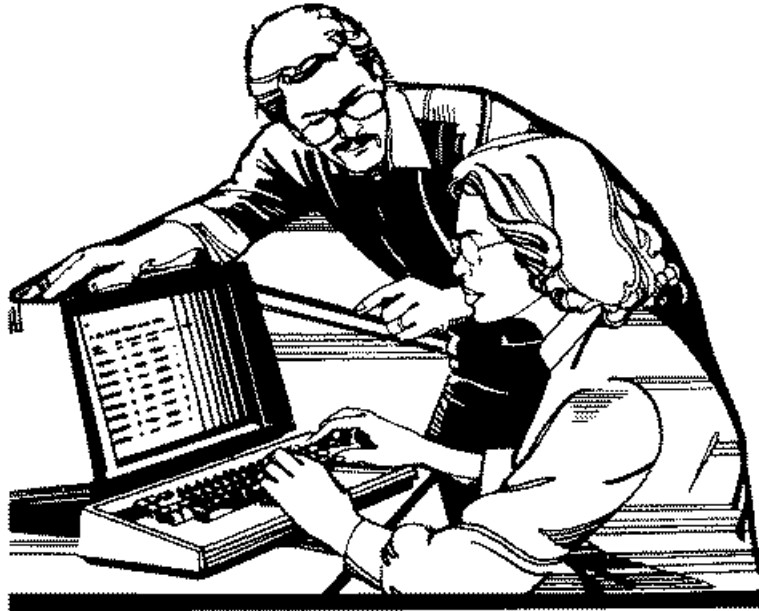


Writing Research

A Handbook to Writing Dissertations and Theses (Abridged)



by
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May 30, 2016
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Foreword

As a teacher, my philosophy has always been “the student will give me what I want if he knows exactly what I want!” This handbook is my response to having worked with many master and doctoral candidates and reviewing even more published research papers. In my review of texts on research, I have found most to be philosophical. That is, they are generally good for the advanced researcher, but, the beginner, the “research dilatant”, wants and needs step-by-step guidance!

The most common problems I have seen are no clearly defined problem statement with negative results, poorly worded research questions, and no understanding of statistical hypotheses – what I call the “*researchers mantra*.” Other problems include extremely poor word-processing and spreadsheet skills, exiguous aesthetic acumen (ie, lack of a discerning eye for visual composition), and a tendency to ‘overwrite’, that is, superfluous narrative and inability to ‘cut to the chase’. Page length is never, and never should be, a criterion for a good research paper!

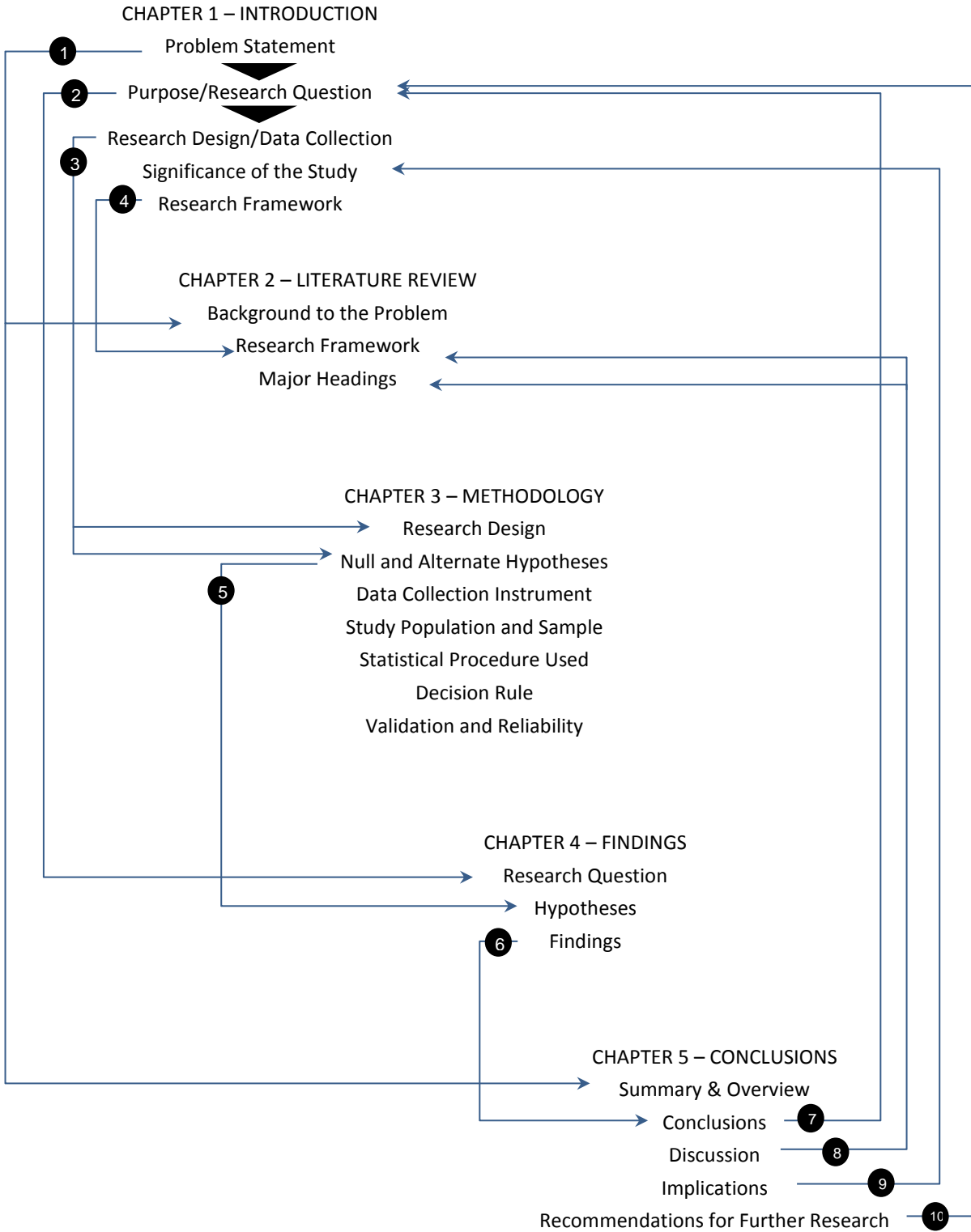
I have organized this ‘how to’ handbook into the five classic sections of a research paper – Introduction, Literature Review, Methodology, Findings, and Conclusion – with typical major headings in each section and have presented tips and responses to common problems I have observed throughout my work with doctoral and master degree candidates. I have also provided actual words and phrases that should be used for very specific situations in a research document. Follow this guidance and at least your paper will look good and your phraseology will be correct, which is half the battle. The rest is perseverance!

Connections of Major Headings in a Research Paper

As depicted in the below diagram Connections of Major Headings in a Research Paper, a dissertation (or research paper) is not simply a collection of scholarly topics. It is a series of deliberately organized headings that lead from the statement of the problem to your conclusions and comes full circle back to the problem. These connections, illustrated below, are discussed in detail within this handbook.

Connections of Major Headings in a Research Paper

The bold arrows ▼ depict the Researcher's Mantra – "The problem drives the question, the question drives the methodology, the methodology drives the data collection!" The line-arrows ↑ depict the links between major headings in the chapter and are each numbered and explained below.



