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Formulating research questions in social science research

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Formulating clear and focussed research questions is a fundamental step in social science research because the questions shape the design, methodology and analysis of the entire study. Well-crafted research questions define the scope of inquiry, align with methodological approaches and contribute to theoretical advancement. To facilitate this process, several frameworks have been developed to guide the creation of primary and secondary research questions in the social sciences. Potential frameworks guiding the formulation of research questions include Feasible, Interesting, Novel, Ethical, Relevant, Management, Appropriate, Potential Value, Publishable, Systematic (FINERMAPS), Population, Exposure, Outcome (PEO), Population, Interest, Comparison or Context, Outcome, Time (PICOT) and Sample, Phenomenon of Interest, Design, Evaluation, Research type (SPIDER). Each of these offers a structured approach to identifying key components of a research problem, ensuring clarity, precision and relevance. Secondary research questions derived from these frameworks help deepen the investigation by addressing subcomponents of the main problem. The aim of this article is to demonstrate how social science researchers can utilise these frameworks to construct researchable, specific questions that address complex social phenomena. A literature review is conducted following an abstract conceptual design within an interpretivist research paradigm. The article comprises an outline of common challenges experienced when formulating research questions, including scope definition, ethical considerations and balancing feasibility with academic rigour. Practical examples are provided illustrating how FINERMAPS, PEO, PICOT and SPIDER can be utilised in the formulation of research questions. By critically examining these frameworks, this article equips researchers with the tools to overcome challenges and improve the formulation of research questions, leading to robust and insightful social science research.

Transdisciplinary contribution: The significance of inter-, multi- and transdisciplinarity in the formulation of research questions in the social sciences is expounded by accentuating the ways in which the knowledge domains and methodologies of multiple disciplines create a comprehensive understanding of complex social phenomena. A new corpus of knowledge usually emerges from research that transcends individual disciplines.

Keywords: research questions; social science research; primary and secondary questions; question design frameworks; FINERMAPS; PEO; PICOT; SPIDER.

Introduction

Research questions are commonly regarded as the foundation of any academic inquiry, particularly in the social sciences, in which phenomena are often complex, multifaceted and influenced by subjective perceptions. The formulation of clear, precise and researchable questions is essential for guiding the research process, from choosing the appropriate methodology to shaping data collection and analysis. Poorly defined research questions can lead to unfocussed studies, inconclusive results and wasted resources.

In social science research, frameworks such as Feasible, Interesting, Novel, Ethical, Relevant, Management, Appropriate, Potential Value, Publishable, Systematic (FINERMAPS), Population, Exposure, Outcome (PEO), Population, Interest, Comparison or Context, Outcome, Time (PICOT) and Sample, Phenomenon of Interest, Design, Evaluation, Research type (SPIDER) have emerged as valuable tools for structuring research questions. These frameworks help researchers break down complex problems into manageable components, ensuring that their research questions are specific, measurable, realistic and aligned with the overall aims of the study. For instance, the PEO framework is commonly used in qualitative research to explore relationships and experiences, while SPIDER offers a flexible approach to studying participant perspectives in mixed-methods research.[1,2,3] However, crafting clear, concise research questions can be challenging, particularly when dealing with complex or abstract concepts. Postgraduate students in the social sciences often start with

broad or vague ideas and struggle to narrow them down into specific and researchable primary and secondary research questions.[4,5,6] Vague or overly ambitious questions can result in unfocussed research and difficulties in formulating clear hypotheses, objectives and data collection strategies.[1]

This article is an examination of the significance of well-crafted research questions in the social sciences. The key success factors in its articulation are unpacked and the utilisation of frameworks that might guide their formulation are explored. Practical examples of how these frameworks can be applied are provided to help researchers navigate challenges such as scope definition, feasibility and ethical considerations. By understanding the principles and applications of these frameworks, social science researchers can create rigorous and impactful studies, thus contributing to the advancement of knowledge in their respective fields.

