RESEARCH METHODS

For Business and Marketing

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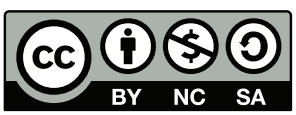

FOREWORD

I have taught BASV 316, *Introductory Methods of Analysis*, on-line for the University of Arizona in Sierra Vista since 2010 and enjoy working with students on research methodology. I wanted a textbook that presented research in a practical way so students could use the lessons learned in their own research projects. I found an excellent book but over the years the cost of that book increased to the point that I felt like it was an unfair burden on students.

I began by looking for an acceptable "open source" book since authors make those available to students free of charge and I could modify the book to meet my own objectives. I could not find any that were focused on business research though I tried for several years—and keep looking to this day. I did, though, find a few open source books about research in the social and psychological sciences that were reasonably close to what I needed. So, I modified those books to emphasize business research and then provided my work to students free of charge.

Bhattacherjee[1], Blackstone[2], and Price[5] all released books about research that formed the major sources for this book. Those books are all open source and published under a Creative Commons license that permitted me to copy and modify them.

Three goals shaped the choices made about the topics covered by the text and how those topics are presented.

- The topics must have relevance for business students.
- Both qualitative and quantitative research methods are given roughly equal attention since both types of research are used in business.
- The text is engaging and readable.

While the book is useful in its current form, I will continually update it based on emerging trends in research.

This book is published under a Creative Commons Attribution-NonCommercial-ShareAlike license, just like the books that provided its foundation. The source is available at my GitHub account: http://bit.ly/2xIjzXL. It is my hope that students can use this book to learn about business research and other instructors can modify and use it for their own classes.

— George Self

BRIEF CONTENTS

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Part I

BACKGROUND

Research methods are grounded in philosophy, statistics, sociology, and many other disciplines. The chapters in this section introduce these background concepts.

Part II

QUANTITATIVE METHODS

Quantitative methods are based in the measurement of concepts and the statistical analysis of those measures. Quantitative methods include activities like sampling, surveys, and experimental research.

Part III

QUALITATIVE METHODS

Qualitative methods are based in the evaluation of non-numeric data, like photographs and text documents. These methods include activities like field work, unobtrusive, and interpretive research methods.

Part IV

MIXED METHODS

All quantitative and qualitative research methods have certain strengths and weaknesses. Mixed methods are an attempt to use more than one research method on a given project to utilize the strengths of each method while mitigating their weaknesses.

Part V

REPORTING

After a research project is completed, the investigator must report the results of the project, often in both written and oral forms. This chapter concerns the reporting process.

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PRESENTING RESEARCH

After months, sometimes years, of working on a project that brings a sharp focus to a corner of the researcher's world it would be disgusting to fail to share the results of that research in a format that others could read and use. This chapter concerns presenting research in both written and oral forms and includes practical information that researchers can use to ensure their work is made available to the largest group of people possible.

Objectives

- What and with whom to share research results.
- Oral presentation tips.
- Written presentation tips.
- Disseminating findings.

1.1 INTRODUCTION

[1]Most researchers hope that their work will have relevance to others besides themselves. As such, research is in some ways a public activity. While the work may be conducted by an individual in a private setting, the knowledge gained from that work should be shared with peers and other parties who may have an interest. Understanding how to share research is an important aspect of the research process.

1.2 WHAT AND WITH WHOM TO SHARE

When preparing to share work with others, researchers must decide what to share, with whom to share it, and in what format(s) to share it. This section considers the "what" and "with whom" aspects while later sections cover the various formats and mechanisms through which research is shared.

Photo by Devin Avery on Unsplash

1 Most of the material in this chapter was adopted from McLean, *Business Communication for Success*[4]

1.2.0.1 *Sharing It All*

Because conducting research is a scholarly pursuit and because researchers generally aim to reach a true understanding of business and economics processes, it is crucial that all aspects of research, the good, the bad, and the ugly, are shared. Doing so helps ensure that others will understand, be able to build from, and effectively critique the work.

It is also important to share all aspects of a research project for ethical reasons and to permit other researchers to replicate the work. The following questions will aid researchers in preparing to share research with others.

1. Why was the research conducted?
2. How was the research conducted?
3. For whom was the research conducted?
4. What conclusions can be reasonably drawn from this research?
5. How could the research have been improved?

