

## Article

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# How to Develop Business Surveys Continuously in a Cyclic Model

by Helena Bäckström and Pia Hartwig

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## Abstract

In one sense, a questionnaire is never complete. Test results, paradata and research findings constantly provide reasons to update and improve the questionnaire. In addition, establishments change over time and questions need to be updated accordingly. In reality, it doesn't always work like this. At Statistics Sweden there are several examples of questionnaires that were designed at one point in time and rarely improved later on. However, we are currently trying to shift the perspective on questionnaire design from a linear to a cyclic one. We are developing a cyclic model in which the questionnaire can be improved continuously in multiple rounds. In this presentation, we will discuss this model and how we work with it.

Key Words: Business surveys, Standardization, Cyclic model, Editing staff debriefings, Guidelines, Cognitive methods, Data quality.

## 1. Introduction

### 1.1 Business surveys at Statistics Sweden

Statistics Sweden conducts about 100 business surveys a year. Most of the surveys are conducted yearly, quarterly or monthly. Today, we conduct both paper and web surveys but the amount of web surveys are increasing.

The government has provided some challenges for and demands on Statistics Sweden's business surveys. One is to expand the economic statistics, another is to improve the quality. At the same time, we should reduce the cost for the respondents with 25% within a four-year period. Finally, we should reduce the amount of editing substantially. Statistics Sweden is applying selective editing.

### 1.2 What efforts are required?

One of our strategies to achieve the goals above is to standardize our questionnaires by using guidelines concerning the visual design and how to write questions. The advantage with standardization of the visual design is that the respondent gets familiar and learns how to work with it, regardless of which survey she participates in at the time. The standards are based on the knowledge of questionnaire design. Now, when we have these standards, we can spend less time on design issues and more on subject matters.

Another strategy is to apply a model which enables us to evaluate our ongoing surveys in a systematic way. The evaluations should not be based on mere opinions or suspicions but on qualitative and quantitative investigations.

## 2. The cyclic model

Previously, we looked at our surveys in a linear fashion. The disadvantage with this was the lack of feedback processes and improvements which is the strength in the cyclic model. That the model is cyclic, rather than linear,

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Some of the problems in the old questionnaire were:

- Questions and response boxes were separated which made it difficult for the respondent to navigate through the questionnaire.
- The same questionnaires are sent out every year even though all questions should not be answered every year. Questions that should not be answered can not be taken out, because of layout issues, so they are marked in grey. This makes them stand out, more than the questions that should be answered, which is disruptive.

After a review we concluded that a change in layout could solve these problems. Such changes could increase the response rate, reduce the burden and make the production process more efficient.

**Figure 2.2-2**  
New questionnaire “Statistics on salaries”

Lönestrukturstatistik privat sektor (AM/SLP) + Löneredovisning - individer +

Företagsnamn: \_\_\_\_\_ Organisationsnummer: \_\_\_\_\_

+ Arbetsställe \_\_\_\_\_ CFAR-nr: \_\_\_\_\_ 0 **I**

**Frågorna avser perioden 1 - 30 september 2007**

	Individuppgifter	Individuppgifter
1. Fyll i personnummer <i>Fylls i med 10 siffror</i>	<input type="text"/>	<input type="text"/>
2. Vilken SSYK-kod (yrkeskod) har personen?	<input type="text"/>	<input type="text"/>
3. Ange yrket eller beskriv personens arbetsuppgifter. <i>Behöver endast anges om SSYK-kod inte är ifyllt</i>	<input type="text"/>	<input type="text"/>
4. Vilken personalkategori tillhör personen?	<input type="checkbox"/> Arbetare <input type="checkbox"/> Övriga	<input type="checkbox"/> Arbetare <input type="checkbox"/> Övriga
5. Vilken löneform har personen?	<input type="checkbox"/> Månadslön <input type="checkbox"/> Veckolön <input type="checkbox"/> Timlön	<input type="checkbox"/> Månadslön <input type="checkbox"/> Veckolön <input type="checkbox"/> Timlön
6. Vilken överenskommen fast bruttolön (månads-, vecko- eller timlön) har personen?	<input type="text"/> kr <input type="text"/> öre	<input type="text"/> kr <input type="text"/> öre
7. Vilken överenskommen veckoarbetstid har personen? <i>Fyll i timmar med 2 decimaler</i>	<input type="text"/> tim / vecka	<input type="text"/> tim / vecka
8. Vilken är veckoarbetstiden för motsvarande heltidstjänst? <i>Fyll i timmar med 2 decimaler</i>	<input type="text"/> tim / vecka	<input type="text"/> tim / vecka
9. Hur många timmar arbetade personen i september? <i>Räkna med mer- &amp; övertid.</i>	<input type="text"/> timmar i september	<input type="text"/> timmar i september
10. Hur många timmar var betalda mer- eller övertidstimmar? <i>Ange hela timmar</i>	<input type="text"/> timmar i september	<input type="text"/> timmar i september
11. Hur mycket betalades ut totalt i rörlig lön för september? <i>Ex. provision, ackord</i>	<input type="text"/> kr	<input type="text"/> kr
12. Hur mycket betalades ut totalt i form av tillägg för september? <i>Ex. OB, skift. Räkna inte med grundlön.</i>	<input type="text"/> kr	<input type="text"/> kr
13. Hur stort var värdet av förmåner samt ersättningen för jour, beredskap, väntetid och restid utanför ordinarie arbetstid i september?	<input type="text"/> kr	<input type="text"/> kr
14. Vilken kod gäller för arbetslagsart? <i>Se instruktionen</i>	<input type="text"/>	<input type="text"/>

