

The importance of Employing Previous Studies in Scientific Research

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Abstract

The objective of this article is to underscore the significance of prior research within the stages of the scientific inquiry process and the imperative of its systematic and rigorous utilization to inform new investigations. Such engagement enables the researcher to establish the theoretical framework for their study and to scrutinize the research question that constitutes the core of the intended investigation. Prior research forms a valuable knowledge base that synthesizes the findings accrued by researchers within a specific discipline or concerning a particular subject. It provides the foundation for the advancement of scientific knowledge and empowers the researcher to construct a comprehensive understanding and broad conceptualization of their research topic.

Keywords: Stages of scientific research, Literature review, Bibliographic research, Sources, Prior research.

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Introduction

The utilization of prior research in scientific inquiry presents a significant issue that warrants careful consideration. Experience derived from practice and the supervision of student dissertations/theses has revealed the difficulty inherent in this research task, particularly during the initial stages of investigation. Some students merely compile extensive lists of previous studies without analyzing their content or determining their relevance to the specific research needs. Conversely, other students neglect prior researches entirely, either failing to recognize its importance or lacking the knowledge of how to effectively employ it. This challenge often manifests in the researcher's – especially the student's – difficulty in establishing a robust theoretical framework for their study, formulating precise research questions, and constructing a clear and well-defined research problem that allows for the effective operationalization of variables.

A literature review constitutes a comprehensive analysis of the available scholarly literature, research findings, and scientific publications pertinent to a specific research topic or question. It assists researchers in identifying the theories, methodologies, and approaches employed in previous studies, which in turn help shape future research directions. This analysis aids in establishing the research context and enables the researcher to situate their work within the broader disciplinary field. Furthermore, it facilitates the definition of research objectives, the development of research questions, and the design of an appropriate methodology.

The preliminary literature review represents the initial step in examining the existing body of knowledge surrounding a research topic. It involves identifying and analyzing relevant sources to gain a comprehensive understanding of the subject matter. By conducting a preliminary review, researchers can uncover existing theories, identify knowledge gaps, and formulate research questions that contribute meaningfully to the advancement of their field. Researchers can draw upon various resources for bibliographic research, primarily including books, articles published in scientific journals, conference proceedings, and online databases.

1. The Stages of Scientific Research and the Role of Prior Studies Therein

Scientific research progresses through several stages and steps that researchers follow to ensure the rigor and validity of each phase of the investigation. These steps can be summarized into five distinct phases for conducting scientific research, according to Guillaume (2017) (See Figure 01):

❖ **Conceptual Phase:** This phase commences with the observation of a phenomenon, a question, a problem, or a need. Such observation or inquiry may stem from experience, established facts, existing models, theories, representations, or beliefs. The observation must be objective and unbiased. This stage also determines the overall direction the study or research will take.

Subsequently, the researcher needs to propose hypotheses to address the initial observation or questions. This is a critical step as it guides the research by providing a tentative answer. Hypothesis formulation is a significant undertaking that necessitates a thorough understanding of the study's context, achieved through conducting a literature review, examining current knowledge, and analyzing prior research. Without this review of the literature and previous studies, the researcher cannot adequately define the research question and variables or develop a testable hypothesis – that is, a hypothesis proposing a relationship between two variables that can be empirically verified or falsified.

❖ **Methodological Phase:** In this phase, the researcher determines the sample upon which the study or research will be conducted, defines the dependent and independent variables, and selects the appropriate scientific research method. This selection dictates whether the research will require surveys, field investigations, interviews, laboratory experiments, or other approaches. It is also essential to meticulously plan the data collection procedures, the measures to be employed, and the methods for gathering and recording information. At this stage, the researcher must also consult the methodologies utilized in prior studies similar to their intended research, examining the approaches followed, the samples studied, the instruments used for collecting qualitative and quantitative data, and the tools employed for data analysis. It is crucial to record results and data in a suitable and organized manner to facilitate the subsequent interpretation phase.

❖ **Empirical Phase:** During this phase, the researcher implements the designed experimental plan or procedure to test the formulated hypotheses. This stage represents the execution of fieldwork or the practical application of the research design, allowing the researcher to collect, capture, and record data directly from the study setting using the instruments identified in the preceding phase. Developing a detailed plan for the procedures to be followed in the field is highly advisable.

