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Risk Analysis, Assessment, and Management in Social Research: A New Approach in Research Project Management

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Abstract

The management of social research projects is a current issue which is not often adequately addressed in the sociological sphere. This topic is vital in light of the increased studies on Saudi society, especially with the growing numbers of social research centers and increased promotion of conducting national research. This article aims to explain the method of analyzing risks prior to conducting social research; to determine the types of risks and the degree of their importance; and to explain how to assess and manage these possible risks and errors that may impede the successful completion of a study.

Keywords: risk analysis, risk assessment, risk management, Saudi Arabia, social research, human science, research project management.

INTRODUCTION

Part 1: What is Risk Management?

Management scholars emphasize that risk analysis, assessment, and management are essential parts of the strategic execution of any project. These are the procedures that any organization should systematically follow in order to maintain the sustainable benefits and success of all their activities. The main focus of risk management is to anticipate the future, being aware of these risks and dealing with them effectively. The goal is to add sustainable positive value to all activities of the organization (Ya'rib, 2009). As such, risk management augments the likelihood of success and reduces the likelihood of failure and uncertainty in achieving project objectives.

Due to the multiplicity of risks and difficulties that researchers may encounter in conducting studies in social and human sciences— whether at the public level such as national research initiatives or at the private level in personal research or postgraduate research— it is appropriate to adopt the methodology of analyzing and evaluating risks that are used in other fields such as management science. This can occur by identifying potential future events and procedures that may negatively affect the progress of the previously planned research process. Subsequently, these potential events are reviewed, classified, and analyzed individually. As part of this process, identifying potential risks can be done mathematically (quantitatively), to determine the degree of each potential risk and how to handle it in a timely manner in order to mitigate its damages.

Study Problem

The research project is like any other investment, economic, or development project that faces many probable risks and challenges at the time of implementation. Therefore, these risks must be precisely identified and evaluated; the extent of their impact on the course of a research project and how to overcome them must also be addressed. When implementing risk management strategies, one can minimize the research process from becoming exposed to errors by taking optimal steps to reduce or eliminate them and using proven techniques, methods, and research instruments. This process is important due to the impossibility of any research work being devoid of risks, some of which can be predicted and controlled while

others more difficult. It should be noted here that the risk assessment process is an essential and important part of a comprehensive risk management strategy, which aims to take preventive measures and procedures to eliminate potential risks or mitigate their effects. It is an analysis of what may hinder the smooth progress of work, the probability of occurrence of these errors, the resulting negative effects, and the extent to which they can be tolerated.

Some of the examples of risks that research projects may be exposed to are sample bias, response bias, missing data, and other issues that cause data loss and anomalous values. These risks may cause interruption of research or invalid score analyses. Thus, this process is a crucial matter that some investigators may overlook or diminish its importance. This article will address the process of analyzing, evaluating, and managing risks and the research problems that may hinder the inquiry process.

The identification and modelling of risks and the quantification for assessing them are based on three risk assessment questions posed by Kaplan and Garrick (Yoe, 2019):

1. What could happen and why?

2. What are the possible outcomes?

3. What is the probability of their occurrence in the future?

In addition to this, the risk assessment process aims to further answer the following (Shishir, 2016):

1. What are the factors that would mitigate the potential results or reduce the likelihood of risks?

2. Can the degree of risk be tolerated and accepted, and do specific procedures require treatment?

Significance

The importance of building a strategy for analyzing, assessing, and managing risks has emerged for the following reasons:

1. The inventory of risks that may affect the researcher's performance in projects is an effective preventive measure in reducing the effects of these risks in the event that they occur.

2. Determining measures to avoid the occurrence of risks or limiting their effects proactively helps in devising the optimal and most effective solutions, instead of improvised solutions that may be costlier and less effective.

3. There is a need for predicting risks and managing them.

4. Researchers and graduate students require directives that can control their performance during the occurrence of risks and aid them to enhance the quality of scientific research.

5. There exists a need for a framework for continuous self-evaluation that helps in early detection of risks, which creates opportunities for excellence among the stakeholders who are concerned with scientific research.

