

EFFECTIVE METHODS FOR ANALYZING SURVEY AND QUESTIONNAIRE DATA

OLGA CHICU

PHD student, ASEM Doctoral School,
Econometrics and Economical Statistics Department
Academy of Economic Studies of Moldova,
Chisinau, Republic of Moldova
e-mail: chicu.olga@ase.md
ORCID: 0009-0007-3885-3825

Abstract: Questionnaires and surveys are an excellent way for obtaining important information that would allow understanding the opinion, but also the needs of those interviewed. It is clear that nowadays the method of questioning using an online platform or a specialized software is in first place, respectively, the data from the questionnaire are provided in digital format. Thus, the time required to prepare the data for processing is very short. Qualitative analysis of this information or rather the results obtained from a qualitative analysis can provide clarity on the opinion and behavioral patterns of the participants in the questionnaires, results that would eventually allow the development of efficient strategies.

To perform effective analysis of survey or questionnaire data, it is important to implement techniques that take into account both qualitative and quantitative data. In other words, it is essential to use a variety of methods that take into account both qualitative and quantitative data.

In this paper, we will address the topic of effective methods for analyzing survey and questionnaire data, but we will also discuss effective techniques for creating a survey or a questionnaire.

Keywords: survey, questionnaire, methods of data analysis,

JEL Classification: C8

1. Introduction

In researches, inclusive in research on education, surveys and questionnaires are valuable tools and resources for collecting needed data so that researchers can find out about the perceptions as well as needs of those interviewed or other stakeholders.

With regard to the questionnaire, the specialist literature contains numerous attempts to define this instrument. The questionnaire is a research tool consisting of a set of questions arranged in a logical and psychological order, which elicits responses from respondents that are then recorded. (Negara C., 2017). A survey is another alternative for collecting information from multiple respondents. A survey is a partial study in which, based on the results obtained by processing sample data, the corresponding parameters of the population are estimated using the principles of probability theory. (Asandului L, 2008)

In a survey, several people are asked to complete a standardized questionnaire. Surveys offer a resource-efficient way to collect data from a large group of people in a short period, for example to assess the impact of an initiative on participants. The survey questionnaire might be completed independently or as a guided activity in a personal setting or online. Although surveys are an effective way to collect data, they also have notable limitations. A very common challenge is low response rates (only a limited number of respondents complete the questionnaire). The usefulness of the survey also depends largely on how well the questions are constructed. It is important that the questions are unambiguous and easy for respondents to understand. It is highly recommended to invest considerable effort in developing the questionnaire and to test it before implementation. (INDEED)

2. Techniques for creating survey and questionnaire

In order to obtain "good" data from the survey, certain principles and steps must be taken into account in the process of collecting data based on questionnaires.

The general principles to be taken into account when creating a questionnaire are the length of the questionnaire, avoiding questions that respondents are unable to answer usefully, and, last but not least, the sequence of questions. It is also very important to adapt the language used to the people who are to be surveyed.

However, first and foremost, the purpose of the questionnaire must be clearly stated. The desired results, or in other words, the data to be collected and the target group must be established.

In order to obtain reliable data from the questionnaire, it is important that the questionnaire be tested. This is to verify that respondents understand each question and respond appropriately, and that the obtained data is usable for research purposes.

To summarize the above, we can outline the steps that should be followed in creating a questionnaire: establishing the objectives along with quantitative and qualitative characteristics, drafting the questionnaire itself, and testing it.

Obviously, there is a recommended structure for questionnaires in the literature, and it talks about the types of questions you can find in a questionnaire, as well as the pros and cons of using each one. We will not go into that here.

Nowadays online questionnaires are becoming increasingly widespread. They have a number of advantages over paper-based questionnaires. These include the following (TGMRESEARCH):

Speed: relative to conventional pen-and-paper techniques, online surveys allow for faster gathering of data such that researchers are able to obtain fast opinions from their respondents.

Track responses in real-time: as soon as the respondent clicks the Submit button, the data is already stored in the appropriate tables and is ready to be processed.