+ **SCB** Statistiska centralbyrån Statistics Sweden sid 1 Var god vänd → +

Some of the changes in the new questionnaire are:

- We changed from rows to columns. Questions and instructions are close to the response boxes. It looks much better and it is easier to see what information we want the respondent to submit. The navigation is easier.
- The response boxes are clearer and adjusted to the expected amount of digits for every question. This makes it easier for the respondent to recognize what we want them to enter.

## 2.3 Testing

To know whether the changes are successful or not, one has to test the questionnaire. All surveys benefit from testing in one or several rounds.

We use different methods, either each one separately or jointly. Methods we use are:

- Expert review – One purpose is to investigate whether the questions collect the intended information. Another purpose is to identify potential problems and adjust them according to guidelines concerning questionnaire design. In an expert review a questionnaire is systematically reviewed by experts in questionnaire design. It does not include any respondents and should, therefore, be complemented by another method.
- Cognitive interviewing – Focus on the response process. Cognitive interviewing is used to study how the respondents interpret and understand the questions. The interviews also provide information on how respondents retrieve the answer (from memory or from an archive) and adjust it to the response alternatives in the questionnaire.
- In-depth interviews – Primarily used to investigate how the respondents define and think about different subject matters, for example terms and concepts. Such knowledge is important when one should write the questions. In-depth interviews can also be used for evaluation.
- Focus groups – A group discussion on a given topic. The purpose of the method is to investigate people's experiences, opinions or difficulties. Focus groups are an excellent method if the topic is complex. It can also be used for evaluations.
- Debriefing – A qualitative method to collect a group's experiences of a specific survey. The purpose is to find out which questions that are problematic, error indicators, and potential causes to the problems and the respondents' reactions.
- Usability tests – Focus on the visual characteristics of the questionnaires, for example on the interface, rather than on the questions' content. For example, whether the respondents find the links or buttons to continue in the questionnaire, or whether they notice the instructions. We use usability testing primarily on web questionnaires.
- Experiments – The purpose is to evaluate how one factor influences another. For example, how one question influences the response rate compared to another question? The experiment is, in contrast to the other methods described in this paper, a quantitative method. It could, therefore, be considered as more precise.
- Card sort – Card sorting is a method to gain knowledge how people conceptualize, group and describe different objects. The card sorting session should also include a debriefing in which the subject can describe his/her groups. Card sorting can be conducted either in focus groups or on an individual basis.

## 2.4 Data collection

After testing and revising it is time to collect the data.

During the data collection, one should collect paradata so one can make evaluations afterwards. This goes for both web and paper questionnaires. It is important to plan ahead, before the data collection, what kind of paradata one needs to collect.

## 2.5 Evaluation

An evaluation of the data collection process needs to be done after every round. The quality policy at Statistics Sweden is that decisions should be made based on facts and information, not opinions. This is for all processes in the production. Facts and information can be quantitative or qualitative or a combination of the two.

Paradata is quantitative information that describes a process. Web surveys have opened new possibilities to automatically collect and store such information without burdening the respondent.

