
GRADUATE RESEARCH GUIDE: FORMAT AND PROCESS OF WRITING DISSERTATIONS AND THESES BY PHD & MASTERS STUDENTS

**Gabriel N Kirori, Professor of Economics
The Catholic University of Eastern Africa
gkirori@cuea.edu & gnkirori@gmail.com**

Publication Date: June 2024

ABSTRACT

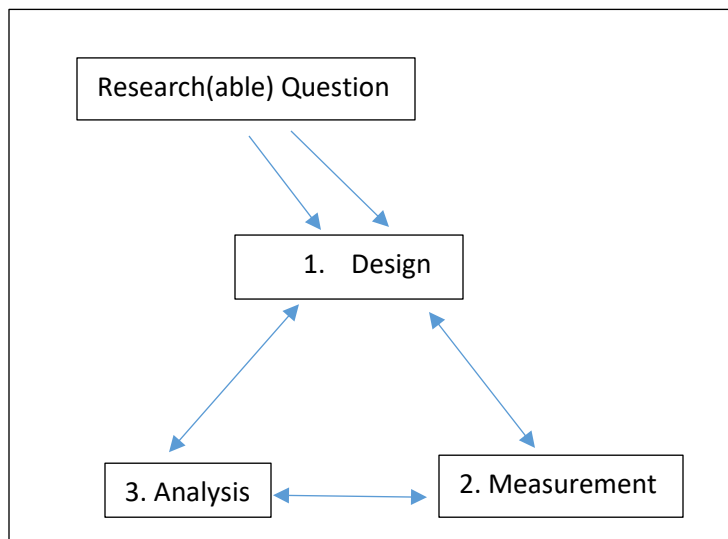
This paper aims to provide a brief Guide on both the format and process of writing dissertations and theses as a chaperon to graduate students across the globe. The Guide takes cognizance of some gaps found with respect to the format and process of writing dissertations and theses by PhD and Masters Students. For instance, the erroneous use of contrasts such as measurement for design and analysis for design, and erroneous use of the terms conceptual framework and theoretical framework interchangeably. The Guide places emphasis on the three pillars of a good research, including Design (Methods), Measurement, and Analysis. The Guide comprise three parts including Pillars of a Good Research, Process of Researching, and Context of the Research.

Keywords: *Pillars of Good Research, Research Question, Research Objectives, Conceptual Framework, Theoretical Framework, Empirical Framework*

1. Pillars of a Good Research

Research Design, Measurement, and Analysis are the three pillars of a good research (Vogt, 2007). According to the author, a researcher will necessarily require to be able to assess the quality that knowledge claims to hold. The researcher will need the three pillars in order to be able to judge the quality of the research findings. Each pillar supports different aspects of the research investigation (topic or problem) including methods of gathering, recording, and interpreting evidence (Vogt, 2007). Figure 1 illustrates the inextricable links among design, measurement, analysis, and the research question. Most arrows point in both directions.

Figure 1: Design, measurement, and analysis



Source: Vogt (2007)

The design-measurement-analysis cycle in Figure 1, describes an iterative process where each step influences the others, as sometimes in a research agenda the researcher goes through the cycle more than once. Prior to design, measurement, and analysis, the researcher will require a research question or problem. A good research question is essential as it leads the researcher to focus on important knowledge and to address significant problems in the field of investigation and practice. The question must be researchable in that, gathering the evidence that would help answer the question is possible. Researchability is partly a matter of the design (Vogt, 2007). Research topics or problems do not come with instructions and require the researcher to figure out both the most important problem to focus on and the way of collecting the evidence to solve it. Creativity in design, measurement, and analysis is necessary in figuring out innovative and effective ways to address the problem (Vogt, 2007).

The design (method) pillar is focused on methods of collecting evidence. It addresses the question, ‘how shall we conduct the study?’ Seven main types of research designs (methods) for collecting evidence include document analysis, secondary analysis of data (e.g., census data), naturalistic observation, surveys, interviews, experiments and quasi-experiments, and participant observation. Any one of these designs can be used to produce evidence that can be handled in either quantitative or qualitative ways.