Framing research questions in social science research

Research in social science disciplines such as public administration, political science, communication studies and sociology might span the full spectrum of research types, including action, applied, basic, empirical, qualitative, quantitative or mixed-methods research, depending on its purpose.[1,7] Barroga and Matanguihan[1] state that a research question 'is what research aims to answer after data analysis and interpretation' (p. 2). Research questions are central to any type of study because they define what the researcher aims to investigate.[8] A well-formulated research question is specific and clear, and guides the entire research process, influencing the design, methodology and analysis.[3]

In social science research, formulating effective research questions is crucial because it informs a study's design, data collection and analysis. Unlike fields with clinical or experimental foci, applied social science disciplines such as public administration and communication studies often deal with complex, subjective phenomena that require flexible yet structured approaches. To develop clear and focussed primary and secondary research questions, researchers frequently use specific frameworks tailored to the nuances of social inquiry.[8]

In postgraduate research proposals, research questions are typically found in several sections. In the introduction, orientation or background section, researchers usually introduce their primary research question after outlining the research problem, background and significance of the study. Typical phrases introducing research questions include: 'The aim of this study will be to answer the following questions', 'The research questions guiding this study will be', or 'The central research question will be …' Alternatively, the literature review section of the proposal often concludes with the research questions. After reviewing the existing body of knowledge, researchers might present research questions that arise from identified gaps or contradictions in the literature.[9] If the proposal includes a dedicated research question section, the research questions should be listed here. Research objectives typically guide the formation of specific research questions, so they are often presented in close proximity. Especially in dissertations or theses, the research questions are reiterated in the methodology section. Because the methodology is designed to address the research questions, they might be restated or clarified before describing the data collection and analysis methods.

A well-aligned dissertation or thesis not only answers the research questions but also identifies areas for further research. In the conclusion section, it is generally expected that researchers indicate how each research question was addressed, allowing them to highlight gaps that remain, thus paving the way for future studies. This contribution to the broader academic field is a key component of a successful dissertation or thesis in the social sciences.

Types of research questions

Barroga and Matanguihan[1] and Ratan, Anand and Ratan[8] argue that research questions can be formulated in a variety of formats, depending on the aspects associated with the nature and scope of the study. For example, research questions can be descriptive in nature, focussing on statements of uniqueness or characteristics.[10] An example is: *What are the theoretical underpinnings of public participation in policy-making?* Questions can also be focussed on composition, aiming to break down phenomena into components. Examples include: *What are the various levels of public participation?* or *What are the phases of public policy-making?*

More complex questions are posed to determine relationships or causality between variables.[11] For instance: *Are public policies perceived to be more legitimate when levels of public participation are high?* Another format is comparative in nature.[2] For example: *Are public policies more legitimate in open and free democratic societies than in countries characterised by dictatorships and authoritarian regimes?*

Other types of research questions, according to Berger,[12] Creswell,[13] Marshall and Rossman[14] and Ritchie et al.[10] include the following:

- Contextual: These questions are utilised when one wants to probe the nature of a situation, such as *What are the experiences of emergency room nurses working night shifts in public hospitals during violent protests?*
- Qualitative (case study): These are formulated to assess a phenomenon using several data sources to answer 'why' and 'how' questions in relation to how a phenomenon is influenced by its contextual situation. For example: *How does quitting work and assuming the role of a full-time mother change the lives of women in the Gauteng province?* or *What are the perceptions of community X regarding the role that traditional leaders play in the decision-making processes in municipal ward committees?*
- Quantitative questions: For example: *By utilising Hollingshead Four Factor Index, how does socioeconomic status influence the academic achievement of learners in institutions of higher learning in South Africa?*

- Descriptive research questions: Here the aim is to describe a phenomenon, such as *What are the various leadership styles of senior managers in public sector agencies?*
- Evaluation research questions: These are crafted to examine the effectiveness of existing practices or frameworks. For example: *How effective are decision-making techniques in helping managers decide whether to institute disciplinary procedures against an employee?*
- Explanatory research questions: These are intended to clarify a previously studied phenomenon and explain why it occurs. For example, *Which factors contribute to the increase in teenage pregnancy in the Eastern Cape province?*
- Exploratory research questions: These are formulated to explore areas that have not been fully investigated to gain a deeper understanding of the research problem. For example, *What factors affected the mental health of medical staff at public hospitals during the coronavirus disease 2019 (COVID-19) pandemic?*
- Generative research questions: The purpose of these is to develop an in-depth understanding of people's behaviour by asking 'how would' or 'what if' questions to identify problems and find solutions. For example: *How would the extensive research experience of inexperienced staff impact the success of a new skills development programme?*
- Ideological research questions: The aim here is to advance specific ideas or ideologies. For example, *Are Cuban doctors serving in rural clinics, who are unfamiliar with the language, culture and traditions of rural South Africans, able to promote the provisioning of accurate information related to healthcare?*
- Ethnographic research questions: These enable one to clarify people's nature, activities, interactions and the outcomes of their actions in specific settings. For example, *What are the demographic characteristics and community interactions of coloured people on the Cape Flats*?
- Phenomenological research questions: These are aimed at gaining an enhanced understanding of phenomena that have impacted individuals, such as *What are the lived experiences of parents who have been living with and caring for children diagnosed with cancer*?
- Grounded theory questions: The focus of these questions is on social processes, such as what happens or how people interact, or uncovering social relationships and behaviours within groups. For example: *What are the problems that pregnant adolescents face in terms of social and cultural norms, and how can these be addressed*?

