

ANALYSIS OF SCIENTIFIC RESEARCH METHODOLOGY

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ABSTRACT

Research Methodology is science of studying how research is done scientifically. A way to systematically solve the research problem by logically adopting various steps. Methodology helps to understand not only the products of scientific inquiry but the process itself. Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology. Researchers not only need to know how to develop certain indices or tests, how to calculate the mean, the mode, the median or the standard deviation or chi-square, how to apply particular research techniques, but they also need to know which of these methods or techniques, are relevant and which are not, and what would they mean and indicate and why.

Key words: *Research Methodology, Qualitative research, Researching, Methodology, Research Techniques, Quantitative Research*

АННОТАЦИЯ

Методология исследования — это наука об изучении того, как исследования проводятся с научной точки зрения. Способ систематического решения исследовательской проблемы путем логического принятия различных шагов. Методология помогает понять не только результаты научных исследований, но и сам процесс. Методология исследования — это способ системного решения исследовательской задачи. Его можно понимать как науку, изучающую, как научные исследования проводятся. В нем мы изучаем различные шаги, которые обычно предпринимает исследователь при изучении своей исследовательской проблемы, а также логику, стоящую за ними. Исследователю необходимо знать не только методы/приемы исследования, но и методологию. Исследователям нужно не только знать, как разрабатывать

определенные индексы или тесты, как вычислять среднее значение, моду, медиану, стандартное отклонение или хи-квадрат, как применять определенные методы исследования, но они также должны знать, какие из этих методы или приемы, уместны, а какие нет, и что они означают и указывают и почему.

Ключевые слова: методология исследования, качественное исследование, исследование, методология, методы исследования, количественное исследование.

INTRODUCTION

Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his methodology for his problem as the same may differ from problem to problem.

The main aim of research is not merely to gather information. Instead, it goes beyond that. The true goal of research is to seek answers to previously unanswered questions to contribute to the body of knowledge in a discipline according to Goddard and Melville. But for your peers, and indeed the whole world, to recognize your newly discovered or created knowledge, you have to show evidence of its validity or truthfulness. The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose, we may think of research objectives as falling into a number of following broad groupings:

1. To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as exploratory or formulative research studies); 2. To portray accurately the characteristics of a particular individual, situation or a group (studies with this object in view are known as descriptive research studies);

3. To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies);

4. To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis-testing research studies)

Determining the validity of your study is anchored on your research paper's methodology. According to Somekh and Lewin, a research methodology is both "the collection of methods or rules" you apply to your research, as well as the "principles,

theories, and values” that support your research approach. Simply put, a research paper’s methodology section must shed light on how you were able to collect or generate your research data and demonstrate how you analyze them. The goal of this article is to define what is research methodology, guide novice researchers in their research methodology writing, and to help them gain a clear understanding of a research methodology’s structure. In studies where the researcher is interested in describing a case, situation, or phenomenon, they are acting under a descriptive research design. As a theory-based design, it is interested in answering the how, what, when, and where questions, instead of the why. Descriptive research directs the researcher to understand the research problem before investigating why it even happens in the first place. There are two types of research problems, viz., those which relate to states of nature and those which relate to relationships between variables. At the very outset the researcher must single out the problem he wants to study, i.e., he must decide the general area of interest or aspect of a subject-matter that he would like to inquire into. Initially the problem may be stated in a broad general way and then the ambiguities, if any, relating to the problem be resolved. Then, the feasibility of a particular solution has to be considered before a working formulation of the problem can be set up. The formulation of a general topic into a specific research problem, thus, constitutes the first step in a scientific enquiry. Essentially two steps are involved in formulating the research problem, viz., understanding the problem thoroughly, and rephrasing the same into meaningful terms from an analytical point of view. Descriptive design furnishes the researcher with an opportunity to gain insight into the problem itself. It also helps the research team to see the need for the research. Descriptive research attempts to build on the groundwork made by exploration, such as providing additional information, filling in gaps in knowledge, or expanding it. Unique to descriptive research is that it also aims to collect as much data and information as possible. An example of descriptive research is market research. An investor, for example, may need to look at the market, such as its current state, its trends, and so on. Descriptive research can answer all these questions for the investor, which is why market research is an investment in itself, as evidenced by the following graphic. The confusion between “methodology” and “methods” in research is a common occurrence, especially with the terms sometimes being used interchangeably. To summarize these definitions, methods cover the technical procedures or steps taken to do the research, and methodology provides the underlying reasons why certain methods are used in the process.