The measurement pillar involves procedures for recording and handling evidence and answers the question, ‘how shall we sort, count, and assign numbers to the variables?’ There are four main types or levels of measurement including nominal scales, ordinal scales, interval scales, and ratio scales. Nominal scales of measurement are just names or categories or identifiers such as social security numbers assigned to categories and convey no quantitative information. Ordinal scales are ranks such as: low, middle, and high, and so on. Interval scales are measurements that have

equal distances and order between any two adjoining numbers but have no meaningful zero point or origin. Ratio scales are measurements that have equal intervals, order, and a true zero point or origin. A related distinction in levels of measurement is between data (variables). Variables are classified as being continuous versus discrete and quantitative versus qualitative. Levels of measurement can be reduced to a trio of distinctions, including quantitative (interval and ratio scales), rank (ordinal scale), and qualitative (nominal or categorical scale). Statistical techniques (methods) as determined by levels of measurement are distinguished between the parametric and non-parametric measures. The parametric statistical techniques are used when the data being analyzed are quantitative (ratio or interval) whereas the non-parametric statistical methods should be used in most other cases. Most statistical techniques are built around the assumption that the measurement scales being used are ratio-level scales (Volgt, 2007).

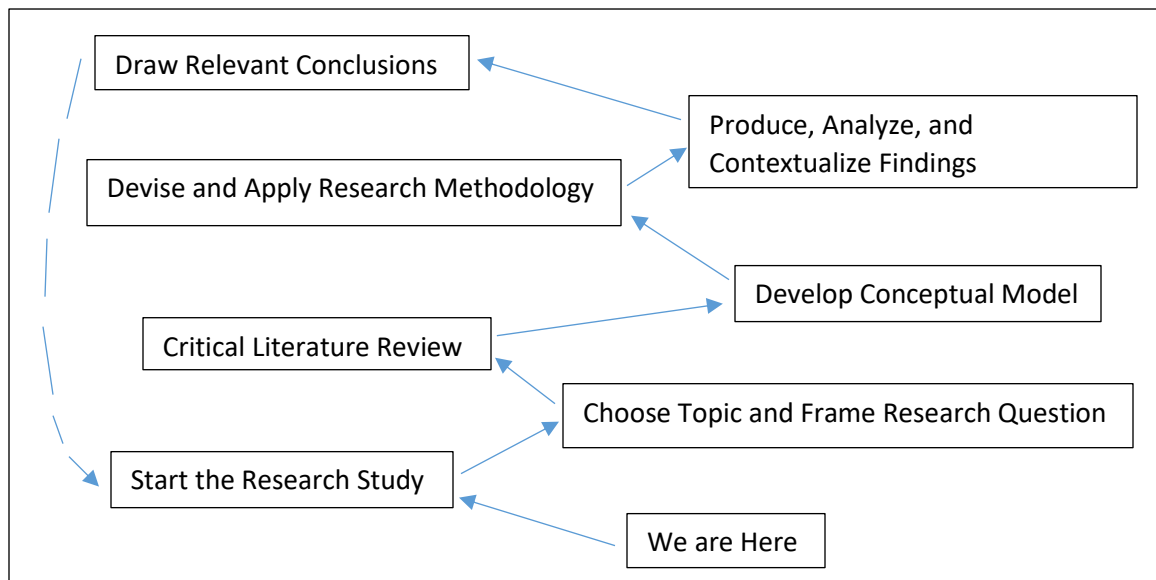
The analysis pillar includes methods for interpreting evidence and answers the question, ‘how shall we produce, evaluate, and make sense of the results?’ Two main categories of statistical analysis are the descriptive statistics analysis and inferential statistics analysis. The main focus of descriptive statistical analysis is to describe and summarize data. Three key descriptive techniques are: the tabular organization of data, graphical presentation of data, and formulation of numerical measures (measures of central tendency, measures of dispersion, measures of relative standing, and measures of linear relationship). Inferential statistical analysis is designed to help the researcher to draw conclusions (make inferences) about populations on the basis of information about samples drawn from the populations. Inference means weighing evidence about the extent to which researchers can infer things about a population on the basis of sample drawn from the population.