Primary and secondary research questions

In social science research, primary and secondary research questions play distinct yet complementary roles in guiding a study. They differ in focus, scope and purpose, and both are essential for conducting thorough, well-rounded research.[15]

The primary research question is the central question that drives the entire study. It defines the main focus of the research and outlines the key issue or phenomenon that the researcher intends to investigate. This question addresses the overarching problem and sets the direction for the research design, methodology and analysis.[16] According to Hosseini et al. (p. 2),[17] the primary research question pinpoints exactly what the researcher wants to establish and should therefore be:

- significant, original and focussed on a single problem or issue
- researchable using primary and/or secondary sources
- feasible to answer within the timeframe and practical constraints of a study
- measurable and specific enough to answer thoroughly
- comply with ethical considerations and scientific guidelines
- complex enough to develop the answer over the space of a dissertation or thesis
- interesting and relevant to the field of study, target population or broader society.

Key characteristics of a primary question is that it is typically broader and rather general, setting the stage for the study's overall purpose, and reflecting the fundamental issue or phenomenon the researcher seeks to explore or explain. It also dictates the choice of research methods (e.g. qualitative, quantitative or mixed-methods), data collection and analysis strategies.[18] All the aspects of the research are oriented towards answering this question. An example in the field of public administration is: *How does project management methodology aid in the successful implementation of municipal service delivery initiatives?*

Secondary or sub-research questions are subordinate to the primary research question.[15] They break down the broader question into specific inquiries, addressing various aspects or dimensions of the main problem. These questions enable one to explore nuances, underlying factors or relationships relating to the primary question, providing depth and supporting the comprehensive investigation of the research topic. As such, they tend to be more specific and detailed than the primary question, zooming in on particular components of the phenomenon being studied. Often, a study will have several secondary questions that tackle specific aspects of the primary question, offering a full understanding of the research topic.

Using the primary question aforementioned as an example, the following secondary questions might be appropriate:

- What are the theoretical underpinnings, characteristics, principles and steps in project management methodology?
- Which project management methodologies (e.g. Agile, PRINCE2, PMBOK) are perceived to be most effective in enhancing service delivery within municipal service delivery operations?
- To what extent are project management methodologies currently applied in municipalities?
- What are the specific benefits and limitations of applying project management methodologies in differing types of municipal services (e.g. waste management, water supply and road maintenance)?
- How do municipalities measure and monitor the success of project management methodologies in improving service delivery?

- What are the typical challenges experienced by municipalities with respect to executing service delivery projects?
- What roles do leadership, organisational culture and stakeholder engagement play in the success of project management methodology implementation in municipalities?
- How does the implementation of project management methodologies impact the efficiency, quality and timeliness of municipal service delivery projects?
- How can project management methodology be adapted to suit the context of service delivery projects in municipalities?

These secondary questions break down the broad primary question into manageable components, enabling the researcher to investigate specific factors or variables that contribute to the overall understanding of the topic (Table 1).

In short, the primary and secondary research questions are intrinsically connected. The primary question sets the overall direction of the research, while the secondary questions break it down into smaller, more focussed parts. Answering secondary questions provides a comprehensive foundation that, in turn, helps one to answer the primary research question. Together, they ensure that the research covers all the relevant aspects of the topic, from the general to the specific.[19] For instance, in a study on the impact of social media on political participation, the primary question is formulated to explore the broad phenomenon, while secondary questions help examine the specific ways in which social media influences political behaviour, such as through content type, engagement with influencers and translation into offline activity. By addressing these secondary questions, the researcher gains insights that directly contribute to answering the primary question. It is important to note that research questions should not be answerable with simply a 'yes' or 'no' response.

Key success factors in formulating research questions

The quality and validity of research questions in postgraduate studies in the social sciences can be significantly enhanced by recognising and applying the key success factors to their formulation. Some of the most significant ones are briefly outlined in this section.