Explanation of the Connections

- ❶ Problem Statement (Ch1) → Summary (Ch5). The Problem Statement in Chapter 1 – Introduction is copied and pasted verbatim in Chapter 5 – Summary and Conclusions so the reader does not have to hunt for it while reading your conclusions.
- ❷ Research Question (Ch1) → Summary (Ch5). The Research Question in Chapter 1 – Introduction is copied and pasted verbatim in Chapter 5 – Summary and Conclusions so the reader does not have to hunt for it while reading your conclusions.
- ❸ Research Design (Ch1) → Research Design and Alternate Hypotheses (Ch3). The Research Design stated in Chapter 1 – Introduction is copied and pasted verbatim and developed in detail in Chapter 3 – Methodology.
- ❹ Research Framework (Ch1) → Research Framework (Ch2). The Research Framework in Chapter 1 – Introduction is copied and pasted verbatim and developed in detail in Chapter 2 – Literature Review.
- ❺ Alternate Hypotheses (Ch3) → Alternate Hypotheses (Ch4). The statistical hypotheses stated in Chapter 3 – Methodology are copied and pasted verbatim in Chapter 4 – Findings so the reader does not have to hunt for them while reading your findings and results.
- ❻ Findings (Ch4) → Conclusions (Ch5). The findings (i.e., interpretation of the statistical conclusions of the hypothesis tests) in Chapter 4 – Findings are extended to the general population as conclusions in Chapter 5 – Summary and Conclusions. The wording of the first sentence of the conclusion heading must directly answer the research question.
- ❼ Conclusions (Ch5) → Research Question (Ch1). The first sentence of the heading Conclusions in Chapter 5 – Summary and Conclusions must directly answer the research question stated in Chapter 1 – Introduction.
- ❽ Discussion (Ch5) → Research Framework and Major Headings (Ch2). The discussion of your conclusions in Chapter 5 – Summary and Conclusions must discuss how the theory (for a quantitative design) detailed in the Research Framework in Chapter 2 – Literature Review is supported or contradicted by your conclusions or how the philosophy (for a qualitative design) has guided your conclusions. Further, the discussion of your conclusions must link directly to the specific studies, articles, and data that you cited under the major headings as support for your research study by supporting or contradicting those citations.
- ❾ Implications (Ch5) → Significance of the Study (Ch1). The implications (aka “Implications for the Field”) in Chapter 5 – Summary and Conclusions must discuss how specific stakeholders identified in Chapter 1 – Introduction will specifically benefit from your conclusions.
- ❿ Recommendations for Further Study (Ch5) → Problem (Ch1). Your recommendations for further study in Chapter 1 – Introduction link back to your research design and hypotheses and suggest how your research questions could be expanded and what other variables should be explored. Note – you do not recommend how to solve the problem – just what needs to be studied further!

The Abstract

I present here, not an abstract of this document but, in the context of my Foreword, a description of what an abstract should be. I debated at length of whether to place this here, before the Table of Contents, as is the correct placing for an abstract, or in Section 5 – Conclusions, because the abstract is the last thing you write in a research paper. It is not until the paper is completely written that you even know what to put in an abstract. But, as the intent of the document is to be a guide to the format of a research paper, my description of the abstract falls in front where it would normally appear.

Abstracts are misunderstood. The Abstract should be a succinct summary of the research – specifically, it should state the problem, the research question, the methodology, and the conclusion. A review of abstracts will show they often stray from these points and use phrases and narrative different from those stated in the paper, thus opening the possibility for misinterpretation of the actual research. The abstract is also the last page you will write in that you cannot write an abstract unless you have something to abstract – ie, the completed research. A guiding principle of the abstract is to remember who and what the abstract is for – it is for other researchers looking for a problem, a question, a methodology, and results.

Thus, a well-written abstract should be no more than six sentences:

- In one sentence, state the problem exactly as it is stated in the introduction (assuming it was properly stated). (See Section 1 – Introduction, Paragraph “Problem Statement”.)
- In one sentence, state the research question exactly as it is stated in the introduction (assuming it is properly stated) (See Section 1 – Introduction, Paragraph “Research Question”.)
- In no more than two sentences, state the type of research (ie., quantitative, qualitative, triangulation, phenomenological, etc.), population, dependent and independent variables, measurement instruments used, and statistical procedure used (See Section 3 – Methodology.)
- In one sentence, state the conclusion that directly answers the question (see Section 5 – Conclusions).
- In one sentence, state your suggestion for further research.

Table of Contents

The Abstract	i
Section 1 – INTRODUCTUION TO RESEARCH	
What is Research?	1
The Fundamental Research Process	1
Types of Research	1
Planning Your Research	1
The Classic Research Format	2
Organization of the Research Document	3
Major Headings of the Document Chapters	3
Chapter 1 – Introduction	3
The Problem	4
Purpose of the Research	4
Research Question	4
Research Hypothesis	4
Research Framework	5
Significance of the Study	7
Design and Methodology	7
Quantitative, Qualitative, and Mixed	14
Organization of the Study	7
Chapter 2 – Literature Review	8
Chapter Overview	8
Context of the Problem	8
Appropriate Major Headings	8
Chapter Summary	8
Chapter 3 – Methodology	8
Chapter Overview	8
Major Headings	8
Chapter 4 – Findings	10
Chapter Overview	9
Major Headings	9
Chapter summary	9
Chapter 5 – Summary and Conclusions	9

Problem and Research Question	10
Summary	10
Conclusions	10
Recommendations for Further Study	10
The Problem Statement	11
The Research Question and Purpose Statement	11
The Conclusion	15

Section 2 – SEARCHING FOR LITERATURE

Organization of Chapter 2 – Literature Review	
Major Headings in Chapter 2 – Literature Review	
The Nature of the Literature Review	16
Searching for Literature	17
Tips on Reviewing Scholarly Journals	17
Referencing Resources	18
Organization of the Literature Review	18
Chapter Overview	18
Research Framework	18
Appropriate Major Headings	19
Chapter Summary	19
Tips on Writing Style	219

Section 3 –METHODOLOGY

Organization of Chapter 3 – Methodology	20
Major Headings in Chapter 3 – Methodology	
Quantitative, Qualitative, and Mixed-method: the Real Difference	20
Research Methodologies	21
Qualitative	22
Case Study	22
Ethnography	22
Phenomenological	22
Grounded Theory	22
Context Analysis	22
Narrative	23
Quantitative or Descriptive	23

Historical	23
Experimental	23
Systematic Review and Meta-Analysis	23
Scientific Research	24
Artistic Research	24
Historical Research	24
Crossectional vs. Longitudinal Study	24
Hypothesis Statements	24
Statistical Procedures	25
Student's t-Test of Hypothesis	26
ANOVA and ANCOVA	26
MANOVA	27
Correlation	27
Multiple Linear Regression	28
Logistic Regression	29
Chi-Square (χ^2)	30
Mann-Whitney	31
Wilcoxon Signed-rank Test	31
Kruskal-Wallis	31
Summary of Statistical Procedures	32
Significance Level, Sample size, Statistical Power, and Decision Rule	33
Significance Level	33
Sample Size	33
Statistical Power	33
Decision Rule	33
Research Sampling	35
Levels of Data	35
Data Collection Instruments	37
Surveys and Questionnaires	38
How to Ask a Question	39
Measuring Variables	39
The Ideal Measure	39
Likert Scale	39
Level of Perception Questions	39
Strength of Agreement Questions	40

