013), who suggested assigning values to the response categories of PRB Questions (Table 1) according to a scheme, where a neutral answer receives the value 0 and burdensome ones are assigned negative values, e.g.,–1 – very burdensome, –0.5 – quite burdensome, 0 – neither/nor option, 0.5 – easy or quick and 1 – very easy or quick and averaging the responses to the questions. This model can conceal difference between particular components and does not account for some important factors affecting response burden.

2.4 Reducing response burden

To minimise the problems concerning response burden as much as possible, NSIs should implement complex strategies involving a permanent overview of all business surveys and domains they cover, controlling data quality, recognition and reductions of threats, etc. To do it, efficient policies of National Statistical Institutes aimed at reducing response burden are necessary. In this section we will present a review of fundamental methods and forms of conducting such activities.

2.4.1 Basic instruments and factors affecting reduction of response burden

According to Willeboordse (1998), there are several instruments for carrying out such policies:

- **co-ordination, concentration or integration of data collection**,

- **rationalisation of the number of questionnaires and institutions where they should be reported**; optimally – one should try to construct universal solutions useful for all institutions involved – each of them could find data which it is interested in, one respondent should communicate only with one authority/department. Of course, there may be good reasons to deviate from this ideal approach. Still, even when respondents are tackled from different places in the organisation, contacts can be streamlined by appointing an account manager who is responsible for a harmonised approach to a particular (group of) respondents. Integration of questionnaires and clustering of surveys may not only reduce (the perception of) burden, but also contribute to the consistency of reported data and thus to the quality of statistics,

- **coordinated delimitation of sampling frames** (drawing samples for all such surveys from one unequivocal source, i.e., a centrally maintained business register; moreover, different surveys should apply the same type of statistical unit, as well as a uniform method and moment of determining their respective sampling frames from the business register),

- **coordinated sampling** (control of response burden achieved by a coordinated selection of samples). Without any internal coordination within the statistical agency it might happen that some businesses receive more forms than others, although these businesses are comparable in terms of size, activity, etc. A powerful tool to spread the response burden is a combination of a centrally maintained business register and a comprehensive computer program for coordinated sampling,

- **Electronic Data Interchange – EDI** (survey statisticians comply with accounting practices and also stimulate centralisation of data collection operations),

- **information on response burden** (NSIs should try to inform respondents in advance about surveys they will be involved in. Ideally, NSIs should send a comprehensive list of these surveys, including an average completion time of the questionnaire, at the beginning of each year. Of course, such a frank attitude is only possible with a very well planned and centrally organised surveying strategy, while all of the above mentioned issues should have been completed or at least be underway, e.g., the Database of Statistical Obligations in Poland),

- **policies applying at the level of individual surveys**. In this case the following aspects should be taken into account: *number of respondents* (using samples that are as small as possible and making a maximum use of auxiliary information. The use of advanced sampling techniques and high quality sampling frames as well as specialised databases and results of other surveys contributes to this goals), *units* (the observation unit should be defined in such a way that the respondent can recognise himself as a real transactor in the economy rather than an artificial construct; this can be accomplished by stressing the requirements of autonomy and data availability in operational unit definitions, while accepting a certain degree of heterogeneity), *concepts and definitions of variables* (questionnaires should be designed in such a way that they can be completed directly from book keeping records, and that it is, again, up to the statistician to bridge the gap between questionnaire concepts and statistical output concepts), *number and details of variables* (the contents of questionnaires should be alternated: once the "maximum" questionnaire is designed, one should seriously consider whether it is really necessary to apply it full size for each respondent during each reporting period), *accuracy of variables* (for smaller units the burden may be relieved by collecting data in ranges rather than discrete values, without a notable effect on the quality of statistical data), *tailor–made questionnaires* (when a survey covers distinct SIC-areas, accounting practices and vocabulary may differ among branches. This may require different questionnaires for different groups of respondents), *relevance of questions and explanatory notes* (if time and effort needed to read and understand questions, introductory letters and explanatory notes is excessive for respondents, it is recommended that questionnaires be tailored to homogeneous groups of respondents using, e.g., data from a previous survey), *feedback of results* (it is necessary to find out whether survey results provided to the respondent come up to their expectations and whether the effort put into preparing relevant data might have a positive effect on the perception of burden; if properly introduced, respondents may consider such a question as an indication that the NSI is aware of their problems and tries to do something about it; besides, outliers might be given after-care by advising them how to reduce the completion time).