Literature reviews

In social science research, literature reviews and the formulation of research questions are closely intertwined. The relationship between them is mutually reinforcing, where one informs and sharpens the other. A comprehensive literature review helps researchers to understand the current state of knowledge in their field.[20] What Sandberg and Alvesson (p. 23)[21] refer to as 'gap-spotting' and Alvesson and Sandberg (p. 247)[22] call 'problematisation', the literature review exposes contradictions or understudied areas that can guide the formulation of research questions. A well-structured literature review builds the rationale for the research question. It shows the significance of the question by highlighting why it is important, how it fits into the existing research, and what contribution the study will make to the field. Without reviewing the literature, a researcher might miss what has already been addressed or overlook areas that need further exploration.

The literature review process often helps narrow down broad ideas or interests into specific, researchable questions. By examining how other scholars have framed their inquiries, researchers can refine their own research questions in a way that is focussed, relevant and manageable.[23] In addition, research questions are often grounded in particular theoretical frameworks or concepts. A literature review provides the necessary background to select and justify these frameworks, shaping the way a research question is constructed. It ensures that the question aligns with relevant theories and previous empirical findings.[24] Through the literature review, researchers can identify what has already been studied extensively. This prevents them from formulating questions that have already been thoroughly answered, facilitating innovation and originality in their research design.

During the review of relevant studies, researchers often come across patterns or trends in the findings of previous research. These can inspire specific hypotheses or lead to the formulation of sub-questions that will enable the researcher to explore particular aspects of the main research question.[25] In this regard, artificial intelligence (AI) tools such as ChatGPT, Google Gemini, Meta AI and Microsoft Bing can be effectively used to 'brainstorm' potential research questions.

From the above, it is evident that a literature review guides the formulation of research questions in the following ways:

- to identify gaps in the existing corpus of knowledge aimed at expanding on or building new (grounded) theory
- to obtain contextual information (e.g. background, statistics and applications) regarding a practical problem, especially in the applied social sciences
- to expand on current research (body of evidence) on a topic or phenomenon
- to refine and sharpen the research problem by identifying key variables, relationships and frameworks in previous

TABLE 1: Key distinctions between primary and secondary research questions.

Aspect	Primary research question	Secondary research question
Focus	Broad, addressing the core research problem	Narrow, exploring specific aspects of the research problem
Purpose	Defines the main objective of the research	Aimed at exploring specific dimensions of the main topic
Scope	Encompasses the overall research agenda	Covers particular components or variables related to the primary question
Role in the study	Guides the entire research design and methodology	Supports the primary question by delving into subtopics or related themes
Number	Typically one, central to the study	Several, depending on the complexity of the research topic

studies that can inform the development of hypotheses and conceptual frameworks
- to avoid duplication by ensuring that the research questions address new or underexplored areas, preventing redundancy in research
- to identify suitable methodological approaches by reviewing how similar research questions have been addressed in previous research
- to establish a theoretical foundation by anchoring the research within established theoretical frameworks
- to highlight conflicting findings or debates by exploring differing perspectives or unresolved debates in the literature.

The dialogical relationships between theory and research questions

The theoretical framework of a study is inextricably linked to research questions, whether the theory shapes them initially or suggests new questions as the study unfolds. By situating research questions within a theoretical framework, researchers can align their inquiries with existing knowledge, thus ensuring that their work contributes to the broader academic discourse.[26] As researchers design a study and protocols, theory often shapes the methods in explicit ways. Some researchers, such as Merriam,[27] suggest that a theoretical framework should inform the research questions, especially in case study research, because the theory will help to define the selection and parameters of cases. For many researchers, selecting a theoretical framework not only shapes the questions but also connects the research to a particular field. An aspect that is commonly overlooked by postgraduate students in the social sciences is that theories can assist the design of the study by enabling them to identify and define key variables that might be important to the analysis. A theory will usually also enable the researcher to make some assumptions about the possible interconnectedness and interrelationship between these variables. For example, Marxist theory on socioeconomic inequality might guide the study by highlighting the significance of class struggles, capitalism, means of production, unequal wealth distribution, power imbalances and social stratification as key variables. Each of these variables should guide the formulation of sub-questions, although researchers should be careful not to expand the scope of their research beyond what is realistic and viable in a study.

