

Research Methods Guide

REALTOR® University Library

February 2015

Updated July 2018

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Author's Note

The REALTOR® University Library would like to thank Dr. Kathleen Sullivan for reviewing and providing guidance and resource suggestions for the development of this guide. We would also like to thank the research community at large for the numerous contributions and sources cited in this guide. It is through a strong research community that we are able to pass on the knowledge and foundational skills necessary for future scholars to continue the scholarly research tradition.

About this Guide

This guide is intended as a primer for students enrolled in REALTOR® University's Master of Real Estate RE 600 Capstone course. The very basics of the scholarly research process are covered. This guide is by no means comprehensive or complete. Students should consider this guide a launching point for further investigation and study.

Introduction

If you are enrolled in REALTOR® University's RE 600 Capstone course, it is quite likely that you are finding yourself in a position to conduct scholarly research, and that this is the first time you've conducted such research. While exciting, the thought of conducting scholarly research may seem daunting. This guide offers a run-down of the basics of scholarly research, and the types of research design and methodologies that you might consider for your Capstone research project.

Before you begin research for your thesis, action research project, or case study, there are some issues to consider. The goal is to ensure that the time and effort you spend will go toward a project that you are able to complete within the 8 week course timeframe.

The first step is to define a plan of action for your study, wherein you ask yourself questions such as:

- What kind of research do you want to do?
- What are the different types of research?
- Which type of research design is most appropriate for your project?
- Do you need to obtain permissions from an organization, board, or company to pursue your research?
- Do you have the connections and skills necessary to conduct your research project?
- What should your timeline look like? (i.e. work backwards from week 8, setting goals for what needs to happen by each week in the academic session)

The second step is to become familiar with the research process, which is as follows:

- Identify the problem
- Justify that there is a problem
- Conduct a literature review
- Determine the type of research you will conduct to assess the problem
- Gather the data
- Analyze the data
- Report the findings

Scholarly Research Defined

The term “research” is defined below by both Creswell, who has produced seminal works in the field of educational research, and Ghauri and Gronhaug, who have produced seminal works in the field of business research. Creswell (2012) defines research as “a process of steps used to collect and analyze information to increase our understanding of a topic or issue” (p. 3). Ghauri and Gronhaug (2010) further offer that “the purpose of doing research [is] manifold, such as to describe, explain, understand, foresee, criticize, and/or analyze already existing knowledge or phenomena in social sciences” (p.11).

Research Design vs Research Methodology

It is important to note that research design and methodology are not the same. Creswell (2012) defines research design as “[the set of] procedures used for collecting, analyzing and reporting research in quantitative and qualitative research” (p. 627). Ghauri and Gronhaug (2010) further elaborate that “research design is the overall plan for relating the conceptual research problem to relevant and practicable empirical research” (p. 54). In sum: research design encompasses all elements of a body of research, whereas methodology is only about the process used for data collection for the body of research.

There are three main types of research design, which include exploratory, descriptive and casual (Ghauri & Gronhaug, 2010). Ghauri and Gronhaug (2010) offer that researchers use *exploratory research design* when “a situation or problem is poorly understood” and requires one to “observe, collect information and formulate a theory.” Conversely, researchers use *descriptive research design* when a problem is well-defined, or *casual research design* when a problem is well-defined and they are looking to identify the root cause and effect (Ghauri & Gronhaug, 2010)

Types of Research Methodologies

There are many types of scientific research methodologies. The two main categories of research methodology involving human subjects are *quantitative* and *qualitative* research. Researchers sometimes combine these two categories to produce *mixed-methods* research. The textbooks for your Capstone course define these research methodologies in great detail. For the purposes of this guide, we will offer basic definitions.

In terms of qualitative and quantitative research, the notion is that of quality and quantity; what is quantifiable versus what may be determined through the quality interaction with a few. Though some argue this anecdote is overly simplistic, many consider ***quantitative data as a mile long and an inch deep*** and ***qualitative data as an inch long and a mile deep***. Both types of data offer valuable insight into an information problem, but ask different questions: *how many people like peppermint ice cream?* versus *why do people like peppermint ice cream?*

The Scholarly Research Process

Creswell (2012) offers a flowchart of the scholarly research process, wherein the scholarly research process proceeds as such: problem → literature review → development of research questions → determination of research methodology (quantitative, qualitative or combined) and research design (p. 13). Additionally, Creswell (2012) furthers that quantitative methodologies include *experimental*, *correlational* and *survey*; combined research designs include *mixed-method* and *action* research; and qualitative methodologies include *grounded theory*, *ethnography* and *narrative* (p. 13). Once the research methodology and design is determined,

Creswell (2012) defines the next stage as sampling, instrument implementation and protocols, followed by data analysis and interpretation. After analyzing the data, researchers then discuss findings and limitations, offering some conclusions and implications for future research (Creswell, 2012, p. 13).