❖ **Analytical Phase:** This phase involves the analysis and interpretation of the collected data. It is a central component of the scientific method as it allows for the verification of the initial hypotheses. Data interpretation relies on a factual analysis of quantitative or qualitative data, which can be accomplished using statistical tests, analyses of variance (ANOVA), graphs, charts, and other analytical tools. The researcher must interpret trends and correlations objectively and fairly. During this stage, the researcher often refers back to the findings of prior research to interpret their own obtained results, comparing them with findings that are consistent, contradictory, or simply different.

❖ **Dissemination Phase:** This final phase enables the researcher to write up and publish their research findings, sharing them with the scientific community through journal articles, conference presentations, or scholarly books.

It becomes evident from this overview of the stages that utilizing prior research is crucial at multiple points in the research process. Its application in each relevant phase contributes to clarifying or constructing subsequent steps in the new investigation, whether during the Conceptual Phase, the Methodological Phase, or even during the Analysis and Discussion phase.



Figure 01. Represents the research process diagram according to Guillaume (2017, p. 16).

2. What is the Purpose of the Literature Review?

The objective of a literature review is to provide a summary, evaluation, and critical analysis of prior research within a specific field or concerning particular aspects thereof. A literature review aims to identify gaps, contradictions, and areas requiring further investigation, while also offering a comprehensive overview of the existing knowledge in the domain. Ultimately, the literature review serves as an essential tool for researchers and academics seeking to advance knowledge within their field and discipline.

Conducting a preliminary literature review yields several benefits for the researcher. It assists in:

- Gaining a comprehensive understanding of the existing knowledge base.

- Identifying gaps and research opportunities that can inform the study's direction.
- Developing pertinent research questions and hypotheses.
- Establishing the appropriate context and essential background information regarding the research topic and its significance.
- Refining research methodologies and study designs.
- Avoiding duplication of effort and building upon established research.
- Contributing original insights to the scholarly community.

A thorough literature review demonstrates the researcher's command of the field and their capacity to critically analyze and synthesize existing research. This enables the researcher to effectively guide the research design, encompassing the formulation of the research question, the selection of methodology, and the approach to data analysis. Furthermore, a literature review can stimulate the generation of novel research ideas and hypotheses suitable for testing in future studies.

3. Conducting the Literature Review: Essential Steps

Reviewing the literature and prior studies is a fundamental step in constructing scientific research. It demands a systematic approach from the researcher during the bibliographic search phase to navigate effectively through the multitude of databases and references. The following steps should be adhered to:

- **Identify Keywords and Sources:** The initial step involves identifying keywords and sources relevant to the research topic. Keywords are crucial for conducting efficient database searches, enabling researchers to locate pertinent articles, books, and other resources. Selecting appropriate databases according to the researcher's discipline and the intended context of the research is vital. Additionally, consulting with experts, exploring the reference lists of related publications, and utilizing citation tracking tools can aid researchers in identifying valuable sources.
- **Evaluate and Select Sources:** Once potential sources are identified, the researcher must critically evaluate their relevance, credibility, and quality. This critical assessment ensures that reliable and authoritative information is incorporated into the literature review. Factors such as the author's expertise, the publication date, peer-review status, and the reputation of the publishing journal or conference should be considered. Selecting high-quality sources enhances the validity and reliability of the literature review, thereby strengthening the foundation of the research.
- **Identify Themes, Debates, and Gaps:** After compiling a collection of relevant sources, the researcher needs to analyze the literature to identify common themes, ongoing debates, and existing gaps. Themes represent recurring topics or ideas, while debates encompass conflicting viewpoints or unresolved issues. Identifying these aspects helps the researcher understand the current state of knowledge within the field and pinpoint potential areas for further exploration.

Recognizing gaps in the existing literature allows researchers to formulate research questions that address novel or unresolved issues, contributing to the advancement of their field.