Hedlin (2011) observes that the main factors affecting the total reduction in actual burden are as follows: **use of registers** (administrative databases can be a good source of a lot of information, which should eliminate the necessity of collecting it in surveys; it is commonly perceived as the first option to think of when reducing response burden), **the number of respondents** (to reduce sample size, either in every period of the survey or in some periods and using design–based methods of efficient sampling and estimation, e.g., a domain estimator is also recommended as the second option when the use of registers is impossible or insufficient), **time per question** (question text and questionnaire design-related response burden can potentially be reduced without any loss of exactitude), **thenumber of questions per questionnaire** (one should avoid using similar questions in the same or other surveys), **the range of questions in different survey rounds** (rather than collecting the full data set in

every period of the survey, some questions in some periods can simply be skipped, also time series analysis may be useful to impute some data), **the frequency of the questionnaire** (reduce frequency of questionnaires, for example from four times to three times a year in a repeated survey), **general survey tasks** (opening the envelope, logging onto the website, retrieving a web questionnaire, storing responses in an archive, communicating the response, etc.), **the frequency of re-contacts for the same questionnaire** (minimise re-contacts for editing and follow-up purposes), **spreading actual response burden out** (a more even distribution of response burden over businesses is highly desirable even if the total burden remains the same; one can spread questionnaire requests evenly over the population or spread questions evenly by dividing up items in a survey in question sets and not putting more than one question set to any one business; both approaches can be combined).

Hedlin (2011) focuses on how to reduce actual response burden by means of sampling and estimation. There are, in principle, two main data sources in surveys: data that the survey organisation collects and data that are collected by another organisation for purposes other than the survey. An obvious way to reduce actual response burden would be to cut down on the information output and, hence, the need for data input from respondents. Whether this is feasible or not is a pertinent question to ask; however, we focus on burden reduction measures that largely maintain information output. An overview of survey results for survey design actions that can reduce actual burden (based on the survey of NSIs described by Giesen and Raymond-Blaess, 2011b) shows that the use of administrative or register data, reduction in sample size and reduction in the number of items are particularly common measures implemented by NSIs. However, burden reduction actions may also reduce the quality of survey estimates. For example, replacing a survey with register-based statistics may lead to a loss in validity. Sometimes it is possible to estimate the size of the loss by running the survey while simultaneously producing register-based statistics.

To be closer to current practice and to account for problems mentioned in sections 2.1. to 2.3, a strategy to reduce response burden should contain the following actions:

- changing deadlines for submitting statistical reports to reduce response burden and to improve survey quality and completeness – adjusting them to book keeping regulations.

- obtaining data from administrative registers, where data are submitted by companies because of reporting obligations imposed by law. Such registers are maintained by government institutions and contain data about social insurance (employment data) or revenues (income and tax data).

- using other (administrative) sources to ensure current information on enterprises to update business registers (phone numbers, e-mail addresses, postal addresses)

- creating regulations to support statisticians in their work with enterprises that consistently refuse to report information.

- simplifying, providing explanations to reports, variables and concepts. The more complex such explanations are, the higher the rate of incorrect data.

- adjusting survey assumptions to the requirements of accounting systems and regulations to enable the transfer of data directly from accounting systems.

2.4.2   Some practical solutions concerning response burden policy

We will now present several examples of special strategies within the response burden policy concerning the recognition and reduction of burdens applied in various countries.

Bolin and Thyrestrand (2011) describe tasks carried out by the Survey Help Desk in Statistics Sweden, which monitors response burden and tries to help heavily burdened enterprises, that is enterprises that are in a particularly difficult situation, with many surveys and limited possibilities to respond to them. This organisational unit researches the situation of such enterprises and tries to find ways to ease the burden for them in accordance with the scope of non-response and sample scheme. To support this undertaking, the Survey Help Desk relies on the Swedish Register of Data Providers. The purpose of this database is to measure and analyse the burden at an aggregated level and to be able to give information to each individual enterprise about the surveys they are participating in.