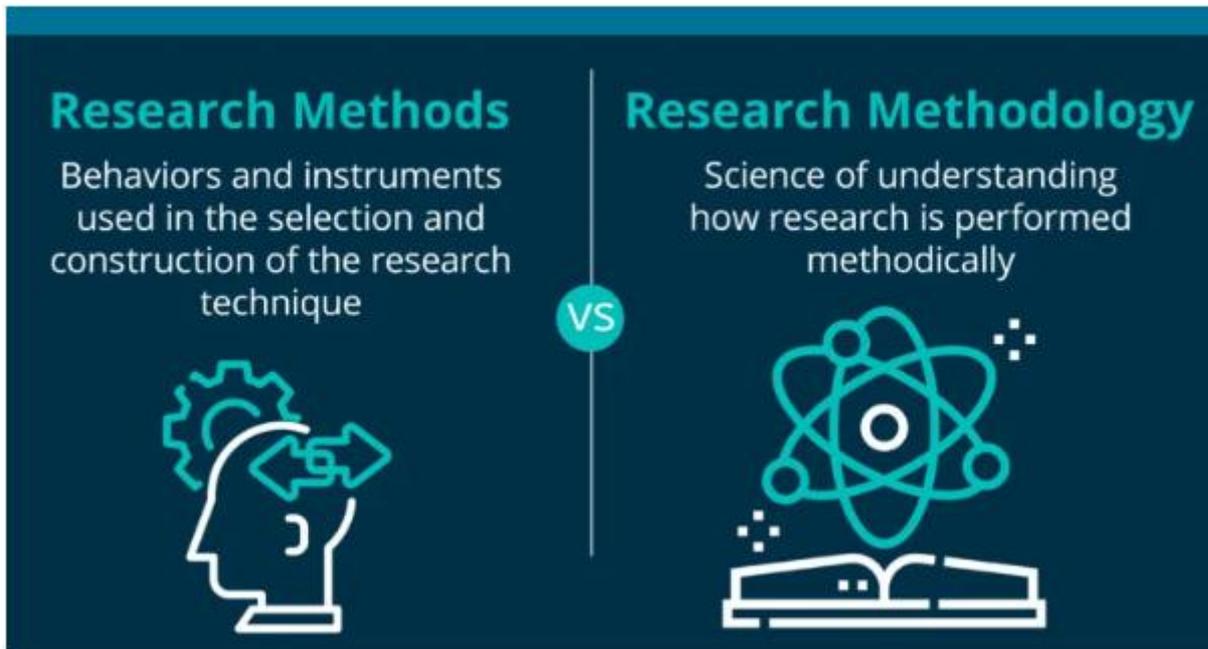


Figure 1. Types of Researching methodology

Now that you know what is methodology in research, the next step is to identify the different methods used in research. Traditionally, researchers often approach research studies using the methodology research institutions typically use which are two distinct paradigms, namely positivistic and phenomenological. Also, sometimes called qualitative and quantitative, positivistic and phenomenological approaches play a significant role in determining your data-gathering process, especially the methods you are going to use in your research. It is also worth noting that when it comes to primary vs secondary research methods, there are significant differences that you need to consider. Research methods lay down the foundation of your research. According to Neil McInroy, the chief executive of Centre for Local Economic Strategies, not using the appropriate research methods and design creates “a shaky foundation to any review, evaluation, or future strategy. In any type of research, the data you will gather can come either in the form of numbers or descriptions, which means you will either be required to count or converse with people. In research, there are two fundamental methods used for either approach quantitative and qualitative research methods. Even if you take the path of a philosophy career, these are still methods that you may encounter and even use.