Real-time Analysis: Survey construction software allows researchers to see data and responses in real-time through a built-in dashboard, thus facilitating timely and enlightened decision-making. Of course, we speak here more about frequencies and not about deeper analysis.

Cost-efficiency: obviously, online questionnaires require minimal resources compared to methods such as telephone or paper surveys.

Reduced Margin of Error: direct submission by respondents minimizes the potential for errors associated with traditional survey methods that involve intermediaries.

User-Friendly: online surveys tend to be easy for respondents to complete.

Increased Truthfulness: anonymity in online surveys encourages respondents to provide more honest and truthful answers, enhancing the reliability of the collected data.

Flexible Design Options: online surveys offer customizable features like skip logic and branding. Skip logic directs respondents to different questions based on their previous answers.

Despite all the advantages, there are also some disadvantages.

Although online surveys offer anonymity, this can also be a disadvantage. For example, respondents could answer the same questionnaire multiple times. This could be accidental, if they simply forgot that they had already completed it, or it could be deliberate. Obviously, the number of possible responses to the questionnaire can be reduced, for example, by collecting e-mail addresses, but this raises another issue. Even if anonymity is respected, the respondent may not trust that their answers will remain anonymous (depending on the respondent's maturity and digital skills) and may not always give honest answers.

In addition, a lack of interest in the survey or the subject addressed on the part of the respondent may lead to filling out questionnaires randomly, just to get rid of the burden of

completing them more quickly. However, such responses to online questionnaires can be detected taking into account the fact that online questionnaires record the time at which the questionnaire was completed. For example, if it takes 5 minutes just to read all the questions, and the respondent took 30 seconds to answer them, this questionnaire must be classified as unreliable. These responses can be excluded from the final data as unreliable.

Thus, although online surveys offer many advantages over traditional pen-and-paper surveys, especially the speed with which data can be obtained in digital format, it is essential to take into account the target group in order to avoid the situations mentioned above.

3. Methods for analyzing survey and questionnaire data

Survey and questionnaire data collection is only the first step; the true value lies in how the results interpreted and applied, which can transform simple summaries into significant and insightful findings. Using data processing tools and techniques can help:

- to determine if trends in observed data are statistically significant or due to random variation,

- to interpret results in relation to existing knowledge or ancillary data,

- to determine the relative impact of various factors to identify which most impact outcomes,

- to deduce of reasonable next steps or research questions from findings to date.

Survey data is generally either quantitative or qualitative. In order to perform an effective analysis of survey and questionnaire data, it is essential to implement techniques that address both qualitative and quantitative data.

Quantitative analysis is one of the primary approaches. This involves using numerical methods to identify models and trends, which include descriptive and inferential statistics. First summarizes data using the mean, median, mode and second one help to extend conclusions beyond the presented data set. These techniques enable analysts to extract meaningful insights from big data sets.

Descriptive statistics give the answer on how the data is distributed across the population, on the other hand inferential statistics help to predict what might happen or to extrapolate from the sample that are studied to whole population.

By applying methods such as descriptive and inferential statistics, researchers can gain a comprehensive view of the dataset.

Knowing whether the survey results are statistically significant or not allows for confident decision-making and data-driven conclusions.

Therefore, obtaining statistically significant results is extremely important for businesses, academia, and researchers alike.

From a qualitative perspective, thematic analysis is a useful tool for examining responses to open-ended questions. Coding techniques can transform complex textual information into categorized groups. By using a combination of these methods, researchers can enrich their analysis of survey data, thereby obtaining more in-depth and useful information derived from questionnaire data.

The following types of statistical analysis are well known:

Regression analysis – statistical technique used to find the relationship between two or more variables. This technique allows us not only to see whether the relationship between variables is statistically significant, but also to specify the impact on independent variables.

T-test – a tool that used to compare two data groups, which have different mean values.

ANOVA test – similar to the previous one and it allows testing if differences between the means of three or more groups are statistically significant. ANOVA is used whit a regression study.