Goddeeris and Bruynooghe (2011) provide an overview of the simplification process and its results and the use of the XBRL based web survey used in many countries. XBRL (eXtensible Business Reporting Language) is an open standard based on the electronic collection and transfer of business economic data via the internet. The use of the XBRL technology has made it possible to develop programs that automatically search all the data for Structural Business Statistics in the accountancy data of the enterprise and organise these data in an XBRL file that can be uploaded (see the topic "Data Collection" of this Handbook and http://www.xbrl.org/).

Yancheva and Iskrova (2011) present objectives, assumptions and results of the Bulgarian project aimed at reducing administrative burden in business statistics in that country. It is conducted on the basis of the Information System of "Business Statistics" (ISBS), which provides an online collection of annual reports of all economically active enterprises, containing a set of accounting and statistical questionnaires. The key result of the project was the implementation of the single entry point for reporting fiscal and statistical information, which involved defining the scope and content of data that have to be submitted, ensuring that definitions and concepts used in the reports are identical for institutions which collect business data (in Bulgaria there are two), introducing amendments in the legal acts related to fiscal and statistical obligations of business, developing the concept of SBS data warehouse to ensure the common use of data that fits the specific purposes of each institution, creating the Information System of 'Business Statistics, developing and launching a public awareness campaign and training sessions for accountants and business associations and, finally, promoting electronic data submission instead of paper based one. These tasks were performed by specialised experts from statistical and financial institutions.

Oswald and Stanton (2011), on the basis of experiences of the United States of America, suggest reducing instruction/explanatory materials and item redundancy, distributing subsets of items strategically across units using available data or imputation to complete analyses and automating field completion by means of relevant optimisation techniques, which are based on the dependencies between data and restrictions imposed on them.

Finally, we would like to mention some solutions adopted in Poland. To ensure effective knowledge and control of survey implementation one should have a central database indicating for each economic entity which surveys it is actually involved in. In Poland this information is stored in the Database of Statistical Obligations, containing a list of reports that each statistical unit should submit to the Central Statistical Office. The timeliness of fulfilling these obligations is also systematically monitored.

2.4.3 International recommendations for response burden policy

When describing the problem of reducing response burden, we should also present most important international recommendations which will be useful for statisticians and users of statistical data. A starting point in this context can be the document prepared by Eurostat and ESS (2011), Principle 9 concerning non-excessive burden on respondents was formulated. The document states that "*the reporting burden should be proportionate to the needs of the users and should not be excessive for respondents. The statistical authority monitors the response burden and sets targets for its reduction over time*". This principle states that "*the range and detail of European statistics demands is limited to what is absolutely necessary*". That is, the reporting burden should be spread as widely as possible over survey populations by applying appropriate sampling techniques. To collect information from businesses, their accounts and electronic means should be used where possible. This should improve data transfer and their quality. If exact figures are not readily available, best estimates and approximations are accepted. The document also underlies the role of administrative data sources, which can be used to avoid duplicating requests for information and keep the number of surveys to a minimum. Thus, data sharing within statistical authorities has to be harmonised and generalised.

Eurostat (2009) states that the procedures of treating respondent burden should include among others: assessment of annual respondent burden in financial terms and/or hours, the definition of respondent burden reduction targets, recent efforts made to reduce respondent burden, answers to questions of whether the range and detail of data collected by surveys is limited to what is absolutely necessary, whether administrative and other survey sources are used to the fullest extent possible, whether electronic means are used to facilitate data collection, whether best estimates and approximations are accepted when exact details are not readily available and whether reporting burden on individual respondents is limited to the extent possible by minimising the overlap with other surveys. Also, one should consider the scope of data collected from businesses – it should be verified whether such data are readily available from their accounts. These elements are necessary components of any efficient and comprehensive report on response burden.

In the document by Eurostat (2009), it was pointed out that the difference between costs on the one hand and benefits in terms of output data quality on the other should also include respondent participation understood as a cost (to respondents) that has to be balanced against the benefits of the data thus provided.