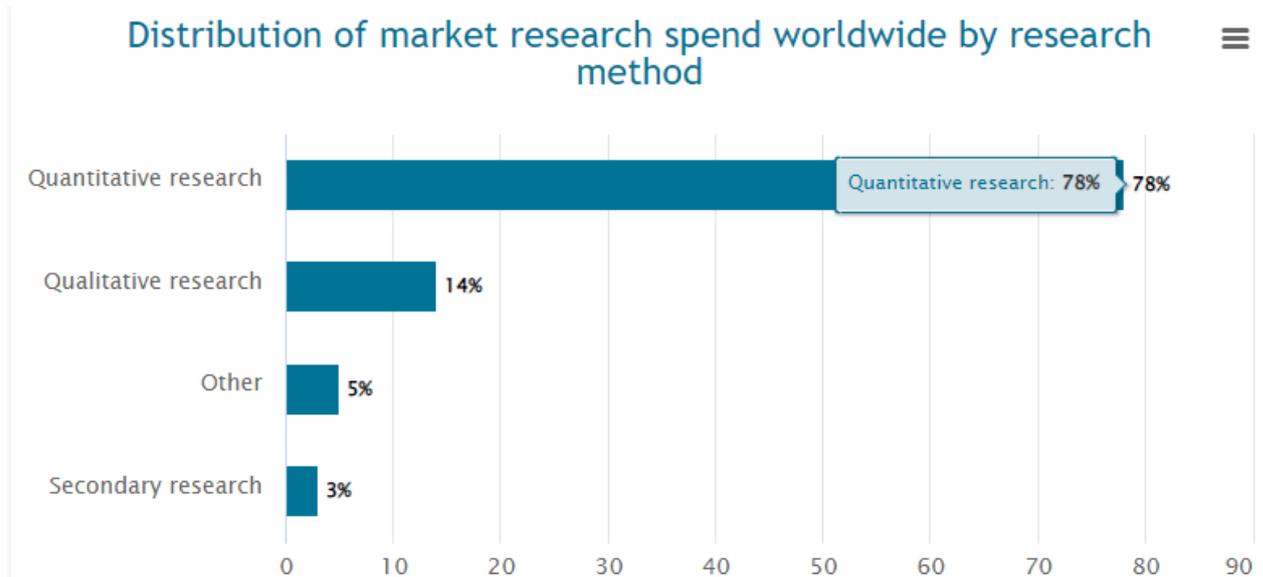


Figure 2. Distribution of research method

A contemporary method sprung from the combination of traditional quantitative and qualitative approaches. According to Brannen and Moss (2012), the existence of the mixed methods approach stemmed from its potential to help researchers view social relations and their intricacies clearer by fusing together the quantitative and qualitative methods of research while recognizing the limitations of both at the same time. Mixed methods are also known for the concept of triangulation in social research. Triangulation provides researchers with the opportunity to present multiple findings about a single phenomenon by deploying various elements of quantitative and qualitative approaches in one research. This is the kind of method that one may use when studying sleep and academic performance.

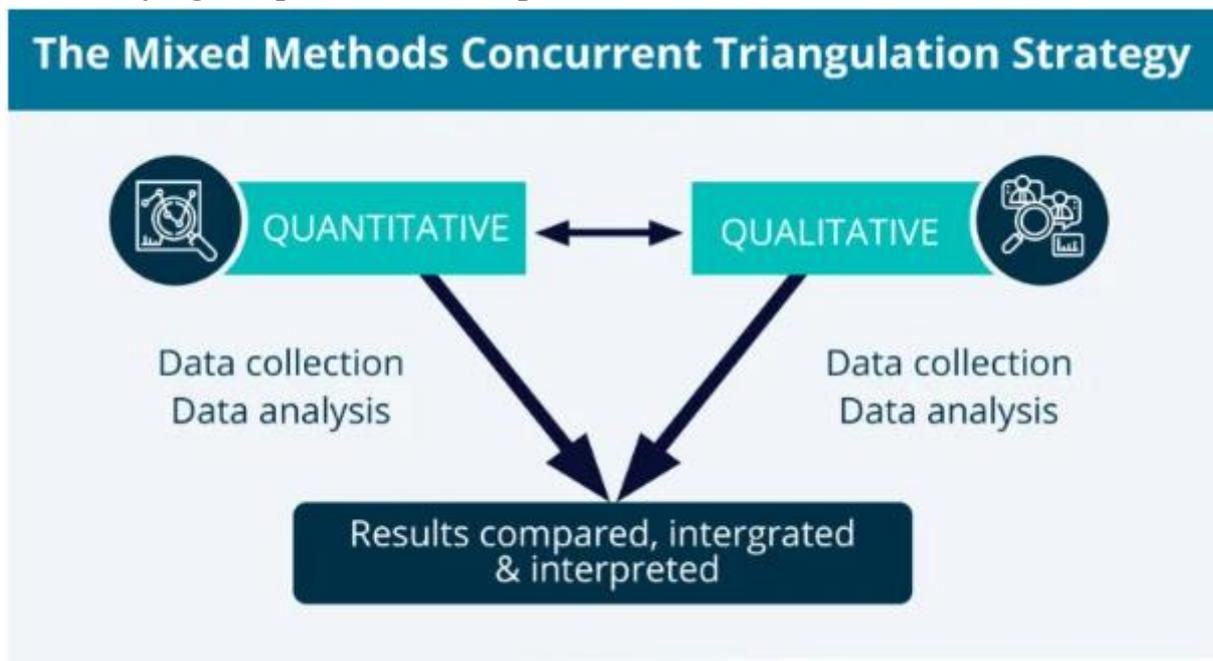


Figure 3. Researching methods concurrent triangulation strategy

Saunders et al. (2007) proposed the concept of the research onion model to help researchers develop a methodology and construct research design techniques within the field of future studies. The characteristic of research onion model is illustrated by its six main layers, which serve as a step-by-step guide for researchers on how to write a research methodology. The methodology section of your research paper is not all about describing your data gathering process and your analysis. The methodology is about the overall approaches and perspectives of the research process. If you want to study abroad for free and have to present a research proposal to the institution for acceptance, then you have to be able to clearly delineate your analytical methods for your study. Here are some tips as well as problems to avoid in order to write an effective research methodology. Out of these, you can construct your own research methodology example for future reference. While doing so, you can apply research methodology best practices for optimal results.