Concept Definitions

Risk: The occurrence of something that has a negative impact and impedes the achievement of a research project’s objectives or leads to material or moral loss.

Weight: The likelihood of occurrence of a risk and assessment of its potential impact on a project.

Risk Management in Scientific Research: A research procedure aimed at controlling risk and mitigating it to reduce its effects to acceptable degrees.

The Importance of Risk Management in Research Projects

Risk management is an important element of accountability in the management of research projects as it is a scientific and methodological approach applied to the scope of a project, which helps in achieving its objectives by identifying, analyzing, and assessing potential risks, arranging related priorities, and addressing them. Since it assists in preparing for the optimal achievement and implementation of a project, it cannot be separated from the methods, approaches, mechanisms of scientific research, and research priorities of the investigator. This practice ensures the continuity of the research project according to the timeline approved by the responsible research body. Risk management also helps reduce sudden risks according to a set of scientific methods through a continuous prediction of the future, identifying

expected obstacles and difficulties in order to provide a consistent methodology for project implementation.

Objectives of the Risk Management Plan in Research Projects:

- To predict, determine, classify, and assess possible risks and minimize their occurrences.
- To establish application procedures in the event of any risk so that the loss is minimized, which affects the progress of the project implementation.
- To determine the requirements for implementing the risk management plan and follow up.
- To spread the culture of risk management among the authorities which are concerned with scientific research.
- To provide a database of research risks shared by all parties and workers in the research field.

Part 2: Potential Sources of Risk in Social Research Projects

Most phenomena that attract the interest of researchers in the social sciences are complex, concealed, and intangible by nature, such as social status, authority, power, and job satisfaction. Consequently, these terms and phenomena are abstract and need to be molded into concepts in a scientific way that can be measured and observed in reality. It is not possible to measure or test a social phenomenon or problem directly, but this can be mitigated through indicators that symbolize measures. Hence, this process, through which one moves from theoretical to tangible indicators and measures, is not free from errors.

Sources of Error and Bias in Social Research

There are two types of errors in research management. (1) Random error:

This occurs due to several factors, including encoding or data entry methods, but it is not repeated frequently. It is an error that occurs by chance. (2) Non-random error: This error type occurs regularly because of factors such as sample bias, data collection method, or the formulation of statements in a questionnaire. It occurs every time it is applied.

One of the questions that poses itself to a researcher when designing a project is: To what extent can an investigator increase the efficiency and quality of the research procedures and instruments used (i.e. to reduce the sources of errors)? In order for researchers to obtain findings from a sample, truly reflecting the target population (Kish, 1965), there are basic sources of errors that they should be aware of:

1. Measurement errors
2. Sources of error in the research population
3. Sampling errors due to the sample size, the population from which the sample is drawn, or sample bias.
4. The effect of responses (Sudman, 1976)
5. The effect of missing data (Alwin, 1991)

Measurement Errors

Carmines and Zeller (Carmines & Zeller, 1979) assert that a measure that has a high degree of consistency leads to consistency in the results because it contains a small percentage of random error. Therefore, consistency is an experimental or practical issue that confirms the effectiveness of the measure. However, the non-random error (i.e. systematic bias) negatively affects the measure because it no longer accurately measures the phenomenon it was set for, affecting the investigation's validity. Thus, validity is primarily a theoretical issue as it attempts to relate theory to experimental procedural concepts (Carmines & Zeller, 1979). Sometimes error and risk may occur when the study measures are applied under unusual circumstances, such as when fear and anxiety are surrounding the study population in times of crises and disasters. In this case, the responses will be inaccurate and not reliable and valid, given that these measures have been tested and built upon normal and natural conditions of society and these differ from the conditions under which the study measures are applied during crises.

Research Population Errors

There are some errors that may occur in the research population:

a. Failure to identify and clarify the characteristics of the research population from which the sample will be drawn (Winton, 1974).

b. Failure to identify the unit of analysis. The first step in defining the research population is to define the unit of analysis or observation (e.g. the individual, family, or organized group) (Sudman, 1976).

c. The researcher does not conduct a pilot study through which he can discover the parameters of his research population, especially the unit of analysis from the field.

d. Failure to identify and discover potential crises and risks in the research population.

e. Uncertainty about the validity and sensitivity of the topic of study.