Quantitative Research Methodology

Quantitative data is “measured or assessed with respect to or on the basis of quantity; that which may be expressed in terms of quantity; quantifiable” (OED, 2013a). Creswell (2012) offers that quantitative research offers insight into narrowly defined questions, helping to identify trends for a group (best done through surveys) and relationships among variables (best done through correlational research).

Characteristics of Quantitative Research

According to Edmonds and Kennedy (2010), quantitative research is typically characterized when:

- Numerical data from a sample of a larger population is used to make generalizations about the population of study.
- It seeks to understand relationships between variables and determine cause and effect.
- Groups are compared using experiments, correlational studies or surveys.

Quantitative Research Process

Ghuri and Gronhaug (2010) share that surveys are a popular method for quantitative data collection, particularly in business research, where analytical surveys are used to understand relationships between variables, and descriptive surveys are used to assess characteristics of the sample population. According to Meir (2006) quantitative survey research is broken into seven stages:

1. Planning and survey design
2. Data collection
3. Data access
4. Data preparation and management
5. Data analysis
6. Reporting
7. Deployment

Quantitative surveys allow for surveying a broad swath of individuals while also providing feedback anonymity. However, quantitative surveys may only tell a small part of the story by answering the questions regarding “who, where, how many, how much” and establishing relationships between variables, but quantitative research “is not optimal for answering why and how questions” (Frels & Onwuegbuzie, 2013, p. 185).

Quantitative Survey Sampling

When conducting quantitative research, one must consider how to define and select survey participants. The entire population the researcher is interested in is known as the *target population*. Since it is often not possible to survey the entire target population, one typically surveys a small sample that is representative of the target population. Some types of survey sampling include probability or “random,” stratified, cluster, non-probability, quota, purposive or “purposeful,” convenience, snowball and volunteer (Rowley, 2014, p. 319).

Rowley (2014) defines *probability or “random” sampling* as when “cases are selected at random—as in a lottery, a roulette wheel or using a table of random numbers” (p. 319). In a probability sampling, each member of the target population has an equal chance of participation in the study, using probability as a means to limit survey bias (Creswell, 2011). The Center for Institutional Evaluation, Research and Planning (n.d.) offers the definition for a random sample as “a subset of the population of interest” and further offers “One way to ensure a representative sample is to use random sampling. In random sampling, every member of the population has the same chance of being part of the sample.”

For more on random sampling see:

Margin of error in surveys. (n.d.). Center for Institutional Evaluation, Research and Planning. Retrieved from <http://irp.utep.edu/Default.aspx?tabid=58004>

With *stratified sampling*, the researcher divides the target population into groups, based upon “characteristics appropriate for the research questions (e.g. age, income, profit, location, and then a sample is selected from each group” (Rowley, 2014, p. 319).

Non-probability or “systematic” sampling is when “cases are selected by choosing every *n*th case—e.g. 5th, 10th, 20th, etc. [where] systematic sampling is often regarded as close to probability sampling, depending on the order of the list” (Rowley, 2014, p. 319).

With *purposive or “purposeful” sampling*, researchers seek out study participants who “can best answer each kind of question” (Lapan, Quartaroli & Riemer, 2012, p. 334).

Volunteer sampling is for times when the researcher is left with “volunteer participants” because many in the target population did not participate in the survey (Creswell, 2011). In a similar vein to volunteer sampling, *convenience sampling* is when the researcher uses a sample “built from cases which are accessible, such as the organizations in a certain region, or the members of a social networking site” (Rowley, 2014, p. 319). It is important to note that both volunteer and convenience sampling are considered biased forms of sampling, and thus results from these sampling methodologies may not be truly representative of the characteristics of the target population.