On the basis of his statements described in subsection 2.4.1 of this module, Hedlin (2011) formulates the following main recommendations for internationally consistent policy aimed at burden reduction:

"*1. Eurostat should initiate the development and implementation of a standardised methodology for the measurement of response burden caused by official business surveys. The standardised methodology may include multiple indicators and a minimum version of the measurement, to accommodate NSIs differences regarding the purposes of and resources for response burden measurement. Standards are needed to ensure that basic comparisons can be made over time and between NSIs. To make informed decisions on the minimal requirements for standardised response burden measurement research is needed that assesses to which extent different aspects of response burden are relevant for the quality and costs of data collection.*

2. Research concerning business data collection methodology must move on from qualitative, explorative research to quantitative and preferably experimental research designs. Research into data

collection methodology for business surveys is relatively young and has so far been mainly qualitative. These studies have provided many valuable insights in how data collection design characteristics that are under control of the survey organisation can affect response burden, data quality and the costs of data collection. However, quantitative studies that provide information about the significance and the magnitude of these effects are lacking. This information is essential for NSIs to efficiently plan their resources and optimize their data collection.

3. Effects of actions intended to reduce response burden should be monitored, reviewed, documented and published. When NSIs plan actions to improve their data collection, they should include a plan to make statistically sound comparisons between alternative (or old and new) methodologies. As these kinds of studies are very scarce and most NSIs face similar challenges, effort should be put in making the results of these studies known to the international community of statistical agencies and survey methodologists.

4. Burden reduction measurement and burden reduction actions should be coordinated within NSIs. Within NSIs the knowledge on response burden measurement and response burden reduction actions seems to be rather fragmented and scattered. Statistics Canada and Statistics New Zealand are examples of what seem to be the current best practices concerning the organisation of response burden measurement and response burden reduction at NSIs. Both agencies have dedicated staff, an Ombudsman and a Respondents Advocate respectively, to coordinate the response burden work."

Thus, careful and permanent monitoring and treatment of the response burden and taking efficient actions aimed at reduction of them is one of key tasks of the modern statistics.

3.   Design issues

4.   Available software tools

5.   Decision tree of methods

6.   Glossary

For definitions of terms used in this module, please refer to the separate "Glossary" provided as part of the handbook.

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Interconnections with other modules

8. Related themes described in other modules

1. User Needs – Specification of User Needs for Business Statistics

2. Overall Design – Overall Design

3. Questionnaire Design – Main Module

4. Sample Selection – Main Module

5. Data Collection – Main Module

6. Data Collection – Collection and Use of Secondary Data

7. Imputation – Main Module

8. Weighting and Estimation – Main Module

9. Methods explicitly referred to in this module

1.

10. Mathematical techniques explicitly referred to in this module

1. Cost computation

2. Effective sample selection algorithms

3. Imputation algorithms

4. Weighting algorithms

11. GSBPM phases explicitly referred to in this module

1. GSBPM Phases 4.1 and 5.2–5.6

12. Tools explicitly referred to in this module

1. CAII

2. CAPI

3. CATI

4. EDI

5. Reporting portals, e-questionnaires

13. Process steps explicitly referred to in this module

1.

Administrative section

14.   Module code

Response-T-Response Burden

15.   Version history

Version	Date	Description of changes	Author	Institute
0.1	6-6-2011	first version	Monika Natkowska Andrzej Młodak	GUS (PL)
0.2	31-08-2012	revised version	Monika Natkowska Andrzej Młodak	GUS (PL)
0.3	14-02-2013	third version	Monika Natkowska Andrzej Młodak	GUS (PL)
0.4	26-04-2013	fourth version	Monika Natkowska Andrzej Młodak	GUS (PL)
0.5	07-11-2013	fifth version	Monika Natkowska Andrzej Młodak	GUS (PL)
0.5.5	27-01-2014	corrected version according to EB-review	Monika Natkowska Andrzej Młodak	GUS (PL)
0.5.6	28-01-2014	preliminary release		
1.0	26-03-2014	final version within the Memobust project		

16.   Template version and print date

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