Sampling Errors

The most important source of error in the sample is the failure to accurately determine the sample size. What is the most appropriate size for a study? This might be one of the most difficult questions that can be answered precisely as most social surveys are multipurpose and thus the level of accuracy varies significantly among different studies. An appropriate sample size is often determined on the basis of the cost-benefit relationship, namely the cost of increasing the sample size and the desired benefit from taking a sample larger than the acceptable minimum. Another method for determining the sample size, which is easier, is to adopt the method used by other renown scholars, especially those who are trustworthy and have contributed publications in a particular field of specialization (Kish, 1989). It was found that the increase in the sample size increases the likelihood of obtaining statistically significant results, that is, when the sample is large, this makes any test statistically significant even if it is not actually significant (Aron & Aron, 1997). A more standardized method is to set four considerations when determining the sample size: the level of significance, the acceptable error, the parameters of the study population, and the degree of variation in the research population. To account for the non-response rate when determining the sample size, this is accomplished by dividing the required sample size by the expected rate of responses from the questionnaires.

Sample bias is another common source of error. It occurs as a result of a number of factors: the inadequacy of research instruments for the sample; insufficiency of the sample frame (Kish, 1989); the presence of a duplicate list containing some of the components or elements of the research population; not fulfilling the research framework conditions of representation and randomness; and unsuitable sample type chosen for the study (i.e. inappropriately using probability and non-probability samples, each of which has clear effects on the research process).

Effect of Responses

Responses are affected by a set of errors and possible risks:

- The respondents themselves, such as the presence of respondent's fears, recollection of traumatic events, inappropriate time, boredom, fatigue, or fear of the results of the study. (Bradburn, (1983); Dillman, (1978).
- Lack of precise method of collecting appropriate data for the research (Frey, (1989); James, and Bolstein (1990).
- The effect of the methods used by the data collectors on the respondents (Fox et. al., (1988);
- The effect of the personal characteristics of the data collector, such as age, gender and appearance on the responses (Atifa, 2009).

These influences are present in social research, and the goal must be to reduce the impact of such errors and biases on the research instruments and sample (Ayidiya and McClendon, 1990).

Missing Data and Other Field Errors

There exists a myriad of potential negative effects from applications in the research field which can become a source of errors. To understand and identify these errors, a researcher should focus on a set of topics (e.g. data collection method, question types, question sequence, the question length, word usage, and the answer choices within each question). In relation to questions used during thee data collection phase, the effect of open-ended or closed questions often centers on the fact that some segments of the population have an inability to answer an extended prompt in writing. Furthermore, the effect of arranging

questions in a particular order is significant, especially with certain topics sensitive to the sample. Question length, language usage, and the type of answer choices presented may further influence the possibility of errors, resulting in problematic answers and sometimes missing data which all affect research results (Al-Hassan and Hosni, (1981); Badr, (1978); Bishop, (1990); Poe, et. al., (1988); Presser and Schuman, (1989).

Each of the aforementioned errors lead to practical problems that impact the effective completion of the tasks and methodological procedures of a research project. They adversely affect a study and can lead to failure in reaching its objectives due to the presence of clear biases in various aspects of inquiry. Thus, risk analysis, management, and assessment are imperative in the successful completion of any social research project.

Part 3: Methodology of Risk Management

Method of Risk Management in Social Research

Risk management is part of the researcher's management tasks of a project. It is represented in a set of methodological procedures that the researcher follows in an orderly manner to address the probable risks associated with a study through the optimal use of available human and financial resources and research methods to ensure the achievement of a project's purpose. This is accomplished through defining, identifying, and analyzing critical risks and developing mechanisms and methods to avoid or mitigate them.

The Stages of Risk Management

The following process is grounded on the ISO 31000 framework, a standard for risk management principles and guidelines (The International Organization for Standardization, 2018). This process provides a logical and systematic way to contextualize, identify, analyze, evaluate, address, and remedy risks in an appropriate and timely manner. The general risk management framework used is a process consisting of a set of six stages.