Quantitative Survey Tools

If you decide to conduct a quantitative survey for your Capstone project, options include collecting the data via print or verbally-administered surveys, or via electronic surveys. Some electronic survey tools include:

1. [Survey Monkey](#)
2. [Survey System](#)
3. [Check Box](#)
4. [Key Survey](#)
5. [Google Consumer Surveys](#)

Formulating Quantitative Survey Questions

One decision to make when formulating quantitative surveys is: do you want to force survey participants to choose a positive or negative correlation for a given subject or topic? For example, when asking a scale-based question you can opt to give survey participants a neutral option or force them into a category as demonstrated in the two questions below:

1. I like peppermint ice cream.

Strongly agree | Somewhat agree | **No opinion** | Somewhat disagree | Strongly disagree

versus:

2. I like peppermint ice cream.

Strongly agree | Somewhat agree | Somewhat disagree | Strongly disagree

With question 1, the survey results could potentially all be "no opinion" which might not help with study outcomes (or one might interpret such results as a general ambivalence toward a topic or subject). With question 2, participants are required to show a positive or a negative correlation to the question as there is no neutral option. When reporting results, question 2 would allow the researcher to report that "Survey participants showed a positive [or negative] correlation with regards to peppermint ice cream." However, what if survey participants truly feel neutral about the topic? Also, if you give the neutral option and the results still show a positive or negative correlation, then the results might provide even more convincing evidence due to strong opinions toward the topic.

Survey bias explained.

An important idea to consider when creating and administering surveys is the concept of “bias.” There are several types of survey bias. Survey bias falls into three main categories: bias related to the sample population surveyed, bias related to the way a survey was administered, and bias related to the survey instrument itself. Researchers seek to limit survey bias, as it can produce survey results that are not truly representative of a given population. Below several types of survey bias are explained.

Sampling error.

A survey should seek to randomly select a group of participants who are representative of a larger population. Sampling error occurs when the group of survey respondents do not adequately represent a study’s target population. Sample bias typically relates to the manner in which a survey is distributed.

Response and Nonresponse bias.

Consider those who first respond to a survey: might they be a specific sub-set of individuals who are outliers from your total survey population? Perhaps those who respond to the survey are the type of individual who enjoys taking surveys, has a strong opinion on your survey’s subject matter, or has a strong belief in contributing to research. However, what about the percentage of the population who does not respond to your survey? Either because they don’t have an opinion on the subject (which would change your survey’s results), they are not tech-savvy and cannot access the survey electronically or have technical troubles with accessing it, or they are more introverted, shy, or don’t feel comfortable sharing their thoughts: how can one account for this group of individuals when reporting survey results? This concept is known as response and nonresponse bias. Additionally, how do you know you selected a survey group that adequately reflects your total population? Distributing surveys can be tricky and it is not always easy to find and connect with all groups within a given population. Administering surveys in a variety of formats and locations can help combat this issue of nonresponse bias. Additionally, surveys should be distributed in a *randomized* manner to seek a survey response group that represents your survey population’s demographic characteristics.

Survey administration bias.

The environment in which a survey is administered is extremely important. If the survey is administered in a *hostile environment*, or one perceived by the survey participant as *unsafe*, then the survey results will likely not be representative of the survey participant’s true feelings. For example, if a focus group includes employees and their direct supervisors, the employee survey participants might be likely to respond in a way that will please their supervisors, but is not reflective of their true feelings.

If surveys are administered digitally, one must consider that not everyone has access to a computer, tablet, or smartphone to take the survey. And, even those who do have access to a

digital tool may not feel comfortable with the technology required to complete the survey. Thus, those who respond to a digital survey may not be representative of your study's target population. Additionally, digital surveys may be easier to participate in when using certain types of digital devices, and more difficult with others. For example, if a survey is designed to be viewed on a desktop computer screen, than those accessing the survey on much smaller smartphone screens may be less likely to complete the survey. When surveys are difficult to complete, survey participants may give up before completion. If surveys are distributed via email, one must consider the prevalence of spam, junk, and server filters that may prevent the survey tool from reaching participants; email filters may filter out emails with seemingly suspicious links or attachments. The distribution of surveys via email typically entails either a link or an attachment. When qualitative surveys are administered in person, one must consider the survey administrator. The person administering the survey should be sure to not influence survey results through *facial expressions*, *body language*, or by asking *accusative* or *leading* questions, as all of these types of behaviors can influence survey participants to respond in a way that is not representative of their true feelings.

Survey instrument bias.