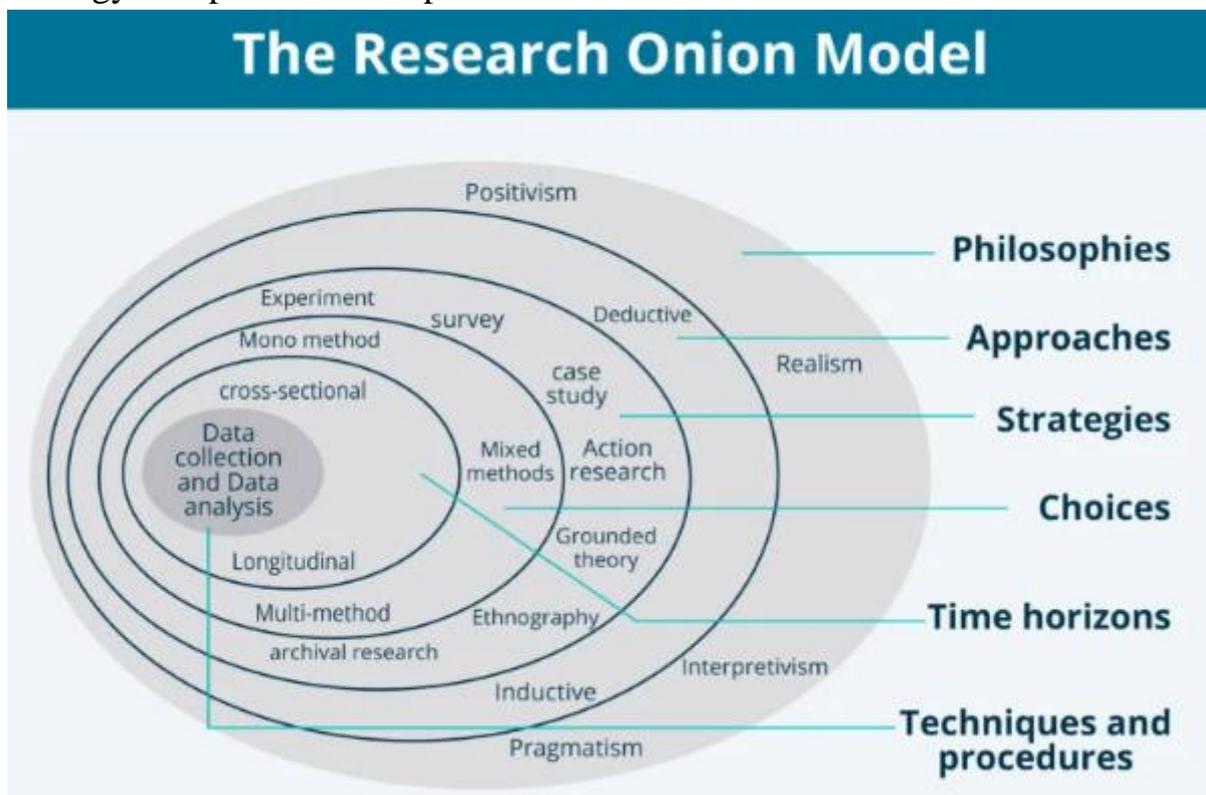


Figure 4. Researching onion model

According to Holden and Lynch, research should not only be “methodologically led” but the choice of which methodology to use should be consequential not only to the social science phenomenon to be investigated but also to the philosophical stance of the researcher. Similarly, Goulding claims that the choice of methodology should be based on the researcher’s interests, beliefs, and convictions. Meanwhile, other significant factors such as epistemological concerns must also be taken into consideration when choosing a research methodology (Buchanan & Bryman, 2007).

On top of philosophical underpinnings and personal convictions, there are also practical considerations that can affect a researcher's decision on what methodology to use, including the amount of existing data or knowledge, available time, and other resources.

CONCLUSION

It's now clear that the methodology section is where a researcher indicates and elaborates on the plans that must be put into motion in order to achieve the objective of the research. Being acquainted with research methodologies, however, does not make choosing the appropriate methodology easier. Walker (2006) states that selecting which research methodology is a difficult step in the research process. It can be confusing and overwhelming, especially for novice researchers. Even if you are aiming for a career in the humanities and social sciences, having a clear research methodology is still essential.

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