– Outline the Literature Review Structure: Establishing a clear and logical structure is essential for effectively organizing the literature review. The researcher needs to develop a coherent narrative by grouping related concepts and ensuring smooth transitions between sections. An outline can serve as a roadmap for the review, ensuring all key aspects are addressed systematically. By organizing the literature review methodically, researchers can present their synthesis of the literature in a coherent and persuasive manner.

4. Prior Research and its Utilization in Scientific Inquiry

Prior research constitutes one of the most crucial components of scientific inquiry; it is considered a fundamental part of the theoretical framework underpinning the research. Its inclusion is an essential prerequisite for constructing sound scientific research; without it, the investigation would lack a proper foundation.

Prior research encompasses the body of existing studies and investigations that have previously addressed the topic the researcher intends to study. These studies provide the researcher with substantial information pertinent to the subject matter, ensuring a thorough and comprehensive understanding of their scientific endeavor.

It is widely acknowledged that summarizing prior research is a distinct stage in the process of writing and conducting scientific research. This stage commences with searching for scholarly sources that have studied or addressed the same topic the researcher plans to investigate, or significant aspects thereof. It is advisable for the researcher's initial search for sources to be broad, spanning multiple languages and diverse international universities. This is because, at the outset of a literature review and the search for prior studies on a topic, it is beneficial for the researcher to gather, as comprehensively as possible, all literature relevant to their investigation to establish a solid foundation for the research. Furthermore, prior studies enable the researcher to comprehend the context within which the research is situated, identify current trends, and recognize knowledge gaps associated with the topic.

This process allows the researcher to identify countries, universities, specific researchers, and research laboratories actively engaged with the same research topic – individuals or groups whose extensive studies position them as pioneers in the field. Relying on such seminal studies provides the researcher's work with a robust and current scientific basis, thereby imparting an element of

novelty and contemporaneity, enabling them to make a meaningful contribution to the field of scientific research.

Searching, reviewing, and summarizing prior research allows the researcher to effectively position themselves within the field they intend to explore and delve into, building upon the findings of previous researchers while clarifying the specific objectives of their current investigation. Through reviewing the existing literature, the researcher can refine their research questions, develop appropriate methodologies, and crucially, avoid redundant duplication of previous studies.

Therefore, summarizing and classifying prior research is a critical step in formulating and refining the research problem. This relies on analyzing the findings of previous studies related to the research variables and examining the methodologies employed by other researchers, allowing the current researcher to adapt these appropriately for their own study. When consulting prior research, the researcher must prioritize primary and original sources and diligently verify the accuracy of the information contained therein.

5. Reasons for Utilizing Prior Research

Prior research holds paramount importance in scientific inquiry, as it contributes significantly to the accumulation of knowledge and guides the research trajectory. Its key contributions include:

- Saving time and effort by leveraging the findings and insights of previous research.
- Facilitating the selection of an appropriate theoretical framework for the study.
- Enabling the researcher to choose the most suitable research approach (e.g., quantitative, qualitative, mixed methods).
- Assisting in the selection and refinement of the specific research methodology and methods.
- Providing rich sources of information and identifying key references relevant to the topic and theoretical framework.
- Forming a crucial basis for discussing the findings of the current research, comparing them with previous results, and learning from the experiences (including potential errors) of other researchers.
- Alerting the researcher to potential pitfalls or challenges encountered by previous investigators in the field.
- Allowing for the examination and critical discussion of recommendations put forth in prior studies.

6. Methods for Presenting Prior Research

Researchers can employ several distinct methods to present prior research in their literature review, each with its own advantages and characteristics.

Common approaches include:

- The Annotated Bibliography: A traditional method where the researcher presents the title and a summary for each study, followed by commentary and a statement of its findings. A recognized drawback of this method is its potential failure to explicitly highlight similarities and differences across studies, the limited scope for the researcher's synthesized perspective or classification, and its often-limited utility in directly helping to articulate or bridge the research gap.
- The Chronological Approach: This method arranges relevant studies chronologically, typically emphasizing the historical development of concepts, methodologies, or findings within the field over time.
- The Thematic Approach: This strategy involves grouping and classifying studies according to recurring key themes, concepts, or topics relevant to the research question.
- The Conceptual Approach: This method may utilize tools like concept maps to present studies in a structured, often hierarchical, format based on overarching ideas or theoretical constructs.
- The Comparative Approach: This approach explicitly focuses on identifying and analyzing the similarities and differences between the current study's proposed scope or findings and those of prior research.
- The Methodological Approach: This strategy organizes the review based on the research methodologies employed in the studies being discussed (e.g., grouping quantitative studies, qualitative studies, or specific types of experimental designs).