Step 1: Identifying the Risks and Their Sources

The first step in understanding risks is to identify the sources of them and deduce the risks and their potential influences. This process aims to review and document all the obstacles that can be known and which ones may affect the research activities and procedures. After identifying the risks, they are numbered, classified, and accurately described detailing how to address and treat them. This is done by the principal investigator, by holding workshops with the research team or with stakeholders of the study. This process can be supplemented with the assistance and consultation of experts and specialists. Then the risks should be documented in a Risk Register Table (e.g. see Appendix, Table A7) in much detail to support the risk analysis, assessment, and management processes.

At this stage, the significant risks are identified. These risks are events and actions that when they occur, they lead to research difficulties. Therefore, identification of risks can begin from the source of the problems or the problem itself. There is a set of procedures that help to identify these risks and their sources. One of the common ways to identify risks are:

1. Brainstorming: One of the most important methods used to identify risks is through brainstorming in which all interested people (e.g. participants in the research, research teams, and stakeholders who are supporters or beneficiaries of the study) participate to determine possible risks that may occur for any reason.

2. Analysis of Research Procedures: This is one of the oldest methods used to determine risks where the research project or stage is divided into several activities and steps; then each activity is studied to identify and examine as many risks as possible.

3. Ways to Achieve the Objective: Risks can be identified by developing an integrated concept of how to achieve the research objective, where the procedure followed to achieve this goal and to identify all the risks that may hinder it are studied. The opportunities that help to achieve the goal quickly and affordably are identified as well. Although when preparing the research plan to conduct any project, there may be specific assumptions or requirements of reaching said goal. Thus, every assumption or stipulation one makes is considered a potential risk.

4. List of Previous Risks: This can be obtained from previous studies or experiences of

researchers and specialists in the research field who have a reputation in such projects.

5. Pilot Study: Several researchers neglect the practice of conducting a pilot study on the research population. This study should be done with the intention of delving into the characteristics of the research problem and population. In fact, conducting such pilot studies is an important matter as it provides the researcher advanced knowledge of the types of risks that he may face when embarking on the actual project.

6. Participation of a Research Team: It is important for the principal investigator to encourage participation from team members who should be encouraged to share their thoughts on the potential risks of a project whenever they identify them using an organized, agreed-upon reporting mechanism.

Step 2: Risk Analysis

A risk is analyzed to understand its negative effects and the probability of the impacts that may occur. This analysis is based on specific metrics and helps in assessing and proritizing the impact and probability of potential risks, and thus define treatment plans in a manner that focuses on those risks that pose the greatest threat. A common method for analyzing risks is through determining the likelihood of the occurrence of the risk and its severity if the risk occurs. This two-dimensional technique is used to assess the probability an impact. Probability is the likelihood of the occurrence of the risk, and the impact is the result or effect of the risk and is usually related to the goals of the research project in terms of methodology, procedures, cost, approved budget for research, timeline, research limits, or quality. The risk analysis process is carried out in two stages:

Stage 1: Determining the likelihood of the occurrence of the risk through a five-point scale, from (1) to (5): 1 = very low, 2 = low, 3 = likely, 4 = high, and 5 = very high, (Table 1).

Table 1. *The Probability Scale of Risk Occurrence*

The Probability of Risk Occurrence				
Very Low	Low	Likely	High	Very High
1	2	3	4	5

Stage 2: Measuring the degree of the impact of the risk if it occurs through a five-point scale, from (1) to (5): 1 = very low, 2 = low, 3 = likely, 4 = high, and 5 = very high, (Table 2):

Table 2. *The Impact Scale of the Risk*

The Impact Scale of the Risk				
Very Low	Low	Likely	High	Very High
1	2	3	4	5

Note: The previous two stages are based on the third step: risk assessment.

Step 3: Risk Assessment

After identifying potential risks, it may result in a large number, making it difficult or even impossible to manage simultaneously due to the nature of research and its different stages. Therefore, the risks must first be evaluated and then arranged according to priority. This process aims to prioritize the risks in order to address them or mitigate their impact by evaluating them in terms of their severity in causing loss, within each stage of the research process.