Respondent Bias	40
Organizing the Survey Questions	41
Collecting, Measuring, and Analyzing Qualitative Data	41
Research Interviews	42
Human and Animal Subjects	42
Validity and Reliability	42
Types of Validity	43
Face Validity	43
Content Validity	43
Criterion Validity	43
Predictive Validity	43
Construct Validity	43
Discriminant Validity	43
Measures of Validity and Reliability	43
Cronbach's Alpha (validity and reliability)	43
Inter-Observer Reliability	43
Test-Retest (Reliability)	43
Parallel Forms Reliability	44
Split-half Reliability	44
Repeated Use (reliability)	44
Alternate/Equivalent Form (reliability)	44
Validity in Qualitative Research	44
Threats to Internal and External Validity	44
History	45
Maturation	45
Instrumentation	45
Testing	45
Subject Selection	45
Interaction	45
Experimenter Bias	45
Placebo Effect	45
Hawthorne Effect	45
Contamination	45
Reactive effect of experimental arrangement	45
Multiple treatment interference	45

Central Tendency Bias	45
Acquiescence Bias	45
Social Desirability Bias	46
Validating Data Collection Instruments	46
Creating an Original Instrument	46
Reducing Instrument Length	46
Congruency with the Study Population	47
Validating an Original Instrument	47
Validation of Qualitative Instruments	47

Section 4 – FINDINGS

Writing Technique and Style	49
Get to the Point!	49
Answer the Question	49
Data, data, data	49
Voice	49
Formatting the Document	50
Presenting Quantitative Findings	50
Presenting Qualitative Findings	52
Figures, Charts, Graphs, and Tables	53
APA Format for Tables and Figures	53
Tips for Creating Tables and Figures in MSWORD	54
Findings and Conclusions	55

Section 5 – CONCLUSIONS

Answer the Question!	55
Problem and Research Question	55
Summary	55
Conclusions	55
Implications	55
Recommendations for Further Study	55

APPENDICES

Appendix A -- References A – 1
Appendix B – Example Surveys B – 1
Appendix C – Example Research Problems, Questions, and Conclusions C – 1
Appendix D – t-test, ANOVA, and ANCOVA in Excel and SPSS D – 1
Appendix E – Multiple Regression in Excel and SPSS E – 1
Appendix F – Examples of Presentation on Findings E – 1

LIST OF FIGURES

Figure 1 – Levels of Data 33
Figure 2 – Extract fro Appendix B – Example Survey – Satisfaction Survey 34
Figure 3 – Likert Scale Values Labeling 34

LIST OF TABLES

Table 1 – Sampling Techniques
Table 2 – Statistical Procedures and Hypothesis Statements 31
Table 3 – Insurance Company Rates Comparison 45

List of Acronyms

aka	also known as
ANCOVA	Analysis of Covariance
ANOVA	Analysis of Variance
APA	American Psychological Association
BFI	Big Five Inventory
DV	Dependent Variable
e.g.	exmepli gratia (Latin) “for example”
Ha	Alternate hypothesis
Ho	Null hypothesis
HSD	Honestly Significant Difference
i.e.	id est (Latin) “that is to say”
IRB	Internal Review Board
IV	Independent Variable
MANOVA	Multi-variate Analysis of Variance
MS	Microsoft
OED	Oxford English dictionary
OWL	Online Writing Lab
QDAP	Qualitative Data Analysis Program
VA	Virginia

Writing Research

by Miles M. Hamby, Ph.D.

Section I. Introduction to Research

The Researcher's Mantra –

*The problem drives the question, the question drives the methodology,
the methodology drives the data collection.*

What is Research?

Research has been defined in many ways:

- "In the broadest sense of the word, the definition of research includes any gathering of data, information and facts for the advancement of knowledge." (Shuttleworth 2011)
- "Research is a process of steps used to collect and analyze information to increase our understanding of a topic or issue". (Creswell, 2008)
- According to the Merriam and Webster Online Dictionary, "A studious inquiry or examination; especially: investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws". Further, "the word *research* is derived from the Middle French "*recherche*", which means "to go about seeking", the term itself being derived from the Old French term "*recherche*" a compound word from "re-" + "cerchier", or "sercher", meaning 'search'. The earliest recorded use of the term was in 1577. (Merriam-Webster Online Dictionary 2011).
- Research is the search for knowledge, or as any systematic investigation, to establish novel facts, solve new or existing problems, prove new ideas, or develop new theories, usually using a scientific method. The primary purpose for basic research (as opposed to applied research) is discovering, interpreting, and the development of methods and systems for the advancement of human knowledge on a wide variety of scientific matters of our world and the universe.

Peter Medawar (1984) wrote "The art of research is the art of making difficult problems soluble by devising means of getting at them." (Pluto's Republic, New York, p. 253).

However one defines 'research', the research project focuses on a question or hypothesis that the researcher feels will address or solve an identified problem. Leedy and Ormrod (2001) advise:

"Research is the systematic process of collecting and analyzing information or data in order to increase our understanding of the phenomenon about which we are concerned or interested. . . . The research paper does not simply summarize facts, data, and writings of others. The research paper is original research into testing or proving a hypothesis, solving a problem, or providing insight into the nature of a problem. "

Can research be done for research's sake or must there be a purpose? Without purpose, research becomes simply curiosity? The distinction is that curiosity is the desire to know more, without regard to validity of the knowledge or purpose of acquiring that knowledge. Research, then, is the active pursuit of knowledge for the purposes of solving a problem or improving a condition.

The Fundamental Research Process

When doing your research project, you should follow this process (paraphrased from Leedy & Omrod, 2002):

1. originate the project with a problem
2. clearly articulate the problem (see Paragraph "The Problem Statement", Chapter 1 – Introduction to Research)
3. divide the principle problem into research questions or hypotheses (see Paragraph "The Research Question", Chapter 1 – Introduction to Research)
4. develop and follow a specific plan to answer the questions (see Chapter 3 – Design and Methodology)
5. collects and interprets data in an attempt to answer the questions (see Chapters 2 – Literature Review and Chapter 4 – Findings)
6. and offer conclusions about the problem (see Chapter 5 – Conclusions).

Types of Research (Modes of Inquiry)

Different types of research are often referred to as 'modes of inquiry'. Research has been categorized in many ways, including Qualitative (broken down further by Creswell (2013) as Narrative, Phenomenological, Hermeneutical, Case Study, Ethnographic, and Grounded Theory), Quantitative, Historical, Experimental, Systematic, Meta-Analysis, Scientific, and Artistic (Leedy and Ormod, 2002). Refer to Paragraph "Research Methodologies" in Chapter 3 – Methodology for details about these specific modes of inquiry.

Planning Your Research

Once you have properly stated the problem and research question, then you must plan to collect data. Leedy & Omrod (2001) list six key questions for planning and designing a research project:

Population	Who or what are the sources of the information or data, and how can the research sources participate with interest, whether or not they are beneficiaries of the research results? For instance, are they providing funding, other resources or support, is it upper management, are they employees, customers, neighbors, associations, etc.. Why?
Data Needs	What kinds of information or data are needed to conduct an analysis, draw conclusions, and make decisions or recommendations. Who?
Data Collection	How can data or information be collected using a reasonable methodology, e.g., survey, questionnaires, interviews, examining documentation, or a literature review? Why?