7. Criteria for Utilizing Prior Research

Several criteria must be observed when searching for and utilizing prior research (Al-Hamdi Khawla et al., 2017; Al-Najjar Nabil Juma'a, 2018). Researchers should be thoroughly familiar with these requirements, which include:

- Consulting prior research primarily through primary sources.
- Prioritizing the most recent and up-to-date sources and references.
- Verifying the accuracy and established validity of the information presented in prior studies to avoid incorporating erroneous data into the current research.

- Avoiding excessive detail when presenting prior studies; researchers should strive for conciseness, summarizing only the key findings and main ideas relevant to their investigation. Focus should remain on points directly pertinent to the current scientific research.
- Providing context about the author(s) of the prior study, the historical period in which the research was conducted, and the methodologies or tools available and utilized at that time, particularly when such context is necessary to understand the evolution of the field or the significance of the study's findings in their historical context.
- Focusing critically on the substantive content of the referenced prior studies. The goal is not merely to amass a large number of references, many of which may be tangential, but rather to select studies that are highly relevant and closely connected to the current research topic.
- Maintaining strict objectivity and impartiality. Researchers must not selectively present only those studies that align with their preconceived notions or hypotheses. It is imperative to include all relevant prior research, even studies whose findings contradict the researcher's own perspectives or expected outcomes.
- When organizing the presentation of prior studies (e.g., within thematic sections), arranging them chronologically, typically from the oldest to the most recent, can be a useful method to show development over time.

Based on the foregoing, it is clear that prior research holds substantial significance in scientific inquiry. It furnishes the researcher with ample background information on the research topic and saves considerable time and effort by addressing numerous preliminary questions the researcher might have.

Conclusion

The fundamental purpose of utilizing prior research within the scope of scientific investigation is to provide a solid foundation for new research endeavors. It enables researchers to understand what has already been studied, identify existing knowledge gaps, and pinpoint questions that warrant further exploration. By critically examining the work of others, researchers can build upon the existing knowledge base, avoid redundant efforts, and ensure their work offers a valuable contribution to their specific field of inquiry. Furthermore, referencing prior work helps validate the researcher's own study design and methodological choices, thereby enhancing the credibility and reliability of their findings.

The scope of prior research considered in an investigation refers to the body of literature and sources deemed relevant by the researcher to their specific study. This involves the careful selection and examination of studies directly pertinent to the research topic and objectives. Researchers should prioritize recent and up-to-date works, while also including seminal or highly influential studies and acknowledging the latest advancements in the field. Through both selectivity

and comprehensiveness in their review, researchers gain a robust understanding of prior work, which aids in formulating relevant research questions and maximizing the potential impact of their own study.

In summation, the preliminary literature review and the engagement with prior research are indispensable components of the scientific research process, providing researchers with a crucial foundation for their investigations. By adhering to the outlined steps – including meticulous attention to detail, critical analysis, and adherence to rigorous citation practices – researchers can conduct comprehensive reviews, effectively identify knowledge gaps, and make meaningful contributions to their discipline. Utilizing appropriate tools and resources allows researchers to enhance their understanding of the existing knowledge landscape and effectively communicate their scientific findings.

Ideally, the utilization and analysis of prior research should be conducted with sufficient precision to allow the researcher to address aspects overlooked or unaddressed by previous investigators. This might involve exploring ideas or phenomena considered less significant in the past but recognized as pressing or important today. Consequently, students, in particular, should be encouraged to allocate the necessary time for thoroughly searching, reviewing, and analyzing prior research as a fundamental stage of the research process. This enables them to effectively extract the elements most critical and relevant to their current study.

Indeed, the researcher initiates the process of formulating the research problem by drawing upon prior studies, relies on them extensively in developing the theoretical framework, and ultimately concludes their research by contextualizing and comparing their findings with the results reported in that established body of literature.

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