In research, it is commonly talked about ‘quantitative design’ or ‘qualitative design’. This is to confuse design and measurement (Volgt, 2007). Each of the several designs (methods) can be used to generate both quantitative and qualitative data. Another common contrast is between experiment research and ‘correlational research’. This contrast confuses design and analysis. Experiments are designs while correlations are analysis tools. Evidence from experimental designs can be analyzed with several statistical techniques, one cluster of which is correlational (Volgt, 2007).

2. Process of Researching

Figure 2 illustrates the researching process of a study commencing by choosing the topic and framing the research question. The next step is the literature review, followed by formulation of conceptual model, devising research methodology, findings and conclusions (Bosson, 2020).

Figure 2: General Context of Research Process



Source: Bosson Brou (2020).

There are various types of researchers and each will exhibit traits of more than one researcher type (Brown, 2006). Understanding the dominant trait for one’s personality will help designing the research question as well as the approach to adopt in the researching process. The researcher types include detective, doctor, explorer, insider, outsider emic and etic. The ‘detective’ researcher knows what the problem is and needs to uncover the clues that will solve the problem, whereas the ‘doctor’ researcher, presented with a variety of ‘symptoms’, will diagnose the problem and provide the prescription of the correct solution to the problem. The ‘explorer’ researcher enters unknown territory, maps what is found, then returns with previously unknown information. The ‘insider’ researcher is concerned in researching within an organization trying to understand people’s behavior within a context, whereas the ‘outsider’ researcher is concerned in researching either within or outside an organization with view to establishing facts rather than meanings. The ‘emic’ researcher is concerned with studying behavior to see how the inhabitants contextualize and understand their world, whereas the ‘etic’ researcher is more concerned with ‘universals’ and observing from outside

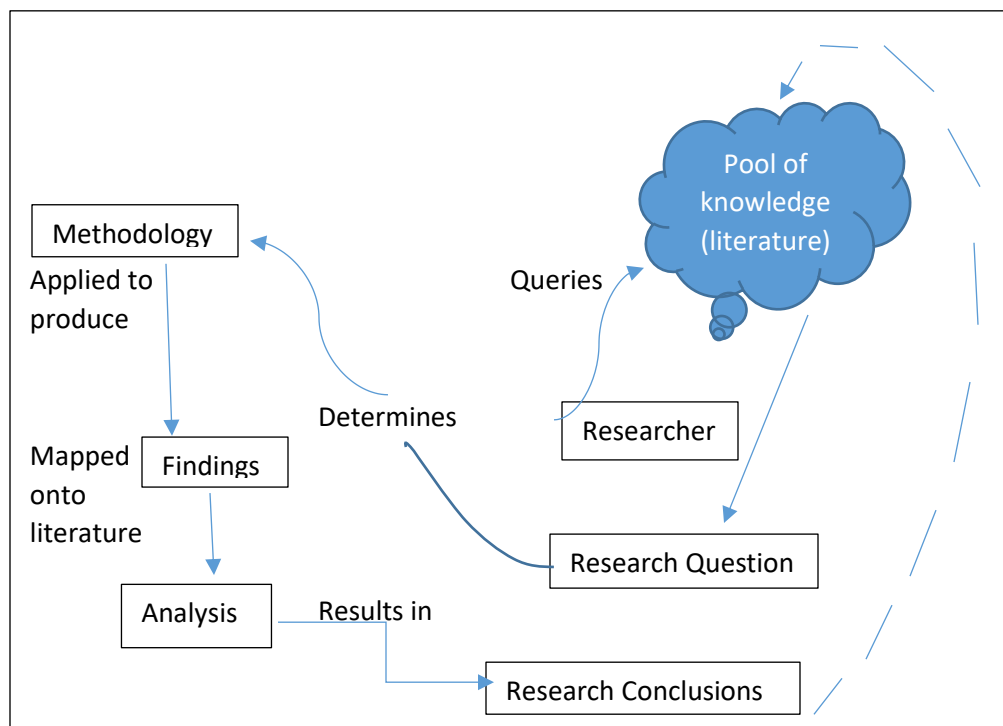
It is important to distinguish the various concepts in the researching process including research ontology, positivism, interpretivism, epistemology, and axiology (Bosson Brou, 2020). Ontology is the accepted axiom or ‘truth’ for a particular context (objective or subjective). It is associated with a central question of whether social entities should be perceived as objective or subjective. Positivism is the quest for objective knowledge that arises from using natural sciences as a model for social research. It is underpinned by an objectivist or realist ontology that ‘facts are facts’ and that the truth can be captured if right approaches such as measurement, correlation, statistical logic, and verification are used in explaining how and why things happen. Typical of the right