An overarching question for many qualitative studies will point towards one or more of the theoretical constructs that frame the study. As Maxwell[28] explains, 'research questions need to account for one's tentative theories about … phenomena' (p. 68). Those tentative theories and the questions that result from them might change to accommodate data collection or preliminary findings. Often, when doctoral students write a proposal, they are drawn to grand theories as a beginning point. The theory might be narrowed to discourse analysis and research questions about discourse, and the positioning of individuals in a discourse would follow.

Theoretical framing evolves and changes during most studies and might also inspire additional questions as a researcher collects data.[29] Flick[6] observes that research questions usually originate with 'the researchers' personal biographies and their social contexts' (p. 45). However, the process of qualitative inquiry should invite the possibility of questioning personal theories and expanding or modifying the original conceptual framework and research questions.

Aligning research objectives with research questions

As noted earlier, in social science research, research objectives and research questions are closely related and work together to guide the overall research process. Their relationship is one of purpose and direction, whereby the research objectives provide a broad, overarching framework and the research questions translate those objectives into specific, focussed inquiries.

Research objectives constitute an outline of the purpose of the study; that is, what the researcher aims to achieve. They are broad statements that define the intended outcomes of the research, such as exploring a phenomenon, understanding relationships or identifying causal factors. Once the research objectives are clear, the researcher formulates questions that directly address these objectives. Research objectives (ROs) give the study its general scope and direction. Research questions (RQs), on the other hand, indicate specific inquiries that break down these broad objectives into concrete, answerable questions. They operationalise the objectives by focussing on the particular aspects of the topic under investigation.[30]

The following example illustrates this close alignment:

RO: *To assess the potential influence of social media on political participation among university students*.

RQ: *How does social media influence the political engagement of students in selected South African universities?*

Research questions are more precise, guiding the data collection and analysis by focussing on specific elements of the broader goal.[31] Research questions often specify the variables, populations or relationships to be studied, whereas ROs provide a more holistic view of the expected research outcomes. The relationship between the two is, thus, that the objectives provide the foundation and direction, while the research questions ensure precision and focus, ultimately helping to achieve the objectives. Together, they provide a clear roadmap for the entire research process.

Aligning chapter content with research questions

A further key success factor in the formulation of research questions is their close alignment with chapter content. Such an alignment ensures that the study remains focussed,

coherent and systematically addresses the issues being investigated. The formulation of research questions helps to determine what information is relevant or irrelevant to include in the chapter content. Content that does not directly contribute to answering the research questions is typically omitted, ensuring that the dissertation or thesis remains focussed. The research questions essentially determine the outline of the thesis and dissertation chapters. Each chapter addresses a specific aspect of the research, and the content of each chapter is organised to respond to the research questions. If the latter are focussed on exploring specific variables, processes or phenomena, the chapters will be organised in a way that systematically addresses these inquiries. For instance, in a study on ethical leadership, a research question focussed on the barriers women face in attaining leadership positions would limit the content in the literature review and analysis to factors related to barriers rather than to unrelated issues such as leadership styles. Thus, the relationship between chapter content in a social science research thesis or dissertation and the formulation of research questions is integral to shaping the overall structure and coherence of the research.

If the chapters are not aligned with the research questions, the study can become disjointed, leading to gaps in the research or a lack of focus on the topic under study. In a well-aligned study, the research remains tightly focussed on the original questions. Misalignment, whereby chapters diverge into unrelated areas, can dilute the study's purpose. For example, if the research question is about how leadership styles affect team motivation, but the focus of the analysis chapter is too much on individual personality traits unrelated to leadership, the study risks losing its direction. By aligning each chapter with the research questions, clarity and purpose are maintained, ensuring that all the sections contribute to answering those questions directly.

The flow of a thesis is determined by how logically each chapter builds on the previous one. Research questions serve as the foundation for this structure. Each chapter should be organised to incrementally answer specific aspects of the research questions:

Example:

RQ: *What factors contribute to income inequality in urban versus rural settings?*

Chapter 1: Introduction – the issue of income inequality is introduced.

Chapter 2: Literature review – an examination of existing research on income inequality, specifically focussing on urban and rural contexts.

Chapter 3: Methodology – an explanation of how data is collected to analyse the relevant factors in both settings.

Chapter 4: Data analysis – a presentation of the findings in response to the research question.

Chapter 5: Discussion – interpretation of the findings in light of the research question.

Chapter 6: Conclusion – summary of how the question has been answered.