In addition to the bias with the survey sample and administration, the survey instrument itself can exhibit bias. The use of *certain words* can carry positive or negative connotations, which might cause a survey respondent to respond in a way that may not be representative of his/her true feelings. *Leading questions* are questions that direct a survey participant to respond in a particular way, regardless of his or her true feelings. An example of a leading question might be:

“Do you agree that ice cream, such as delicious peppermint flavor, is extremely satisfying?”

The use of *double negatives* can cause confusion. An example of a double-negative is:

“You do not like peppermint ice cream, do you not?”

The use of “*Terms of Art*” (terms used only within a particular industry, company, or group, and not understood by the general population) may not be known or understood by survey participants, so it is suggested to avoid such terms. An example of a Term of Art would be:

“Where would you rate peppermint ice cream on the ICE index?”

Survey questions should be succinct, clear, and cogent to increase the likelihood that you will capture a survey respondent's true feelings about an issue or topic. There are many other types of bias to consider when wording survey questions, such as bundled or “double-barreled” questions, which bundle multiple questions into one question, and are phrased ambiguously. To learn more about survey bias, check out these resources:

Bias in survey sampling. (n.d.). *StatTrek*. Retrieved from <http://stattrek.com/survey-research/survey-bias.aspx>

Choi, B. C. K., & Pak, A. W. P. (2005). A catalog of biases in questionnaires. *Prev Chronic Dis* [serial online] 2005 Jan [18 Nov. 2014]. Retrieved from http://www.cdc.gov/pcd/issues/2005/jan/04_0050.htm

Qualitative Research Methodology

Qualitative data is “of or relating to quality or qualities; measuring, or measured by, the quality of something” (OED, 2013b).

Constantinos-Vasilios, Vassiliadis and Stylos (2012) define qualitative research as a research method that uses “small samples and develop[s] deeper insight into people's perspectives on particular problems, rather than focusing on the number of people who may share a perspective [where] qualitative research tries to understand a particular phenomenon rather than uncover causal relationships” (p. 388). Joyner (2013) adds that qualitative research operates under the assumption that “reality inheres in the *perceptions* of individuals” (p. 73). Creswell (2012) shares that qualitative research is appropriate for “real-life inquiry, discovery-oriented studies, learning perspectives of others, and studying complex and natural phenomena” where qualitative research uses an inquiry-based approach through open-ended questions to “explore a shared culture” (best done through ethnographic research), or “explore individual stories” (best done through narrative research)(Creswell, 2012, p. 13).

Characteristics of Qualitative Research

When considering the characteristics of qualitative research, Creswell (2012) offers that it seeks to understand a phenomenon through the exploration of a well-defined problem, which is done through data collection and analysis of a small sampling of population of study.

Qualitative Instruments

The survey “instrument” used in qualitative research includes interviews, individual focus groups, participant observations, open-ended surveys and content analysis (Creswell, 2012).

Qualitative Instrument Sampling

Qualitative survey sampling typically employs the “purposeful sample” methodology, using a smaller sampling of the target population (Creswell, 2011).

When conducting qualitative research it is important to create a safe and comfortable environment for your survey participants. The survey environment should also be free of external distractions, such as loud noises, passers-by, and the ability for strangers to listen in on the qualitative interview. The person administering the survey should be sure to not influence survey results through facial expressions, body language, or by asking accusative or leading questions. If conducting qualitative research by way of focus groups, be sure that survey participants are comfortable sharing their thoughts in front of others. For example, a survey participant may not

feel comfortable sharing his or her true feelings if a supervisor is present. Qualitative survey questions should be open-ended, allowing the survey participant to answer the question in a way that s/he feels is best. Instead of asking a *yes* or *no* question such as “Do you like peppermint ice cream?” The question might be phrased in an open-ended manner, such as “What are your thoughts on peppermint ice cream?” or “Tell me about peppermint ice cream.” To learn more about creating survey questions, check out these resources:

Merriam, S. (2014). [Qualitative research: a guide to design and implementation](#). Hoboken, NJ: Wiley Publishing, Inc.

Tracey, S. (2012). [Qualitative research methods: collecting evidence, crafting analysis, communicating impact](#). Hoboken, NJ: Wiley Publishing, Inc.

Spalding, C. (2005). [The everything guide to writing research papers book](#). Avon, MA: F+W Publications, Inc.

Davis, H. (2005). [Building research tools with Google for dummies](#). Hoboken, NJ: Wiley Publishing, Inc.