The risk assessment process is closely connected to evaluation and is based on a specific mechanism that gives each risk a score by multiplying the score of the probability of risk occurrence and the score of the impact of the risk. For example, if the probability of risk occurrence has a score of (4), and the impact of the risk is (3), the severity of the risk will be (4)*(3) = 12. Table 3 illustrates the relationship between the probability of a risk and its severity.

Table 3. *Risk Assessment Matrix*

Severity of Risk Score = (Probability of risk occurrence * Impact of Risk)					
Probability / Impact	**Very Low**	**Low**	**Medium**	**High**	**Very High**
Very Low	1	2	3	4	5
Low	2	4	6	8	10
Likely	3	6	9	12	15
High	4	8	12	16	20
Very High	5	10	15	20	25

Step 4: Addressing The Risk

The risk assessment is based on a specific mechanism to give each risk a score (i.e. the probability of risk occurrence * the score of the impact of the risk), where the overall score of the scale ranged from one (1) to twenty-five (25) degrees. In Table 4, scores are classified and arranged into different categories to determine the level of the severity of the risk. The level of the severity of the risk is classified as follows: Less than 4 degrees means that the level of the severity of the risk is considered very low, from 4 degrees to less than 8 degrees means that the level of the severity of the risk is considered low, from 8 degrees to less than 12 degrees means that the level of the severity of the risk is considered medium, from 12 degrees to less than 16 degrees, means that the level of the severity of the risk is considered high, and finally from 16 degrees or more, means that the level of the severity of the risk is considered very high.

Accordingly, the strategies to address each risk correspond to severity of the risk level. For instance, if the level of severity of the risk is considered very low, the response strategy is to accept the risk. In the case of the medium risk, the response strategy will be to accept the risk, but monitor it so that it remains at the lowest level of risk through the various procedures specified in the evaluation model. In the case of high risk, the response strategy is to accept the risk; however, the activity must be modified to include treatment plans and reassessment. Finally, if the level of severity of the risk is very high, then the strategy to address the risk will be to avoid the risk altogether, and the research activity must not continue under the prevailing circumstances of that risk.

Table 4. *The Relationship Between the Degree and Level of Severity and Response Strategy*

Score of Severity	**Level of Severity**	**Response Strategy**
Less than 4	Very Low	Acceptable no action is needed.
From 4 to less than 8	Low	Acceptable but require specific action.
From 8 to less than 12	Medium	Acceptable but should be monitored to stay under control.
From 12 to less than 16	High	Acceptable but the activity must be modified and improved through a treatment plan and must be subject to evaluation again.
16 or more	Very High	Not acceptable at all, requires immediate action, and the research activity should not proceed while the risk continues.
Degree of severity = the probability of the risk * the impact of the risk		

After assessing all the risks according to the previous method, it will be clear from the existing scores which risks an investigator must deal with first. The aim of this process is to identify, evaluate, and apply appropriate treatment options to respond to the risks. The treatment options vary in a continuum from radical intervention to acceptance. After the

process of identifying and assessing the risks, all the techniques used to manage them fall into one or more of four main categories:

Avoiding Risk: This is when some research procedures or field activities that lead to the occurrence of risk are avoided. In this strategy, some measures are taken that completely remove the risk, such as the use of different research methods or data collection instruments used to carry out the work that help to avoid a potential risk. This avoidance of risk appears to be an effective solution but may not always be feasible.

Risk Mitigation: This includes all methods to reduce the risk or mitigate the resulting losses. Most risk situations are often in this category as the risk is controlled and reduced by taking preventive research procedures.

Acceptance of Risk: This means accepting the expected damages and losses when the risk occurs. Sometimes there is difficulty in avoiding or reducing the potential risk, so the expected risk must be accepted, monitored, and fully prepared for, in terms of increasing the cost or time allocated to it, seeking the help of experts in the same field, or resorting to external resources. This method is an acceptable strategy in the case of risks in which the consequences and results are carefully considered and defined. All risks that cannot be avoided or rejected must be accepted.

Rejecting the risk: This is when a researcher does not accept the expected losses when they occur, because in the event of damages and losses, their impact is very strong on the course of the research project; as such, the project must cease until the risk is removed.