devices/instruments are surveys, questionnaires, and random sampling. Interpretivism is the quest for subjective knowledge that arises from a critique of using the natural sciences as a model for social research. It is underpinned by a subjectivity ontology that ‘people are people’. The truth is out there, but it is complex understanding how and why things happen – elucidating meaning. Typical approaches include ethnographic study, in-depth interviews, and analytical approaches. Research epistemology relates to the assumptions about the pool of knowledge for a subject based on a particular ontology or set of ontologies. Research axiology relates to the values and ethics for a subject based on particular set of epistemologies, i.e., the things the research uses to determine aspects about the world based on the viewpoint being taken (epistemologies).

3. Context of the Research

Figure 3 presents a general contextual outlook of the research. The researcher starts by querying the available pool of knowledge in order to inform the research question which, in turn, determines the methodology to be applied to the literature to produce findings, analysis, and conclusions. Part of the results address the research gap as a contribution of the research to the pool of knowledge (Bosson, 2020).

Figure 3: Contextual Outlook a Research Study



Source: Bosson Brou (2020)

Research context comprise several components including the topic (title), research question (or statement of the problem), objectives (general and specific), hypotheses, literature review (theoretical and empirical), conceptual framework (theoretical and empirical/analytical), methodology (research philosophy, target population, sampling and sampling procedures, and data

collection procedures), expected results, dissemination of the results (presentation & interpretation), conclusion, budget, timetable/duration, and references.

The Topic component should reflect clearly both the subject of the research and the question it tries to answer and, the distinction between ‘Independent and Dependent’ variables. The research Topic is best understood as the research question or the statement of the problem. It is the research question (statement of the problem) that produces the title/topic of the research. The statement of the problem is the anchor of the whole research study and allows the reader to quickly understand the purpose and intent of the research. Problem statements do not have fixed formats since they differ according to the topic of research. A good problem statement is one that is strong which means that it should be focused and researchable, feasible and specific, complex and arguable, and relevant and original. A focused and researchable problem statement is one focused on a single topic and is answerable using credible sources such as quantitative and/or qualitative data and scholarly sources. A feasible and specific problem statement is one that is answerable within practical constraints and well-defined concepts and should focus on improving understanding rather than demanding ready-made solution. A complex and arguable problem statement is one that requires original data (primary or secondary) as well as synthesis of multiple sources and original interpretation before producing an answer. A relevant and original problem focuses on addressing a problem gap in the existing knowledge, contributing to an existing and current debate in the field/discipline or society, producing knowledge that future researchers/practitioners can later build on, and having some aspect of originality, e.g., focus on specific location or explore a new angle (Bosson, 2020).

Research objectives provide a descriptive summary of the research study. They guide key steps of the research process including data collection, discussion of the study findings, and conclusions. It is necessary to explain the research objectives clearly and concisely to the reader by distinguishing between general (overall) objective and specific objectives. Essentially, specific objectives should establish the scope and depth of the study, contribute to the research design, and indicate possible contribution of the study to existing knowledge. It is good practice to frame the specific objectives as clear declarative statements using appropriate verbs to accurately characterize the work to be undertaken. Research objectives should be SMART.

Hypotheses (or research questions) are statements formulated as a prompt to guide the researcher in data analysis. They set out the problem (or issue) the research is trying to answer, as well as the directionality, which help to explain any predictions being made by the researcher of the relationship between the study variables. Characteristics of good hypotheses include clear rationale and description of the relationship between the study variables, as well as an if–then format.