Presser, St. et al. (2004). [Methods for testing and evaluating survey questionnaires](#). Hoboken, New Jersey: John Wiley & Sons, Inc.

Mixed-methods Research Methodology

Johnson and Onwuegbuzie (2004) offer that mixed-methods research occurs when researchers utilize both quantitative and qualitative research methodologies to conduct research which results in a single study.

Mixed-Methods Rationale: When and Why

Researchers typically use mixed-methods research when they feel that the combination of the two methods provides greater insight and understanding into the research problem than either methodology on its own, or when it answers the research questions more completely (Creswell & Plano Clark, 2007).

Mixed-Methods Instruments

As mentioned above, mixed-methods research combines both qualitative and quantitative research methodologies. Examples of mixed-methods research include:

- *Interviews and questionnaires*
- *Performance rests and observation*
- *Questionnaires and follow-up focus groups*
- *Document analysis, performance tests, questionnaire and interviews*

Convergent Parallel Design

Convergent Parallel Design “collects quantitative and qualitative data in parallel, analyzes them separately, and then merges the two data sets at the point of interpretation” (Siebert, Perry, O’Connell, Albrecht, Stenger & Vlasin-Marty, 2014, p. 61). Creswell and Plano Clark (2011) offer that using convergent parallel design to integrate quantitative and qualitative data allows researchers to capitalize on the strengths and minimize the weaknesses of each type of research methodology (Creswell & Plano Clark, 2011).

Survey Instrument Validity and Reliability

***** IMPORTANT NOTE FOR CAPSTONE PROJECT:** *Any student planning on developing her/his own survey instrument will not have the available time to establish reliability and validity of the survey instrument. This will need to be addressed in the appropriate section of your Capstone paper. The University has approved this. ****

When conducting empirical, scholarly research it is important to address the validity and reliability of your data collection tool or “instrument” when reporting results. Included below are definitions of instrument validity. Biddix (n.d.) offers that validity is the “extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform” where researchers often express validity in terms of degrees, since it is nearly impossible for an instrument to be 100% valid. Validity bifurcates into two main categories: external and internal. Benson (1998) defines external validity as “the assessment of how one variable measured by the questionnaire relates to other variables.” In other words, external validity “means that the results of a study can be generalized to other samples from the same population” where the qualitative researcher’s term for this is *transferability* (Lapan, Quartaroli & Riemer, 2012, p. 29). Lapan, Quartaroli and Riemer (2012) offer that internal validity is “the confidence that a researcher has that his or her intervention caused the change in the dependent variable,” where the qualitative researcher’s term for this is *credibility* (p. 29).

In a similar vein to validity is the concept of reliability, which Lapan, Quartaroli and Riemer (2012) define as “the consistency in the measurement of the targeted variables,” where the qualitative researcher’s term for this is *dependability* (p. 29). Reliability can be broken down into four categories: inter-rater/observer reliability, test-retest reliability, parallel-forms reliability, and internal consistency reliability (Biddix, n.d.).

To learn more about instrument validity and reliability, see:

Biddix, J. P. (n.d.). Research rundowns. *Dewar College of Education, Valdosta State University*. Retrieved from <http://researchrundowns.wordpress.com/quantitative-methods/instrument-validity-reliability/>

Statistical Modeling

Once you've gathered the data from your survey tool, you can begin the data analysis and statistical modeling phase of your project. This type of work requires knowledge of statistical modeling, which for most researchers entails a significant amount of scholarly coursework and practice. For the purposes of this guide, we will simply link to a few sources where you can learn more about statistical modeling.

Diaz, G. (2007). *Encyclopedia of statistics*. Chandni Chowk, Delhi: Global Media.

Explorable Psychology Experiments. (2015). *Explorable.com*. Retrieved from <http://explorable.com/>

Mosteller, F., Fienberg, S. E. & Rourke, R. E. K. (1983). *Beginning statistics with data analysis*. Reading, MA: Addison-Wesley.