Time Line	When are the information or data needed; when must it be collected? What are the identifiable resources available to support information or data collection?
Significance	Why or how is the study important? Who or what will benefit from the research and work-product?

The Classic Research Format

Research doesn't do any good unless it is written down. The classic and universally accepted format is the five-chapter (section) format:

Chapter 1 – Introduction. This chapter states the problem, the research question, and the hypotheses.

Chapter 2 – Literature Review. This chapter contains a summary of all the literature pertinent to the problem and the research question. This chapter also presents data and other studies and conclusions from research on the same or pertinent topics.

Chapter 3 – Methodology. This chapter contains an in-depth description of the method to be used in testing and answering the research question. It also contains justification and literature supporting the selected methodology. The chapter explains in detail what variables are to be measured and the scales used to measure them, what data are to be collected, the instrument to be used to collect data, and what statistical or other procedure is to be used to analyze the data and the criteria to be used to answer the research question.

Chapter 4 – Findings. This chapter presents summaries of the data and results of statistical manipulation of the data. It also presents an analysis of the meaning of the data as it relates to answering the research question.

Chapter 5 – Conclusions. This chapter directly answers the research question, based on analysis of the data from the research. It also provides recommendations for further study to assist other researchers in selecting topics.

The Research Document Chapters

The classic research document is composed of five chapters or sections as follows:

Chapter 1 – Introduction. This chapter introduces a problem, states the research question, explains the research design and methodology, identifies the significance of the research, and states and describes the organization of the study. Details are presented further on. This chapter should have the following five major headings

- The Problem
- Purpose of the Research
- Research Question
- Research Framework ('Theoretical' Framework for quantitative studies, 'Philosophical' Framework for qualitative studies)
- Research Hypothesis (Quantitative design only)
- Significance of the Research

- Design and Methodology
- Limitations and Delimitations
- Organization of the Study

Chapter 2 – Literature Review. This chapter is an in-depth disclosure and discussion of the problem as stated in the Statement of the Problem in Chapter 1 – Introduction and identifies gaps in the literature, thus presenting the opportunity for your specific research. Content of this chapter must include data that clearly and substantially demonstrate the extent and negative effects of the problem. Details are presented further on. This chapter should have the following major heading

- Chapter Overview
- Research Framework
- Context of the Problem (or Background to the Problem)
- Other appropriate major headings
- Chapter Summary

Chapter 3 – Methodology. This chapter is an in-depth discussion of the methodology as stated in the heading Methodology in Chapter – Introduction. Details are presented further on. This chapter should have the following major headings:

- Chapter Overview (should include a restatement of the research question)
- Research Hypothesis (Quantitative design only)
- Variables (Quantitative design only)
- Statistical Procedure Used (Quantitative design only)
- Decision Rule (Quantitative design only)
- Data Collection Instrument(s) (Quantitative and Qualitative designs)
- Study Population and Sample (Quantitative and Qualitative designs)
- Validation and Reliability
- Protection of Human and Animal Subjects (Quantitative and Qualitative designs)
- Chapter Summary

Chapter 4 – Findings. This chapter is an in-depth disclosure and discussion of your hypothesis or solution to the problem as presented in the Research Question in Chapter 1 -- Introduction. Content of this chapter must include data that clearly demonstrate the result of the hypothesis – in essence, the answer to the research question. Surveys, interviews, and other forms of data collection must be presented and discussed in this chapter. Major headings in this chapter include:

- Chapter Overview
- Research Hypotheses Results and Interpretation (Quantitative design only)
- Description of the Data Collection (Qualitative design only)
- Description of the Data Analysis Process (Qualitative design only)
- Chapter Summary

Major Headings in the Chapters

Following is a detailed discussion of each of the major headings in each chapter of the research document.

Chapter 1 -- Introduction

The Problem. The Statement of the Problem is paramount. Whether the research is quantitative or qualitative, you must state a problem. Research originates with the identification of a problem (Leedy & Omrod, 2002). Therefore, the first step you must take in developing a research document is to identify a problem in an area of interest to you. The problem statement drives the research question, which, in turn, drives the design and methodology of the research. The problem statement should be no more than three sentences and should identify a specific area of interest, a problem in this area, and the negative results of that problem. Identifying negative results is critical in that, without negative results, there is no problem, and the negative results point directly to what the research is trying to ‘fix’, and thus establishes the benefit to society. For a quantitative study, the problem should identify problems in terms of measurable variables. (See ‘Examples’ in Appendix C -- Examples.)

The problem statement should also imply some relevance to society. Without negative results, the research performed would lack relevance to the real world, that is to say, it would offer no significant contribution to improving society. For examples and critiques of actual problem statements and research questions, see Appendix C – Example Research Problems and Questions.

Several common faults appear in problem statements. One is a tendency to write about the need for research in the area, thus confusing a need for research with a problem (See Examples in Appendix C for detailed descriptions.) Another common fault is failure to identify negative results to establish that there is a problem and point to conditions that would be improved by the research and thus benefit society.

Purpose of the Research. The purpose of the research is essentially a statement form of the research question and should be worded identically to the research question and should be there very first sentence following the heading. For example, “The purpose of this research is to determine if pay has an effect on job satisfaction.” Following the purpose statement should be an explanation of how this will benefit society, thus linking the Problem Statement to the Purpose Statement and ultimately to the Research Question, which, in turn, points directly to a specific methodology.

Research Question. The research question stems directly from the problem statement. For a quantitative study, the research question is essentially an hypothesis proposed to address or

resolve the problem. The research question should be narrow in focus and specific. The research question is identical to the Purpose of the Research but ends with a question mark. Whether the research is qualitative or quantitative, you must state a research question and your conclusions from your findings must link directly back to that question. It is the research question that guides the course of the research and keeps you from going off on a tangent.

A common misconception is that there is more than one research question in a dissertation. There is only *one* research question. Any more than one question confuses the reader and commits you to an entirely new study to answer another question. Essentially, it creates an additional study by introducing more variables and, thus, expanding the study beyond a manageable focus. For quantitative studies, the research question must contain a primary dependent variable and primary independent variables. In most quantitative studies with multiple research questions, the other questions are actually statistical hypotheses erroneously stated as unique questions when they are actually just other independent variables on the same dependent variable or propose an additional statistical relationship that could have been addressed with the proper statistical procedure. (See Appendix C – Research Examples of Research Questions, Example 7 – Taken from Shinkareva and Benson (2007)). For example, given the following four questions proposed as a single study “Is gender correlated to job satisfaction?”, “What is the direction of the correlation of gender to job satisfaction”, “Can age predict job satisfaction”, “Is there a difference between gender and age in their effect on job satisfaction?”, these are essentially one research question “Do gender and age have an effect on job satisfaction?” I have seen questions very similar to these in articles and dissertations and they are usually followed by identification of several different and inadequate statistical procedures, such as Pearson’s Correlation and two-way ANOVA. Although these are adequate procedures for a correlation and comparison of means, all of these questions can be answered in a multiple regression procedure that gives Pearson’s correlation for and actual predictive effect of each independent variable as well as the proportion of variation in the dependent variable (‘Job Satisfaction’ in this example) explained by the independent variables.