Step 5: Determining the Party Responsible for Addressing the Risk

There are many parties that may be responsible for addressing particular risks, depending on their role in the research process or project. These parties may be the researchers themselves, the leaders of a research team, the entities supervising the project, a government or private agency, departments or even individuals. These parties may come from academic or commercial backgrounds and act according to the nature and purpose of the research project and their roles.

Step 6: Building the Risk Register and Managing the Risk

A research must identify all the risks that were analyzed and evaluated in the previous steps and record them sequentially in a register according to the schedule of the study. This register is called a risk register and specifies actions taken to address and mitigate risks. The results of the risk assessment must be recorded in the risk register, for this enables the researcher to make decisions about treating risks through knowing the degree of severity and the best treatment. Attention must be paid to the risks that are assessed as high which have very serious negative outcomes. It is necessary to refer to such risks in the risk register as special cases that need monitoring. They must be addressed immediately, and the actions taken must be recorded. Lastly, the risk register helps in the monitoring and reviewing of this intricate process as it contains all data and information about the risks, and the progress made in the treatment and managing of them, ensuring that the research activities that are implemented are aiding to achieve the desired results.

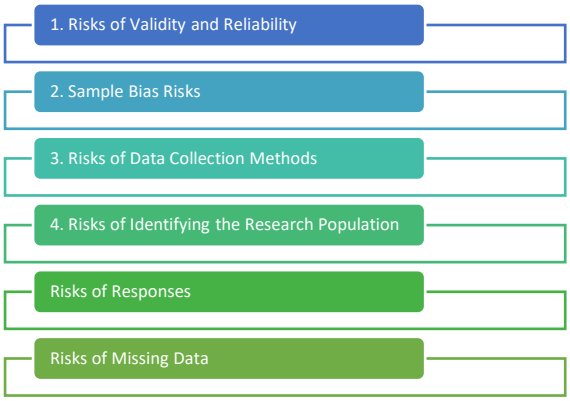
Part 4: Applying Risk Analysis, Assessment, and Management

Application in Research Projects

Based on the study of potential challenges and obstacles in social research projects and a review of a number of previous empirical literature on this topic, a set of potential risks and their sources have been identified in Part 2 of this article. Models for analyzing, assessing, and managing potential risks are illustrated in table format (see Appendix, Tables A1 to A6) , but these assessments are hypothetical in order to provide exemplars to the reader. In an actual assessment model, the application must be based on the reality of the study, the data, and facts of the social matter being investigated. It is important to note that the risk assessment differs according to the various capabilities, experiences, and instruments used in a particular research project, and the levels of risk severity vary according to the time, place, and social reality of the study, as well as differences in research topics, scopes, objectives, and anticipated results. The classification methodology that has been adopted in identifying project risks is based on determining the potential sources of risk. The study and

analysis have resulted in dividing the sources of risk into six main components (see Figure 1).

Figure 1. *Structure of Potential Sources of Risks*



Conclusion

The risk assessment process is an essential and important part of a comprehensive risk management strategy, which aims to take preventive measures to eliminate potential risks or mitigate their effects. It is an analysis of what can hinder a smooth workflow, what is the likelihood of these errors, and what are the negative effects and the possibility of surviving them. The research project is like any other project that faces many risks and difficulties at the time of implementation. These difficulties are concentrated in the research population, sample and its biases, the procedures and methods of the research process, official approvals to conduct the study, or human and financial resources. Such difficulties and risks may lead to practical problems that impact the effectiveness of completing research tasks and methodological procedures, potentially negatively affecting the study and the achievement of its objectives. It is essential to acknowledge that these risks are present in all research and quantitative studies in social and human sciences. Thus, the goal must be to reduce their impact on the research process by accurately identifying and assessing the risks, determining the extent of their impact, and addressing the means to overcome them.

Reference

[1] Al-Hassan, I. M. & Hosni, A. (1981). Social Research Methods. Iraq: Ministry of Higher Education.

[2] Aron, E. & Aron, A. (1997). Statistics for the Behavioral and Social Sciences. Upper Saddle River, NJ: Simon & Schuster Company.