Answering these questions help researchers be honest with themselves and the readers about their own personal interest, investments, or biases with respect to the work. The third question helps identify the major stakeholders, like funders, research participants, or others who share something in common with the research project (e. g., members of the community or social group who were involved in the research). These groups may be interested in the outcome of the research but may also be a source of bias. The last two questions help identify the strengths and weaknesses of the research project and could point the way for future projects.

1.2.0.2 *Knowing Your Audience*

An important decision for researchers is determining with whom to share the results. Certainly, the most obvious candidates with are other researchers working in the same field. Other potential audiences include stakeholders, reporters and other media representatives, policymakers, and members of the public more generally.

While the findings of a research project would never be altered for different audiences, understanding the audience helps frame the research report in a way that is most meaningful to that group. For example, the report for a project about the spending habits of elderly pensioners may be much different if rendered for a group of business owners, a governmental committee on aging, the funding agency, and a community meeting. In all cases, researchers would share the major findings, but the method of presentation and level of detail would vary by audience.

It would be expected that the greatest amount of detail, including data collection method, sampling, and analytic strategy, would be shared with colleagues and the funding agency. In addition, the funding agency may want information about the exact time line for the project along with any bureaucratic hiccups encountered. With a community meeting, though, a more succinct summary of the important findings using less technical jargon would be appropriate.

1.3 ORAL PRESENTATIONS

1.3.1 *Settings*

Researchers frequently make presentations to their peers in settings like conferences or departmental meetings. These presentations are excellent means for feedback and help researchers prepare to write up and publish their work. Presentations might be formal talks, either as part of a panel at a professional conference or to some other group of peers or other interested parties; less formal round-table discussions, another common professional conference format; or posters that are displayed in some specially designated area.

1.3.1.1 *Formal Talk*

When preparing a formal talk, it is very important for researchers to get details well in advance about the time limit for the presentation, requirements for questions from the audience, and whether visual aids, such PowerPoint slides, are expected. At conferences, the typical formal talk is usually expected to last between 15 and 20 minutes. Once researchers start talking about something as as important as their own research, it is common for them to become so engrossed that they forget to watch the clock and they then find themselves running short of time. To avoid this all-too-common occurrence, it is crucial that presenters practice in advance and time those practice sessions.

One common mistake made in formal presentations of research work is in setting up the problem the research addresses. Audience members are usually more interested to hear about the researcher's work work than to hear the results of a long list of previous related studies. While written reports must discuss related previous studies, presentations must use the precious time available to highlight the current research project. Another mistake is to simply read the research paper verbatim. Nothing will bore an audience more quickly than hearing a presenter drone on while reading aloud. Finally, a presentation should highlight only the key points of the study, which, generally, include the research question, methodological approach, major findings, and a few final takeaways.

1.3.1.2 *Round Table Presentation*

In less formal round table presentations, the aim is usually to help stimulate a conversation about a topic. Normally, several research projects are presented so the time available for each is normally shorter than in a formal presentation. Also, round table presentations always includes time for a conversation following the presentations. Round tables are especially useful when a research project is in the early stages of development. For example, perhaps a researcher has conducted a pilot study and is interested in ideas about where to take the study next. A round table is also an excellent place for a preview of potential objections reviewers may raise with respect to the project's approach or conclusions. Finally, round tables are great places to network and meet other scholars who share common interests and may be engaged in similar research projects.

1.3.1.3 *Poster Presentation*

Finally, a poster presentation is a visual representation of a research project. Often, poster sessions are tables lined up in a conference area where researchers have a visual display on the table but also stand by to answer questions. A poster should not be just pages from the report pasted onto a poster board, rather, researchers decide how to tell the "story" of the work in graphs, charts, tables, and other images. Bulleted points are acceptable as long as the people walking by can quickly read and grasp the major argument and findings. Posters, like round tables, can be quite helpful at the early stages of a research project because they are designed to encourage the audience to engage in conversation about the research. It is not necessary to share every detail of a research project in a poster, the point is to share highlights and then discuss the details with people who are interested.

1.3.2 *Types of Presentations*

Most books about oral presentations divide presentations into several broad types.

SPEECH TO INFORM Increase the audience's knowledge, teach about a topic or issue, and share the speaker's expertise.

SPEECH TO DEMONSTRATE Show the audience how to use, operate, or do something.

SPEECH TO PERSUADE Influence the audience by presenting arguments intended to change attitudes, beliefs, or values.

SPEECH TO ENTERTAIN Amuse the audience by engaging them in a relatively light-hearted speech that may have a serious point or goal.