Another way to collect quantitative information is to conduct embedded experiments. This is how we evaluated the questionnaire “Statistics on salary” (see Figures 2.2-1 and 2.2-2 above). 20 percent of the sample received the new version of the questionnaire. The purpose was to examine whether the new questionnaire reduced the item non-response. We picked seven variables for comparison. We also wanted to know whether the new version of the questionnaire reduced the amount of manual editing required. For these seven variables, the item non-response was significantly lower for those businesses who received the new version of the questionnaire compared to those who received the old. The manual editing was also reduced. Therefore, we recommended applying the new version and in the survey in 2008 it was sent to all businesses.

### 2.5.1 Editing staff debriefings

Editing staff debriefing is an example of a qualitative technique. In many ways, it is similar to a focus group. The editing staffs that work with a particular survey meet and discuss their experiences. The purpose is to find out which questions are problematic and what kind of error indicators turn up in the editing process. In addition, the debriefing could also provide information about how the respondents understand the questions and why they are problematic.

The debriefings are led by a moderator who should examine the questionnaire, letter of introduction and instructions in advance and take notes. The moderator should also interview the survey manager to get an introduction to the survey. To make sure that all aspects are covered in the debriefing, the moderator uses a debriefing guide. The guide can vary in structure. If one wants a structured discussion, one should ask more specific questions to the participants. During the debriefing session the questionnaire is discussed. The sessions include two parts. During the first, the editing staffs discuss their experiences freely and spontaneously. During the second part, the moderator asks more structured questions about all the different variables.

The advantages with editing staff debriefings are:

- You will get a lot of information for a minimal cost
- The editing staffs can point out where in the questionnaire the problems are
- The editing staffs often have ideas concerning what causes the errors

The editing staffs have very valuable knowledge which one should use. We recommend that editing staff debriefings are used in combination with, for example, expert reviews and cognitive interviewing. A debriefing could also provide good input to how one should design the test protocol.

## 2.6 A new round

A new round means that the results from the evaluations should be applied to the next round of the survey. Then, the cycle restarts and one should go through all the steps again.

## 3. Summary

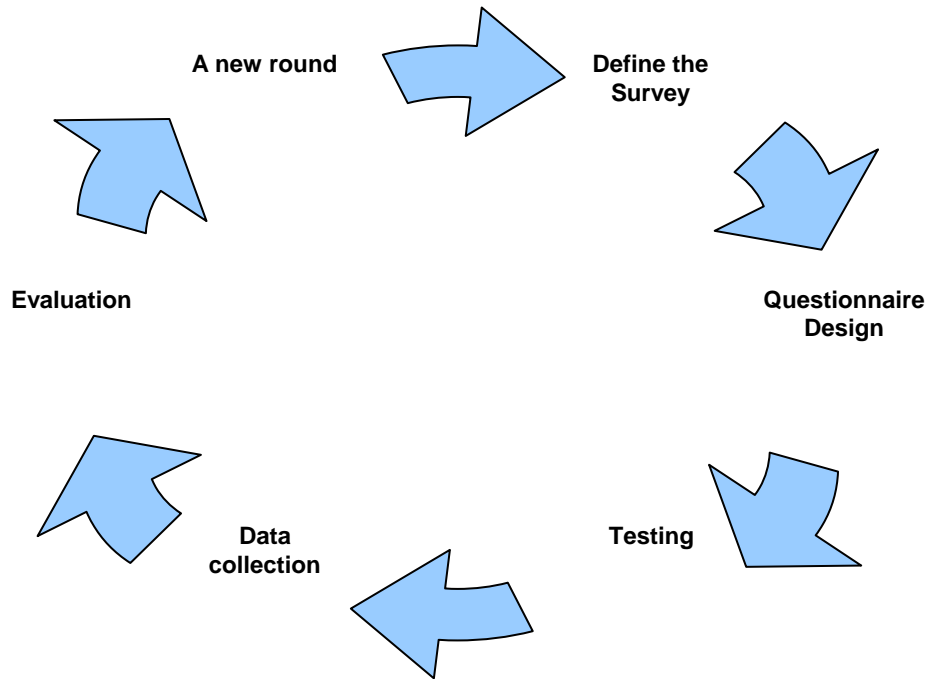
To summarize, these are the goals for Statistics Sweden.

- Expand economic statistics
- Improve economic statistics
- Reduce respondent burden

- Reduce the amount of editing

We believe that the cyclic model is the key to reach these goals.

**Figure 3-1**  
**Cyclic model**



## References

SCB (2007), Riktlinjer för design av frågor och instruktioner och mallar för layout i företagsundersökningar, unpublished report, Örebro, Sweden: Statistics Sweden.