[3] Atifa, Hamdi Abul-fotouh. (2009) Scientific Research Methodology and Its Applications. University Publishing House, Cairo.

[4] Ayidiya, S. A., & McClendon, M. J. (1990). Response effects in mail surveys. Public Opinion Quarterly, 54, 229-247.

[5] Alwin, D. F. (1991). Research on survey quality. Sociological Methods & Research, 2, 3-29.

[6] Badr, A. (1978). Scientific Research and Its Methods (4th ed.). Kuwait: Kuwait Publications Agency.

[7] Shishir, B. (2016). Practical Guidebook for Hospital Infection Risk Assessment, Prevention & Control. Madhya Pradesh, India: Jaypee Brothers Medical Publishers

[8] Bishop, G. F. (1990). Issue involvement and response effects in public opinion surveys. Public Opinion Quarterly, 54, 209-218.

[9] Bradburn, N. M. (1995). What have we learned? In Norbert Schwarz and Seymour Sudman (Eds.), Context Effects in Social and Psychological Research. New York, NY: Springer-Verlag.

[10] Carmines, E.G. & Zeller, R.A. (1979). Reliability and Validity Assessment. Beverly Hills, CA: Sage.

[11] Converse, J. M., & Presser, S. (1986). Survey Questions: Handcrafting the Standardized Questionnaire. Newbury Park, CA: Sage Publications.

[12] Dillman, D. A. (1978). Mail and Telephone Surveys. New York, NY: John Wiley & Sons.

[13] Fox, R. J., Crask, M. R. , & Kim, J. (1988). Mail survey response rate: A meta-analysis of selected techniques for inducing response. Public Opinion Quarterly 52, 467-491.

[14] Frey, J. H. (1989). Survey Research by Telephone. Newbury Park, CA: Sage Publications.

[15] Freudenburg, W. R. (1988). Perceived risk, real risk: Social science and the art of

probabilistic risk assessment. Science, 242(4875), 44-49.
[16] Hasan, A. (1985). The Fundamentals of Social Research (6th ed.). Cairo: The Wahba Library of Cairo.
[17] The International Organization for Standardization (2018). ISO 31000: Risk management—guidelines. https://www.iso.org/standard/65694.html
[18] Kalton, G. (1983). Introduction to Survey Sampling. Newbury Park, CA: Sage Publications.
[19] Kish, L. (1965). Survey Sampling. New York, NY: John Wiley & Sons, Inc.
[20] Kish, L. (1989). Sampling Methods for Agricultural Surveys. Rome, Italy: Food and Agriculture Organization of the United Nation.
[21] James, J. M., & Bolstein, R. (1990). The effect of monetary incentive and follow-up mailings on the response rate and response quality in mail surveys. Public Opinion Quarterly, 54, 346-461.
[22] Poe, G. S., Seeman, I., McLaughlin, J., Mehl, E., & Dietz, M. (1988). Don't Know boxes in factual Questions in a mail questionnaire. Public Opinion Quarterly, 52, 212-222.
[23] Presser, S., & Schuman, H. (1989). The measurement of a middle position in attitude surveys. In Eleanor Singer and Stanley Presser (eds.), Survey Research Methods: Reader. Chicago, IL: The University of Chicago Press.
[24] Smith, T. W. (1989). That which we call welfare by any other name would smell sweeter. In Eleanor Singer and Stanley Presser (Eds.), Survey Research Methods: Reader. Chicago, II: The University of Chicago Press.
[25] Sudman, S. (1976). Applied Sampling. New York, NY: Academic Press.
[26] Warwick, D. P., & Lininger, C. A. (1975). The Sampling Survey: Theory and Practice. New York, NY: McGraw-Hill Book Company.
[27] Winton, C. (1974). Theory and Measurement in Sociology. New York, NY: John Wiley & Son.
[28] Ya'rib, A. (2009). Risk management. Abu Ya'rib Al-Hayat Kalima Blog. http://al7ya7.blogspot.com/2009/08/blog-post_07.html
[29] Yoe, C. (2019). Principles of Risk Analysis: Decision Making Under Uncertainty (2nd ed.). Boca Raton, FL: CRC Press. https://doi.org/10.1201/9780429021121.