Cluster analysis - is a way of processing datasets by identifying how closely related the individual data points are. (Babucea A.-G., 2007)

Factor analysis - is used to solve two types of problems: reducing the number of variables to increase the speed of data processing and identifying hidden patterns in the relationships between data. (Cărbureanu M., 2010)

Crosstab analysis – this technique allows comparing relationship between two variables by presenting them in simple table

We can analyze data using various tools and platforms, such as Excel, Python, R, SAS, SPSS, Power BI, etc. Microsoft Excel is one of the best options for organizing data, and it has some functions and tools for basic statistical analysis. SPSS is good on statistical analysis and, what is very important, it is user-friendly because it presents statistical methods clearly. In our humble opinion, SPSS does not have such impressive graphics (in terms of design), but by combining the results from SPSS and the way Excel creates graphics, we can obtain a very good graphical visualization of the data.

Tableau is a great tool for data visualization options, allowing for clearer presentations of questionnaire data. R is an excellent platform for more complex analysis and graphics.

Choosing the best tool depends primarily on data that we have and, on the type, purpose, and complexity of the analysis, but as well as the user's preferences and skills. In general, the best tools for data analysis are those that are easy to use, efficient, secure, and scalable and has high processing speed. Selecting proper tools for survey data analysis is of the utmost significance when it comes to maximizing efficiency and outcomes. Proper tool can significantly reduce time on data processing. In addition, we may consider combining some tools to get the best result.

4. Conclusions

Surveys are the most common form of data collection in the social sciences for most research. Using this method, a large amount of data can be collected from a single respondent at the same time.

To create an effective questionnaire, there are a few simple steps to follow: *clearly define the objectives* and *identify the target audience*. Depending on the target audience, the purpose of the questionnaire will determine the type of survey: pen-on-paper, on telephone, or online. If it is an online questionnaire, *the platform* to be used *must be correctly identified*. The next step is to *test the questionnaire*. It is also very important to *distribute the questionnaire strategically*.

In order to analyze effectively questionnaire data, it is important to use a variety of methods that address both qualitative and quantitative data.

Using statistical methods is a great way to get more value out of the data obtained from questionnaires and surveys.

With so many methods of analysis, it is crucial to understand which are most appropriate for the needs of the research.

Acknowledgements: *Chicu Olga is partially supported by the project “Analysis of the impact of Covid-19 on the main demographic indicators in Romania and the Republic of Moldova by using econometric modeling” code PN-IV-P8-8.3-ROMD-2023-0208 funded by the Romanian Ministry of Research, Innovation and Digitalization (MCID) through UEFISCDI.*

References

1. Asandului L., Niculescu-Aron I., 2008. Ceobanu C., *Statistica în educație*, Ed. Universității „Alexandru Ioan Cuza” Iași. ISBN: 978-973-703-316-1

Annual International Scientific Conference
“Competitiveness and Innovation in the Knowledge Economy”
September 26-27, 2025
Chisinau, Republic of Moldova

2. Cărbureanu M., 2010. *O metodă de analiză factorială aplicată în domeniul dezvoltării* Analele Universității “Constantin Brâncuși” din Târgu Jiu, Seria Economie, Nr. 1/2010, pp.187-194.
3. Negara C., Popov L., 2017. *Specificul elaborării chestionarelor în cursurile online*, Conferința "Tradiție și inovare în cercetarea științifică" Ediția 6, Bălți, Moldova, 29 septembrie 2016, Vol.1, pp. 94-99. ISBN:978-9975-50-202-3
4. Babucea Ana-Gabriela, 2007. *Utilizarea analizei cluster în comparații Teritoriale.*, pp. 311-316.
5. [online] Available at: https://www.utgjiu.ro/revista/ec/pdf/2007-01/57_Babucea%20Ana-Gabriela.pdf
6. INDEED, Knowledge Series, *Metode de evaluare pentru colectarea și analiza datelor*
7. [online] Available at:
8. https://www.toolkit.indeedproject.eu/pdf/ro/3.INDEED%20Learning%20note%20no%203_Evaluation%20methods%20for%20data%20collection%20and%20analysis%20ro.pdf
9. TGMRESEARCH, *Six Simple Steps to Conduct Online Surveys That Gets Good Results*
10. [online] Available at: <https://tgmresearch.com/how-to-conduct-online-surveys.html>