As can be seen, each chapter should have content that systematically works towards answering the primary research question. For example, the literature review (e.g. Chapter 2) contains a synthesis of the existing knowledge related to the research questions and gaps that the researcher aims to fill are identified. The methodology chapter (e.g. Chapter 3) is a description of how the research was designed to gather data that would provide answers to the research questions. The results and findings (data analysis) chapter (e.g. Chapter 4) comprises a presentation of the empirical findings, structured around the specific research questions. The discussion chapter (e.g. Chapter 5) consists of an interpretation of the results, directly relating the findings to the research questions. By aligning chapter content with questions, scholars create a logical structure that makes it easy for the reader to follow the research process and understand how deductions were made.

The methodology chapter should explicitly link to the research questions, with an explanation of how each research question will be investigated. For instance, if a research question is concerned with the relationship between two variables, the methodology should include a description of the statistical techniques or qualitative methods used to explore that relationship. When the methodology chapter is not aligned with the research questions, the study's methodological rigour suffers, leading to challenges in obtaining relevant data or answering the questions effectively.

Frameworks for the formulation of research questions

Formulating research questions can be challenging, especially when dealing with complex or multidisciplinary topics in social science research. Research question formulation frameworks not only help one to clarify the primary research question but also to develop coherent secondary questions, ensuring a well-rounded approach to investigate the research problem.

According to Covvey et al.,[5] Methley et al.[32] and Ratan, Anand and Ratan,[8] a variety of frameworks, such as FINERMAPS, PEO, PICOT and SPIDER, are available to social science researchers and can assist them in ensuring that their research question has covered all the relevant components. By using a structured framework, researchers can avoid ambiguity and ensure that their questions are precisely formulated. Moreover, when research questions are framed clearly, other researchers can replicate or build upon the work, contributing to the field's body of knowledge. However, the application of these frameworks is not without limitations. For example, some of them might not be applicable to the nature and scope of a particular study. There is also the possibility of oversimplifying complex problems by forcing them into a

rigid framework. Rigid structures can limit the creativity and flexibility needed in qualitative or exploratory research, especially in fields such as the social sciences, in which complex, open-ended questions are common and phenomena might not fit neatly into such categories. In the social sciences, variables such as behaviour, culture and social structures are often more fluid and less defined than in clinical or experimental settings. This can make it relatively challenging to fit these variables into rigid frameworks designed for more concrete and measurable phenomena.

The application of these frameworks in social science research is explored in the section.

Feasible, Interesting, Novel, Ethical, Relevant, Management, Appropriate, Potential Value, Publishable, Systematic (FINERMAPS) framework

The FINERMAPS framework is an extension of the original FINER criteria, which was initially developed in the field of clinical and biomedical research for formulating focussed research questions. FINER stands for feasible, interesting, novel, ethical and relevant. The framework was designed by Hulley et al.[33] and has been widely used to ensure that research questions are well thought out and effective in advancing knowledge in various fields. According to Ratan, Anand and Ratan,[8] the FINERMAPS framework is highly useful to guide the formulation of research questions, representing 'feasible, interesting, novel, ethical, relevant, manageable, appropriate, potential value, publishability and systematic' (p. 15). To illustrate how these aspects might be applied in social science research, the following primary research question serves as an example for the sub-questions according to FINERMAPS that follow: *How do project management methodologies improve service delivery in sampled metropolitan municipalities*?:

- **F – Feasible:** The research question should be practical and answerable within the available time, resources and scope. Example: *Is it feasible to compare the effects of project management methodologies on service delivery across several metropolitan municipalities?*
- **I – Interesting:** The research question should be interesting to you as the researcher and to the broader academic and professional community. The topic is interesting because municipalities often face challenges in service delivery, and finding solutions through project management can benefit local governance. Example: *How do project management methodologies capacitate municipal managers and other stakeholders in improving service delivery?*
- **N – Novel:** The research question should contribute something new to the field, whether by filling a gap in the literature or introducing a new angle to an existing issue. Example: *What new insights can be gained by applying project management methodologies to the improvement of service delivery in sampled metropolitan municipalities?*
- **E – Ethical:** The research question should be ethical and not involve harm or risk to the participants. Therefore, it is important to ensure that the study does not violate ethical standards, especially in terms of confidentiality and the informed consent of municipal employees. Example: *How can the research on project management methodologies in sampled metropolitan municipalities be conducted ethically, ensuring anonymity, confidentiality and informed consent?*
- **R – Relevant:** The research question should be relevant to current social or academic issues, solving real-world problems or addressing pressing gaps in knowledge. It is necessary to highlight, for example, the relevance of improving service delivery in sampled metropolitan municipalities, especially in the context of public demand for efficient local governance. In response, the researcher should, for example, indicate that the study is highly relevant because improving service delivery in metropolitan municipalities can directly impact public satisfaction with local government services and positively influence the overall legitimacy of and trust in the government.
- **M – Manageable:** The process of obtaining an answer to the research question should be manageable in terms of scope and complexity. It should be evident that the study can be completed within a set timeframe. It should, for example, indicate that the researcher will be able to manage the process of collecting data from sampled officials in selected metropolitan municipalities.
- **A – Appropriate:** The research question should be appropriate to the study field and aligned with the primary research objective and method. Researchers should, thus, ensure that the question aligns with the methods (e.g. qualitative, quantitative or mixed-method) they plan to use for data collection and analysis. Example: *What is the appropriate method for gauging and evaluating the potential impact of project management methodologies on municipal service delivery?*
- **P – Publishable:** The research question should result in publishable findings that contribute to scholarly literature or professional practice. Example: *Are the findings on the impact of project management methodologies in metropolitan municipalities significant enough to contribute to academic or policy publications?*
- **S – Systematic:** The research question should encourage a systematic approach to investigation, ensuring a clear and logical flow of inquiry. It should, for example, be evident that there is a clear, systematic process to follow when evaluating how project management methodologies improve service delivery. Example: *How can a systematic approach be used to analyse the implementation of project management methodologies for service delivery improvement in sampled metropolitan municipalities?*

When applying frameworks such as FINERMAPS, which emphasises ethical and feasible questions, social scientists might face significant ethical limitations, particularly when dealing with sensitive social issues (e.g. poverty, violence or inequality). Gathering data might be ethically complicated, or certain questions might not be easily explored because of cultural or political barriers. Asking direct questions about domestic violence in vulnerable communities, for example, could be ethically problematic, even if the research question fits the FINERMAPS criteria.

PEO framework

The PEO framework is commonly used to formulate qualitative research questions, especially in social care research.[31,32] The RQ used above in the FINERMAPS framework will again be used as a practical example to elucidate the application of the respective elements of the PEO framework:

- **P – Population:** The population refers to the group or participants being studied. In social science research, this could be individuals, organisations, communities or specific social groups. In this case, it would be municipal employees or municipalities. Example: *How do municipal employees …*
- **E – Exposure (or experience):** Exposure refers to the phenomenon or experience being studied. This could be an event, policy, intervention or situation that the population is exposed to. In this example, the application of project management methodologies is the key exposure being investigated. Example: … *who are exposed to project management methodologies …*
- **O – Outcome:** Outcome refers to the impact or results of the exposure on the population. In social science, this could include changes in behaviour, perceptions, effectiveness or other measurable or experiential outcomes. In this case, it would be the improvement in service delivery as perceived by municipal employees or based on municipal performance. Example: … *perceive the outcome of their application to improve municipal service delivery?*

A typical format might look like this: In or with _____ (P), will _____(E) result in _____(O)?

Again, caution should be expressed regarding the utilisation of the PEO framework. In the social sciences, research is often observational or exploratory, which might not fit well within this framework, leading to forced or incomplete research questions. For example, when studying social issues such as poverty or inequality, there might be no clear 'exposure' or 'intervention' to define, making it difficult to use the PEO framework.

PICOT

The PICOT research question framework was first introduced in 1995 by Richardson et al.[34] in the field of clinical and healthcare research. It was pioneered mainly in response to the growing emphasis on evidence-based research. It has since been adapted and used in the social sciences, where the goal is to measure the effectiveness of interventions over time.[35] Its structured approach helps researchers develop focussed questions that guide study design, data collection and analysis in empirical research.[36] Using the PICOT framework, research questions can be constructed to address important elements of the study, including the population to be studied, the expected outcomes and the time it takes to achieve the outcome:[17]

- **P – Population:** The population refers to the group of people being studied. In this case, the population is municipal employees or municipalities. Example: *According to municipal employees …*
- **I – Intervention:** The intervention is the action, strategy or methodology being applied. In this case, the intervention is the application of project management methodologies. Example: … *how does the application of project management methodologies …*
- **C – Comparison:** The comparison is what the intervention is being compared to, such as an alternative approach or no intervention at all. Example: … *compare to traditional management practices …*
- **O – Outcome:** The outcome refers to the results or effects of the intervention. In this case, the outcome is improved service delivery. Example: … *in terms of improved municipal service delivery …*
- **T – Time:** The time refers to the period in which the intervention and its outcomes are observed. It thus indicates the timeframe during which the intervention will be applied or evaluated. Example: … *over a period of 12 months.*