The literature review component of a research is a survey of scholarly sources on the study topic with an underlying role to situate the research topic within the context of the existing knowledge. The review helps identify relevant theories, models, methods, and gaps in the existing body of knowledge. Principally, the focus of the review component is the works of other researchers in terms of both theory and practice (empirical), as well as any underlying criticism and the knowledge or research gap. The theoretical review should highlight concepts, ideas, models,

theories, and guiding principles underlying the study while the empirical review should highlight ways the theories have been applied to produce the results, findings and conclusions. The knowledge gap should reflect ‘own contribution’ to the existing body of knowledge in terms of the theoretical, methodological, and textual perspectives.

According to Imenda (2014), a conceptual framework is the ultimate lens for viewing empirical resolution of an identified problem. A conceptual framework focuses on the method by which, theory in conjunction with practice and procedures is formulated to provide problem resolution (Swanson, 2013). According to Leshem & Trafford (2007), conceptual framework is a list of implicit fact-based rationale of interrelated ideas and approaches for executing and defining the outcome of problem resolution efforts. To the researcher, conceptual framework is a tool to facilitate understanding the way in which existing theories and models come together to inform the research problem. Essentially, conceptual framework entails ‘comprehending one’s own study’ by ‘borrowing a leaf’ from the literature review (both theoretical & empirical). The ‘leaf’ so borrowed’ comprise two parts, the ‘theoretical framework’ representing theories and concepts or interrelationship of study variables as well as the operational definitions (measurability) of the variables and, the ‘empirical (or analytical) framework’ representing models and procedures for data analysis. Conceptual framework necessarily is a formulation of two ‘pillars’. One, the interrelationship of variables pillar, commonly referred to as the ‘theoretical framework’. Two, the analytical pillar, commonly referred to as the ‘empirical or analytical’ framework. The terms conceptual framework and theoretical framework are often and erroneously used interchangeably (Grant & Osanloo, 2014). Essentially, the theoretical framework is a subset of the conceptual framework and it would be erroneous to treat conceptual framework as being theoretical framework, a common practice in various graduate institutions. It is also erroneous to separate the placement of the two pillars of the Conceptual Framework in the research documentation.

Besides explaining the interrelationship of the key study variables to inform the research problem, the theoretical framework serves to connect the research topic with the theories, grounding the research focus within theoretical underpinning, as well as focusing on prominent research variables to ensure it aligns itself with the objectives and the problem statement (or the research question). The empirical or analytical framework helps to ground the research focus within empirical/analytical underpinning and to set the study for data analysis and interpretation. It is the application of the theory to understand, explain and predict the research phenomenon and will ensure that it aligns itself with the data analysis (Swanson, 2013).

The methodology component of a research study describes the design (method) of the study in relation to time and resources management. The systematic processes underlying the methodology of the research include the instruments, participants, and data collection while the specific constituents comprise the research philosophy, target population, sample and sampling procedures, data collection procedures, reliability and validity, ethical consideration, and confidentiality.

References

- Bosson Brou, J. M. 2020. Research Philosophy and Proposal Writing (Research Methods). *Journal of Finance and Economics*.
- Grant, C., & Osanloo, A. (2014). Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your “House.” *Administrative Issues Journal: Connecting Education, Practice, and Research*, 4(2), 12–26.
- Imenda, S. (2014). Is There a Conceptual Difference between Theoretical and Conceptual Frameworks? *Sosyal Bilimler Dergisi/Journal of Social Sciences*, 38(2), 185.
- Leshem, S., & Trafford, V. (2007). Overlooking the conceptual framework. *Innovations in Education & Teaching International*, 44(1), 93–105. <https://doi-org.proxy1.ncu.edu/10.1080/14703290601081407>
- Swanson, R. (2013). *Theory building in applied disciplines*. San Francisco: Berrett-Koehler Publishers.
- Vogt, W. Paul. 2007. *Quantitative Research Methods for Professionals*, Boston: Pearson Education.