For a qualitative study, multiple questions introduce entirely different purposes of the study and can actually move the study from qualitative to quantitative. This is due to the lack of understanding of the very specific difference between quantitative and qualitative studies – that is, in a quantitative study, the dependent and independent variables and the relationship between them have been identified and measured whereas in a qualitative study, at least one of the three has not. Indeed, the purpose of a qualitative study is never to measure a variable but to identify and define the variable or propose discover a relationship between variables. Thus, given the following three research questions (actually appearing in a proposed dissertation) “What is the role of the parent in a child’s math achievement?”, “How do teachers perceive the parent’s involvement in their child’s achievement in math?”, and “Do parents perceive a difference in the priority of math in relation to other subjects?”, these are essentially three unique qualitative studies in their purpose. The original intent of the researcher in this example was to focus on the ethnographic group of parents, hence, the first question to identify and define the role of the parent with respect to math achievement. This implies the use of open and emergent interview questions whose responses would inspire further questions. The other research questions depart from that purpose and, thus, obligate the researcher to doing two more, unique studies involving a different ethnographic group (teachers) and a quantitative measure of the perception of priority of academic subjects when the original purpose of the study was only to define the role of the parent.

Quantitative Question. A quantitative research question must specify three items – an independent variable, a dependent variable, and a relationship or effect between them. Thus, you are hypothesizing that a specific action or thing will perform a specific action or have a specific effect on a specific thing. For example, “Does pay have an effect of job satisfaction?” (See ‘Examples’ section.) A qualitative research question should contain the same items, but either or both the independent variable or dependent variable or the specific relationship may not be specified. For example, “What factors contribute to job satisfaction?”, or “What behaviors are characteristic of Asian families?”

For quantitative research, the question can be expressed in the form of a *Thesis Statement* or an *Hypothesis*. (Perrin, 2007).

The *Thesis Statement* clarifies a specific topic and presents your opinion based on your research (e.g., “The purpose of this research is to determine if there is a correlation between morale and job satisfaction at Walmart,” or “the purpose of this research is to determine if there is a correlation between a teacher’s learning style and how he or she prefers to teach.”)

An *Hypothesis* is a conjectural statement that guides an argument and is explored by examining data (e.g., “The purpose of this research is to determine if a mentoring program will improve ethical decision-making at Merrill’s Department Stores” or “the purpose of this research is to determine if a person’s learning style has an effect on the speed one can learn a new language.”)

The research question should be narrow in focus and specific. Essentially, you are hypothesizing that something specific will perform a specific action or have a specific effect on a specific thing. For example, “The purpose of this research is to determine if an *Employee Benefits Training program* will improve the satisfaction of employees with their choice of benefits at Company XYZ.” (See ‘Examples’ section.)

The usual error in formulating a research question is being too vague. For example, “the purpose of this research is to determine what causes wars.” This example is too broad and does not identify a dependent or independent variable. That is, how do you define ‘war’? However, by adding the word ‘if’, the statement now forces one to identify an independent variable, such as, “the purpose of this research is to determine IF famine causes wars.” Now the researcher knows what the dependent variable is (ie, war) and the primary independent variable (ie, famine), and the hypothesized connection (ie, that famine causes wars to occur).

Note that in the above, the research ‘questions’ are presented in statement format. If stated as a question, the first would read “Is there a correlation between morale and job satisfaction?”, and addresses the problem broadly. However, for research to be effective, it must be focused into a specific task, and thus the ‘question’ becomes a statement, such as “The purpose of this research is to determine if there is a correlation between morale and job satisfaction at Walmart.” Likewise, in the second example (famine and war), the question could be “Is there a correlation between famine and war?”

You can establish a focus (Perrin, 2007) by restricting the subject in the context of:

- an effect on a specific population, e.g., Mentoring Programs in Alexandria City Government. An appropriate *thesis statement* research question would be: “The purpose of this research is to determine if there is a correlation between morale and job satisfaction of employees in the Alexandria City government”.

- a specific context or circumstance, e.g., Municipal elections and Morale of Alexandria City Employees. An appropriate *thesis statement* research question would be: “The purpose of this research is to determine if the morale of Alexandria City employees was significantly affected by the change in elected officials in the 2007 municipal elections.”
- a specific location, e.g., Small Business Ethics in Alexandria, VA. An appropriate *hypothesis* research question would be: “The purpose of this research is to determine if a mentoring program will improve ethical decision-making at Merrill’s Department Stores.”
- a specific, manageable time span, e.g., Website Expansion in the 1990s. “This purpose of this research is to describe the development of the Internet in business in the 1990’s.”

Note that the above examples (“e.g.”) would also make appropriate research paper titles in that they identify the dependent and independent variables that are the focus of the study.

The critical word in the purpose statement of a thesis statement or hypothesis is the word ‘if’. ‘If’ points directly to the effect an independent variable has on a dependent variable and thus makes the question specific. For example, a research question phrased “the purpose of this research is to determine *what* effects job satisfaction” is vague. That is, many things effect job satisfaction, but you really want to determine if some specific thing has a specific effect on job satisfaction. For example, ‘the purpose of this research is to determine if pay incentives improve job satisfaction.’ State thusly, the phrasing now points to a specific hypothesis, that is, pay incentives improve job satisfaction. The research question can now be measured and answered.

Traditionally, research papers (articles, dissertations, theses, etc.) contain a paragraph labeled “Purpose of the Research”. This is, and should be, essentially the research question. That is, the entire purpose of the research is to answer a question. In this regard, the “purpose” is simply stated as a statement and the “question” is stated as a question. The distinction is only that the “question” form suggests the statistical representation of the research hypothesis. (See Section 3 – Methodology, Paragraph “Hypotheses”.)

Following the research question are commonly ‘sub-questions’, although this is a misnomer in that they are not questions but ‘action statements’ that lay out a path to answering the question. These statements should begin with an action verb that denotes specific action. For example, given the research question “The purpose of this research is to determine if pay incentives will improve job satisfaction,” an appropriate statement of action statement would be:

“To answer this question, this research will:

- identify and describe the variables that effect job satisfaction
- compare the effect of these variables on job satisfaction
- describe various pay incentive programs
- measure job satisfaction in a given context
- measure the amount of pay incentives employed in a given context, and
- correlate the amount of pay incentives to job satisfaction.”

Note the action verbs in the purpose statement, research question, and bullets imply specific, measurable action. Avoid using verbs like ‘understand’, ‘analyze’, and ‘discover’ as they are not specific, open to interpretation, and cannot be measured. For example, what is meant by stating “the purpose is to analyze the effect ...” or “the purpose is to understand how ...”? If analyzing the effect means to run a correlation and determine if it is strong, then you should say “the purpose is to determine if there are correlations between ...” To pose the purpose as a question, use verbs such as “Is there a correlation ..” or “Does income have an effect on ...”

Qualitative Question. For qualitative research, the question can be stated as a *Stated Objective* (Perrin, 2007) or *Discovery* (Hamby, 2012). The Stated Objective or Discovery question is a brief, focused statement that presents a topic, but does not argue the topic, e.g., “The purpose of this research is to identify significant threats to cyber-security”, or “How do African-American children perceive the roles of men in their lives?”, or “What theory would explain a tendency of people to prefer email or texting to direct telephone voice communication?” As in the preceding examples, the key verbs ‘identify’, ‘what’, and ‘how’, and in the purpose and question for a qualitative design are necessarily general in that the variables have not been identified or defined. Other verbs would include ‘define’ or ‘list’.