McCullagh, P. (2002). What is a statistical model? *The Annals of Statistics*, 30(5): 1225-1310. Retrieved from <https://galton.uchicago.edu/~pmcc/pubs/AOS023.pdf>

Overview: Statistical modeling. (n.d.). *SAS/STAT(R) 9.2 User's Guide* (2nd ed.). SAS Institute, Inc. Retrieved from http://support.sas.com/documentation/cdl/en/statug/63033/HTML/default/viewer.htm#statug_intromod_sect001.htm

SPSS software. (2015). IBM. Retrieved from <http://www-01.ibm.com/software/analytics/spss/>

Survey sampling methods. (2014). *StatPac*. Retrieved from <http://www.statpac.com/surveys/sampling.htm>

Trochim, W. M. (2006). The research methods knowledge base (2nd Ed.). *Web Center for Social Research Methods*. Retrieved from <http://www.socialresearchmethods.net/kb/>

Limitations, Implications and Future Research

It is extremely challenging to design a high-quality survey that adequately captures the statistics, feelings and sentiments of a given population. Researchers often address this issue by explaining the limitations of their research methods when reporting results. This allows future researchers to reproduce the survey, but perhaps in a slightly different manner to see if and how the results vary.

After you've analyzed your findings, you may notice gaps in your research and limitations to your survey instrument. Use the limitations and implications section of your paper to summarize these issues. For example, if you distributed the survey via email you might mention:

“The survey instrument was designed to be completed via a desktop computer with a large screen. The survey tool is not mobile-friendly and as a result, those who do not have access to a desktop computer, or prefer to use mobile devices, may not have started or completed the survey. This would result in a sample bias skewed toward desktop computer users.”

You might then tie this to suggestions for future researchers:

“Future researchers might consider designing and administering a survey instrument that accounts for mobile device users.”

Next, consider the implications of your research: what do your findings mean? How might researchers and professionals use your research to inform business decisions? For example:

“The findings of this research indicate that a large percentage of the population enjoys peppermint ice cream in the winter. This implies that ice cream vendors should consider increasing peppermint ice cream supply and distribution in the winter months.”

Institutional Review Boards (IRBs) and Human Subjects’ Rights

When conducting research that involves human subjects, it is of the utmost importance to consider the research participants’ rights, welfare and wellbeing. Many government and academic institutions have established Institutional Review Boards or “IRBs” to oversee the research conducted under their jurisdiction, and ensure compliance with basic human rights tenets. REALTOR® University does not currently have an IRB, so it is recommended that students proceed with great caution when conducting research that involves human subjects. To learn more about IRBs and human rights tenets, check out the resources below.

United States. Department of Health & Human Services. (n.d.). *Office for human research protections (OHRP)*. Retrieved from <http://www.hhs.gov/ohrp/>

United States. Department of Health & Human Services. Office of Research Integrity. *Institutional review board (IRB) mission*. Retrieved from <http://ori.hhs.gov/education/products/ucla/chapter2/page05.htm>

Further Reading—eBooks in the NAR Library

Below find a collection of research methods books available to REALTOR® University Master of Real estate students. eBooks can be checked out for *free* for a period of 21 days, with the option to renew. To enjoy eBooks from a computer, first download the free Adobe Digital Editions software. To enjoy eBooks and audiobooks from a smartphone or tablet, download the *free* OverDrive Media Console app, found in the Google Play and Apple app stores. Links to these software downloads can be found [here](#).

Research Basics

[Research Writing: Papers, Theses & Dissertations](#)

[The Everything Guide To Writing Research Papers Book](#)

[Writing Up the Research](#)

Research Design

[The Discovery of Grounded Theory](#)

[Action Research](#)

[Action Research Methods](#)

[A Toolkit for Action Research](#)

[The Case Study as Research Method](#)

[Case Study Research](#)

[Case Study Research Methods](#)

[Research Methods for Everyday Life](#)

[The Focus Group Research Handbook](#)

Research Methodologies

[Qualitative Research](#)

[Qualitative Research Methods](#)

[Approaches to Qualitative Research](#)

[Qualitative Research: A Guide to Design and Implementation](#)

[Qualitative Research: An Introduction to Methods and Designs](#)

[Quantitative and Statistical Research Methods](#)

[Methods for Testing and Evaluating Survey Questionnaires](#)

[Building Research Tools with Google For Dummies](#)

Conclusion

Conducting scholarly, empirical research is extremely challenging and requires a deep level of critical thinking. If this type of research is something you plan to conduct in your professional work, or you plan to continue down the academic path towards obtaining a Ph.D., we strongly urge you to seek out and take classes on scholarly research methods, data analysis, statistics, and statistical modeling. It is only through scholarship and practice that one can become proficient in scholarly research.

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