Considering the following RQ: 'Among municipal employees, how does the application of project management methodologies compare to more conventional or traditional management practices in improving service delivery over a 12-month period?', the PICOT framework thus clarifies the following:

P (Population): *municipal employees*

I (Intervention): *project management methodologies*

C (Comparison): *traditional management practices*

O (Outcome): *improved service delivery*

T (Time): *12 months*

Although clearly useful in the formulation of research questions, some of the elements of this framework might not be relevant to every type of social research. For instance, the 'Time' element is often irrelevant in qualitative studies that do not measure outcomes over a specific period. In addition, a study on the cultural impact of immigration on local communities, for example, might not easily incorporate a 'Comparison' component, making the strict application of the PICOT framework rather redundant.

SPIDER framework

Another framework for the formulation of research questions is the SPIDER framework. The SPIDER framework is especially suited for qualitative and mixed-methods research, focussing on participant experiences or perceptions.[32,37]

Using the same RQ used in the previous frameworks, the application of SPIDER will guide the formulation of questions as follows:

- **S – Sample:** *What are the experiences of metropolitan municipal employees in applying project management methodologies?*

- **PI – Phenomenon of Interest:** *How do project management methodologies impact service delivery in urban municipalities?*
- **D – Design:** *Using a qualitative case study, how do urban municipalities implement project management methodologies for service delivery improvement?*
- **E – Evaluation:** *How do municipal employees perceive the effectiveness of project management methodologies in improving service delivery?*
- **R – Research type:** *What insights can be drawn from a qualitative study on the challenges and benefits of using project management methodologies in sampled metropolitan municipalities?*
- **Sample:** *metropolitan municipalities*
- **Phenomenon of interest:** *implementation of project management methodologies*
- **Design:** *qualitative multiple case studies (sampled municipalities)*
- **Evaluation:** *effectiveness and perceptions of improvement in municipal service delivery*
- **Research type:** *qualitative*.

The SPIDER framework might not enable one to account for abstract or layered social concepts such as identity, culture or ethics, for which clear design or evaluation measures might be hard to define.

SPIDER might also not easily accommodate mixed-methods research, which combines qualitative and quantitative approaches. This framework tends to be focussed on one type of methodology, leading to difficulty when applying it to studies in which both are used.[37] A researcher using both interviews (qualitative) and surveys (quantitative) to examine a social phenomenon might, thus, find it difficult to fully apply the SPIDER framework, which is better suited to qualitative approaches.

Conclusion

The formulation of research questions is a foundational element of any scholarly inquiry, particularly in social science research, in which the complexity of human behaviour, societal structures and cultural phenomena requires precise, clear and thoughtful questioning. By focussing on clearly articulated and researchable questions, researchers are well-equipped to address the gaps in their field, contribute to theoretical advancements and offer practical solutions to social issues. In the context of graduate research, aligning the research questions with the chapter content strengthens the study's methodological rigour, facilitating comprehensive and meaningful answers to the core inquiries.

This article has highlighted the significance of employing structured frameworks to systematically develop both primary and secondary research questions that ensure focus, coherence and methodological rigour. Frameworks such as FINERMAPS, PEO, PICOT and SPIDER offer structured approaches to crafting well-defined, clear and researchable questions, particularly in healthcare and intervention-based fields. They help one to ensure that research is focussed, feasible and methodologically sound, ultimately improving the quality and relevance of the findings. These frameworks not only provide clarity to the research process but also assist in maintaining a logical progression throughout the study. However, while these frameworks encourage precise, manageable and succinct research questions in fields such as the social sciences, researchers might need to balance broad, systemic issues with focussed, measurable components. This can be difficult to manage within a strict framework. Furthermore, in the social sciences, research often draws from multiple disciplines, which can make it challenging to use a single framework to formulate research questions that address the complexity of such studies. It is, therefore, necessary to adapt these frameworks to allow for flexibility, interdisciplinarity and nuance when formulating research questions in these fields.

Ultimately, successful research in the social sciences depends on a clear understanding of how to formulate and structure research questions. This not only directs the study but also ensures that the researcher's efforts yield valuable insights and contribute to the advancement of knowledge within the field. By employing frameworks and maintaining alignment throughout a study, researchers can achieve immense clarity, precision and impact in their work, laying the foundation for future scholarly and practical contributions.

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