For examples and critiques of actual problem statements and research questions, see Appendix C – Example Research Problems and Questions.

Research Hypothesis (Quantitative only). If the research intends to employ a statistical methodology (as all quantitative research questions necessarily imply), the research hypothesis is a rephrasing of the research question as null and alternative hypothesis statements. An hypothesis statement must include three terms – the symbolic statement of the specific statistic being tested, a verbal description of what the symbols stand for, and a verbal narrative of the meaning of the statistical procedure. For example, given the research question “Is there a difference between the weights of men and women”, the null hypothesis would be stated as:

“Ho: $\mu_M = \mu_W$, where μ_M is the mean score for the weight of men and μ_W is the mean score for the weight of women, that is, there is no statistically significant difference between the mean scores of the weight of men and women.”

“HA: $\mu_p \neq \mu_s$, where μ_M is the mean score for the weight of men and μ_W is the mean score for the weight of women, that is, there is a statistically significant difference between the mean scores of the weight of men and women.”

The hypotheses in the above examples are for the statistical procedure of a *t* – test of the means (see Chapter 3 – Methodology, para. Hypothesis Statements). The hypothesis statements are different for different procedures. However, the Ho and Ha always refer to the dependent variable and the specific statistic (eg, *r*, β , μ , etc.) refers to a specific independent variable.

Some dissertation reviewers prefer the statistical symbols in the hypothesis statement not to appear in Chapter 1 – Introduction, and want to see the researcher take a “directional” stand in the hypothesis. For example, rather than state the hypothesis as above, they would prefer to see “HA: The weight of men is statistically greater than the weight of women.” This is appropriate if the researcher’s is to actually test for a specific direction based on previous research. However, if the researcher has no evidence of a direction and it is only important to know if there is a difference, then the non-directional statement is more appropriate, such as “HA: There is a

statistically significant difference between the weight of men and women.” In any case, the hypothesis to pursue in any quantitative research must be the alternate ‘HA’, that there is some kind of difference. You cannot state that you think there is no difference or that two variables are the same for example, “HA: there is no statistical difference between the weights of men and women,” because that would be the null hypothesis.

Research Framework. The research framework “... shapes how we formulate our problem and research questions to study and how we seek information to answer the questions.” (Creswell, 2013, p. 19). The research framework for quantitative and qualitative studies is fundamentally different – quantitative studies are guided by a Theoretical Framework while qualitative studies are guided by a Philosophical Framework.

Quantitative Study. In Quantitative studies, the research framework is typically called “Theoretical” Framework, and is (by my original definition) a quantitatively tested hypothesis that an IV has definitive a relationship with a DV. In a quantitative study, this heading is very important and is commonly misunderstood. USC Libraries states “The theoretical framework consists of concepts and, together with their definitions and reference to relevant scholarly literature, existing theory that is used for your particular study. The theoretical framework must demonstrate an understanding of theories and concepts that are relevant to the topic of your research paper and that relate to the broader areas of knowledge being considered.” (USC Libraries 2015.) The theoretical framework is the basis for your hypotheses. Before you can suggest an hypothesis, you must have a theoretical basis for that hypothesis. Malarz (2015) states that the theoretical framework “acts as the link between the literature, the methodology and the results.” (slide 28). USC Libraries further states that “A theoretical framework specifies which key variables influence a phenomenon of interest and highlights the need to examine how those key variables might differ and under what circumstances.” (USC Libraries 2015.) Leshem and Trafford (2007) suggest that the consequences of focusing upon research methods at the expense of concepts may lead to Identifying concepts from a “lack of explicit and cohesive relationships throughout the research.” (p. 95).

Malarz (2015) suggests five main steps to developing your theoretical framework:

1. Identifying the relevant concepts.
2. Defining those concepts.
3. Operationalizing the concepts.
4. Identifying any moderating or intervening variables.
5. Identifying the relationship between variables.

Following is an example of a theoretical framework in a Quantitative research study: given the research question “Does personality have an effect on cyber-bullying behavior,” the theoretical framework might be “Personality affects human behavior.” The research hypothesis then becomes “Personality traits (independent variable) are correlated to cyber-bullying behavior (dependent variable.) Thus, the first sentence under the heading “Research Framework” would be “The framework for this study is the theory that personality has an effect on human behavior.” The next sentence would identify a specific theory. The subsequent literature review would document studies that have defined personality traits and human behavior and have demonstrated correlations between the two variables.

Qualitative Study. Qualitative research is distinguished from quantitative in that the variables of interest and/or their relationship have not been defined, and, as such, cannot be measured, and, therefore, there cannot be an hypothesis and, therefore, there cannot be an underlying theory. Diefenbach (2008) states that the nature of qualitative research is to “... seek to define theories based on data gathered, or develop new theories rather than initiate the study with one or more specific theories in mind from the beginning.” (p. 877). A prime example of this is the Grounded Theory approach in qualitative methodology (see Chapter 3 – Methodology, Para. Research Methodologies.)

Thus, the “framework” of qualitative research is not a theory to which to compare your hypothesis, but by a philosophy of discovery to frame your perspective for collecting data and analyzing the results. That is, what philosophy will guide you, the researcher, in your relationship with your subjects, the data, and the analysis. Will you be detached, insert your biases, focus on one interpretation, strip out subjective values, search for underlying meaning, etc.? For example, as the researcher is often personally engaged with the research subjects (through interviews, etc.), the reader needs to understand how the researcher is viewing the issue lest the reader misinterpret the researcher’s motivations or personal involvement in the research and misinterpret the findings.

Creswell (2013) identifies four basic philosophical frameworks – Ontological, Epistemological, Axiological, Methodological. Following are various interpretations of these philosophies:

- Ontological – reality is multiple as seen through many views (Creswell, 2013); a system of belief that reflects an interpretation of an individual about what constitutes a fact; whether social entities need to be perceived as objective or subjective (Ontology 2016); the study of how something existed, its nature, or being, usually answers the question ‘what’ (Maraqah 2016).
- Epistemological – researcher attempts to lessen distance between himself/herself and the subject being researched (Creswell 2013); often considered as the theory of knowledge in which we know something exists and answers the question ‘how’ do we know this (Maraqah 2016).
- Axiological – research is value-laden and biases are present (Cresswell 2013); our values affect how we do research and what we value in the results of our research (Hogue 2016). Encyclopedia Britannica (2016) defines axiology as from Greek axios meaning “worthy” and logos meaning, “science” and is also called the “Theory of Value” or the philosophical study of goodness or value. The Stanford Encyclopedia of Philosophy further relates axiology directly to the categories of “right”, “reason”, “rational”, “just”, and “ought”, commonly known as the “deontic”. The Encyclopedia states that “... each agent ought always to do whatever action has the feature that, of all available alternatives, it is the one such that, were she to do it, things would be best for her. Rather than asking agents to maximize the good ...” they are asked to “... maximize what is good for them.” (p. 3.1.2).
- Methodological – studying the topic within its context and using an emerging design (Creswell 2013); the particular method of study is central (e.g., personal interviews, historic review, meta-analysis).

Following is an example of a philosophical framework for a Qualitative research study: given the research question “What are the experiences of a transgender adult,” the philosophical framework might be ontological (as per Creswell, 2013), e.g., knowing about transgender is achieved by a subjective experience of a transgender.

Although stated in brief in Chapter I – Introduction of your dissertation, your research framework will be expanded in Chapter 2 – Literature Review where you should describe in detail the theory or philosophy and provide examples of prior studies using the respective theory/philosophy and their results.

Significance of the Study. This is a concise statement (no more than two paragraphs) of to whom this study would be of interest and why, essentially, the stakeholders implied in the problem statement. The common mistake is to write about the extent of the problem when it should be about how the stakeholders in the problem will benefit from the study results. The essence of the content of this section emanates from the problem statement and the purpose statement. Essentially, you are describing the anticipated benefit to society from the findings of this research, i.e., what negative results you expect the research findings will fix, and who, specifically, will benefit and specifically how they will benefit. For example, given the research question “What is the relationship between Executive Coaching” and “Productivity”, an appropriate statement would be “The results of this research would be of particular significance to business executives to assist them in focusing their training programs toward increasing productivity.” This heading may be expanded and revised as you progress through your research.

“Filling a gap in the literature” is not sufficiently significant for a research project and is subordinate to the reasons mentioned in the above paragraph. If you feel as though you need to state that the research will fill a gap in the literature, then it should come after the other reasons and must be specific – what gap does it fill and how? A “gap” in the literature refers to scholarly articles. The “gap” could refer to lack of scholarly articles on a specific topic, or a similar topic but not on the population of interest, or a similar topic using a different methodology or data collection instrument. In any case, you must present evidence that you attempted to find literature on a specific topic, population, or methodology, but could not, and why your specific topic, population, or methodology will be of benefit to society.

Design and Methodology. The research design is dictated by the research question – that is, specifically, step-by-step, how you intend to demonstrate or prove your hypothesis. You must describe succinctly and specifically what variables you will use to measure your problem and to measure the results of your hypothesis, what data you are collecting, from what sources, and your decision rule, that is, how you intend to use the data or results to draw a conclusion. State whether the research is qualitative, quantitative, mixed-method, historical, or experimental. Identify the dependent variable and independent variables in the research question and how you intend to measure them (for qualitative design), what data you are collecting, from what sources, and how you intend to use the data or results to draw a conclusion.

Quantitative, Qualitative, Mixed Method. The research design can be either quantitative, qualitative, or a combination of the two (mixed-method). A quantitative design is based on the identification of the independent and dependent variables that have been defined and the collection of quantitative (numeric) data and a statistical procedure to demonstrate a relationship between the two variables. (See also paragraph Research Methodologies.) A qualitative design is based on the requirement to identify or define at least one of the variables or the relationship between variables that could later be used in a quantitative research hypothesis. It is usually

more expensive and time consuming than quantitative designs because it usually depends on personal interviews, and is, therefore, typically limited to a single set of research subjects. Qualitative designs usually employ the observation and interview of research subjects.

When choosing a quantitative design, you must first define what it is about the connection between the dependent and independent variables you want to demonstrate. Is a dependent and independent variable identified? What is the connection between the dependent and independent variables that are you hypothesizing? Do you want to know if one has an effect on the other or are you only interested in knowing if there is a difference? Will the statistical procedure provide sufficient insight into variation within the dependent variable? Defining this will direct you to a particular statistical procedure, such as multiple or logistic regression, Analysis of Variance (ANOVA), Test of Hypothesis (t-test), correlation, and many others. You must also consider if the sample you intend is representative of the population to which your research question extends.

Organization of the Study. This is an explanation of how the research document. The following structure and phrasing are typical (note - phrasing and verbiage may be revised as you progress through writing the document):

“This study is organized into five chapters as follows:

Chapter 1 – Introduction. This chapter introduces the problem of <problem title>, states the research question, identifies the significance of the study, and explains the research design used to answer the question.

Chapter 2 – Literature Review. This chapter provides an overview of the literature regarding the problem, supports the statements and inferences of negative results of the problem, and describes the theoretical framework for the research question and the methodology.

Chapter 3 – Methodology. This chapter identifies the research method used, defines the variables and explains how they were measured, describes the data collection instruments, explains the statistical procedure used to analyze the data, and defines the decision rule for determining the answer to the research question .

Chapter 4 – Findings. This chapter presents the findings of this research in table format and narrative, including interpretation of the data.

Chapter 5 – Summary and Conclusions. This chapter summarizes the findings from the research, states conclusions drawn from the research and provides a direct answer to the research question.”

Chapter 2 – Literature Review.

This chapter is an in-depth disclosure and discussion of the problem as stated in the Statement of the Problem in Chapter 1 -- Introduction and identifies gaps in the literature, thus presenting the opportunity for your specific research. Content of this chapter must include data that clearly and substantially demonstrate the extent and negative effects of the problem. This chapter will have a major heading ‘Chapter Overview’, ‘Theoretical Framework’, other appropriate major headings, and a concluding major heading ‘Summary’.

Chapter Overview. In the ‘Chapter Overview’, briefly (one paragraph) summarize what the chapter is about and what it intends to demonstrate (essentially, this is a concise ‘summary of

the summary’). Do not use the ‘Chapter Overview’ as a literary lead-in for the topic. Typically, this is a copy and paste of the description in Chapter 1 – Introduction, Section – Organization of the Study.

Context of the Problem. In this major heading, discuss in detail, restate the problem statement from Chapter 1 and discuss in detail the context of the stated problem. Present sufficient data to support your claims stated in the problem.

Appropriate Major Headings. In between the ‘Introduction’ and ‘Summary’ major headings, the chapter should have sufficient major headings and sub-headings as to allow the reader to easily follow your arguments and research toward a natural conclusion.

Chapter Summary. The ‘Chapter Summary’ should restate specific and substantive points of the chapter. The ‘Summary’ is not simply a literary generalization of what was discussed in the chapter. Do not use citations in the ‘Summary’. Keep in mind that other researchers will be reading your ‘Summary’ first to see what is in the chapter before proceeding to the chapter. In this context, you must hit the key points succinctly and ‘sell’ the chapter to the reader, that is, give the reader enough key points, without development, so as to make the reader want to read the chapter for the details. As a rule of thumb, a summary will be about 10% the length of the chapter. Do not use citations, figures or tables in the ‘Summary’. Typically, this is simply a ‘copy and paste’ of the key sentences from the chapter.

Chapter 3 – Methodology

This chapter is an in-depth discussion of the methodology as stated in the Methodology in Chapter 1 -- Introduction. Details for each heading are further presented in Section 3 – Methodology of this handbook.

Chapter Overview. In the ‘Chapter Overview’, briefly (one paragraph) summarize what the chapter is about and what it intends to demonstrate. Essentially, this is a ‘copy and paste’ of the description of Chapter 3 – Methodology stated in the Organization of the Study section in Chapter 1 – Introduction.

Research Hypotheses (Quantitative design only). In Chapter 1 – Introduction, this is often just a verbal statement of the actual relationship between the independent and dependent variables that you predict. However, in Chapter 3 – Methodology, you must state the statistical symbology as well as the verbal expression of your hypothesis because the symbology identifies the specific statistical procedure you will use (See Section 3 – Methodology, para. Statistical Hypotheses). For the sake of brevity, only the alternative hypothesis (H_a) is presented as the null (H_o) is assumed to be understood as “no difference” or “no effect”.

Variables (Quantitative design only). Following your statistical statement of the alternative hypotheses, you must identify you dependent variable(s) and independent variable(s) and exactly how you intend to measure them. This will segue into the next heading “Data Collection Instrument”.

Statistical Procedure (Quantitative design only). Identify and describe the specific statistical procedure you will use to test your statistical hypothesis. This must be very specific. Using scholarly references, describe why this procedure is the most appropriate for your study. This usually is based on the similarity to other studies of the same variables and their relationships and especially on what the results of a specific procedure can show that another procedure cannot. For example, a multiple regression can show the degree of the actual effect

between specific variables where an ANOVA can only show that there is a difference between the variables.

Decision Rule (Quantitative design only). State the alpha-level to be used to reject the null hypothesis (H_0) and the resulting conclusion if H_0 is rejected or not rejected in terms of your verbal narrative of the hypothesis (further details are presented in Section 3 – Methodology of this handbook).

Data Collection Instrument. Describe in detail your data collection instrument (further details are presented in Section 3 – Methodology of this handbook.) You should also present the instrument in the Appendix. **Major Headings.** If you use a survey, you must present this in detail under major headings. If your research includes a survey, you must include a full description of the survey (usually under appropriate sub-headings) to include the intent of the survey, the statistical procedure used and the reason for using that procedure, the dependent variables and independent variables in the survey, description of the questions asked and the method of measuring the values of the responses, description of who the respondents will be and how the survey will be administered. Much of this will be repeated under separate major headings.

Study Population and Sample. Describe the population at large and your specific sub-population. Then describe how you will sample that sub-population. (Further details are presented in Section 3 – Methodology of this handbook.)

Chapter Summary. The ‘Summary’ should restate specific and substantive points of the chapter. The ‘Summary’ is not simply a literary generalization of what was discussed in the chapter. Do not use citations in the ‘Summary’. Keep in mind that other researchers will be reading your ‘Summary’ first to see what is in the chapter before proceeding to the chapter. In this context, you must hit the key points succinctly and ‘sell’ the chapter to the reader, that is, give the reader enough key points, without details, so as to make the reader want to read the chapter for the details. As a rule of thumb, a summary will be about 10% the length of the chapter. Do not use citations, figures or tables in the ‘Summary’.

Chapter 4 – Findings

This chapter is an in-depth disclosure and discussion of your hypothesis or solution to the problem as presented in the Research Question in Chapter 1 -- Introduction. Content of this chapter must include data that clearly demonstrate the result of the hypothesis – in essence, the answer to the research question. Surveys, interviews, and other forms of data collection must be presented and discussed in this chapter. This chapter will have a major heading ‘Introduction’ and a concluding major heading ‘Summary’.

Chapter Overview. In the ‘Overview’, briefly (one paragraph) summarize what the chapter is about and what it intends to demonstrate (essentially, this is a concise ‘summary of the summary’). Do not use the ‘Introduction’ as a literary or superfluous lead-in for the topic, that is, be very specific.

Research Hypotheses Results and Interpretation (Quantitative design only). Present (usually in table format) the statistical results of the statistical procedures. Describe the implication or meaning of the data and how they relate directly to answering the statistical hypothesis and the research question.

Chapter Summary. The ‘Summary’ should restate specific and substantive points of the chapter. The ‘Summary’ is not simply a literary generalization of what was discussed in the chapter. Do not use citations in the ‘Summary’. Keep in mind that other researchers will be reading your ‘Summary’ first to see what is in the chapter before proceeding to the chapter. In this context, you must hit the key points succinctly and ‘sell’ the chapter to the reader, that is, give the reader enough key points, without details, so as to make the reader want to read the chapter for the details. As a rule of thumb, a summary will be about 10% the length of the chapter. Do not use citations, figures or tables in the ‘Summary’.

Chapter 5 – Summary and Conclusions

Problem and Research Question. Concisely restate the problem, the research questions and sub-questions, and the methodology. This is essentially copying the text from Chapter 1 – Introduction and pasting it into Chapter 5 – Summary and Conclusions.

Research Summary. This heading is essentially a copy and paste of the summaries from Chapter 2 – Literature Review, Chapter 3 – Methodology, and Chapter 4 – Summary and Conclusions. As in the actual summaries of these chapters, there should be no tables, graphs, or charts – only narrative. There also should be no in-text citations as the text should have already been cited in the respective chapters. The text of the chapter summary should be a succinct, distilled narrative of the essential points in the chapter. It should not be a narrative saying that you have written about something, for example, “Chapter 2 – Literature review discussed the various negative results of low nutrition.” Such a statement reveals nothing about topic ‘low nutrition.’ An appropriate summary narrative, in this example, would be “Several studies have identified two significant negative results of low nutrition to be chronic illness and premature death.” A rule of thumb is for summary length is 10% of the text of what you are summarizing. MSWord has an AutoSummary feature in 2007 version, but has removed it from the 2012 version with no explanation as to why.

Conclusions. Conclusions are your inferences and deductions based on the evidence presented in the previous chapters. Your conclusions must directly answer your research question and must be based on the data and facts contained in the preceding summary. For example, if the research question was “The purpose of the research was to determine if pay has an effect on job satisfaction,.;, then the first sentence of the Conclusion should be “This research concludes that pay does not have a significant effect on job satisfaction for the sample population.” If the question was “This purpose of this research is to determine if music can be taught effectively online,” the first sentence of the Conclusion should read “This research has determined that certain aspects of music can be taught effectively online, but other aspects cannot be taught effectively online.”

Keep in mind that other researchers will be reading your conclusions first to see how your research question was answered. Your conclusions must follow what you have written in the previous chapters and be supported by them. This section should describe what you have learned and concluded, logically and substantially supported by the previous chapters. Do not cite references in the conclusions or present tables, charts or figures.

Implications. This will be a detailed discussion of the implications of your results and must be linked directly and specifically to the variables and relationships identified in your problem statement, your research question, the theoretical framework (for quantitative design

only), and the scholarly studies you identified in the literature review. The object is to support or contradict those theories or observations. Include also a discussion of the ‘generalizability’ of your results (i.e., are your results typical of the general population you identified in Chapter 3 – Methodology, heading “Population and Sample”).

Recommendations for Further Study. If desired, concisely state recommendations for further study to aid future researchers in identifying research topics. Do not offer recommendations of how to correct the stated problem as your research did not discover any special or substantive relationships beyond the research question. For example, a Recommendation for Further Study might state “We recommend further research be done on the effect of environment of job satisfaction.” You cannot say “pay was not a significant factor to job satisfaction, therefore supervisors should not consider pay as a reward for performance.” The first statement simply recommends research to be done while the second statement draws a bold conclusion about a relationship that was not rigorously tested, i.e., the effect of pay as a reward for productivity. Also include “lessons learned”, (i.e., how you would do things differently now that you have been through the exercise) to assist other researchers in planning a better study.

The Conclusion

This is an aspect in many research documents that is often missed. Many research articles banter about the original question and miss the point. Does the conclusion answer the question? For example, if the research question was “the purpose of this research was to determine if pay has an effect on job satisfaction,” then the very first sentence in the conclusion should read “This research has determined that pay has (or does not have) an effect on job satisfaction in the sample chosen.” If your research was inconclusive, then use a statement such as “this research was inconclusive as to the effect of pay on job satisfaction.”