CEREMONIAL SPEECH Perform a ritual function, such as give a toast at a wedding reception or a eulogy at a funeral.

Often, presentations are stressful since most people do not like speaking in public. However, the following tips may help.

- Perfection is not required. Letting go of perfection can be the hardest guideline for speakers to apply to themselves. It is human nature to compare ourselves to others. It seems odd, but most people can forgive another researcher for the occasional slip or "umm" during a speech, but then turn right around and chastise themselves for making the same error. Everyone has both strengths and weaknesses and researchers must learn where they can improve is an important first step. The old saying is that Rome was not built in a day and good speakers are not developed overnight. It is true that no one wants to see a researcher fail during a presentation so audience members are generally very forgiving of minor speaking faults.
- Take the time to prepare and get organized. Researchers know the topic for the speech (normally a research report) and they are speaking in order to inform or persuade audience members to consider an idea. One of the best ways to build confidence is to know the material being presented "inside out."
- Public speaking is not unlike participating in a conversation. In regular conversations, researchers do not give a second thought to the process of saying something and then waiting for a reply. A public speech follows a similar pattern, but the reply is normally in the form of a non-verbal body language.

There are certain to be various obstacles arise in a presentation.

- Language. Researchers work in fields where there are acronyms and insider jargon. As long as a presenter is 100% certain that everyone in the audience understands some term then it is acceptable to use that term, but if there is any doubt then speakers should defer to common terms. As an example, soldiers may understand a sentence like "I left the CHU in the COP and was heading to the DFAC when a fast mover dropped a JDAM in the village."[2] People who lack military experience would not be able to understand that sentence.
- Culture. Everyone's culture is different and a speaker must understand that the audience's culture may be different enough that communication becomes challenging.

2 "I left the Containerized Housing Unit in the Combat Outpost and was heading to the Dining Facility when a fighter jet dropped a Joint Direct Attack Munition (missle) in the village."

- Role. The speaker and audience may play very different roles in an organization and those roles may create barriers to communication. For example, researchers presenting to a room full of corporate executives would face a much different communications problem than if the room was filled with line workers. Effective speakers must understand the roles of the audience members and then speak in a way that is understandable to those people.
- Goal. Each of the audience members will have a goal in mind when attending the presentation. Occasionally, the goal may only be that they were assigned to attend the presentation; but more often than not, researchers will be presenting at a conference where the audience members select to attend the session. As much as possible, the speaker should attempt to understand the audience members' goals and then address those goals.
- Ethnocentrism. One obstacle to be avoided is for the researcher, or audience members, to exhibit a feeling that they are somehow superior to everyone else. While that can come from ethnicity, it is also a result of scholarly "snobbish" behavior, prejudice, or even stereotypes.

1.3.3 *Visual Aids*

Nearly all research presentations include some sort of visual aid. It is much easier for a speaker to use a graph or chart than to verbally describe some relationship in the data. When preparing visual aids, keep in mind that they should be...

- Big. They need to be large enough to be seen from the back row of the auditorium. For graphs and charts this may be easy enough to arrange since those visuals can be made larger on the screen, but for a physical artifact it may be impossible to magnify it so its utility may be questioned.
- Clear. The visual needs to clearly convey whatever message is intended.
- Simple. There is an old rule of thumb about visual aids: 6 X 6, which means no more than six lines of text and six words per line.
- Consistent. All visuals should use a consistent style so audience members do not have to first learn how to read the graphic but can focus, instead, on the information being presented.

Color is a powerful communication tool, but speakers must be careful with color. First, keep in mind that some audience members will

not be able to distinguish between two or more colors in the visual aid so never use color as the sole information source. Also, avoid using too many colors on one chart, a few well-placed colors are always more powerful than a lot of colors sprinkled seemingly at random around the visual. The following tips may help.

- Keep visual aids simple.
- Use one key idea per slide.
- Avoid clutter, noise, and overwhelming slides.
- Use large, bold fonts that the audience can read from at least twenty feet from the screen.
- Use contrasting colors to create a dynamic effect.
- Use analogous colors to unify your presentation.
- Use clip art with permission and sparingly.
- Edit and proofread each slide with care and caution.
- Use copies of your visuals available as handouts after your presentation.
- Check the presentation room beforehand.
- Have a backup plan in case technology fails, such as providing printed visuals.

1.4 WRITTEN PRESENTATIONS

Written reports that will be read by other scholars generally follow a formal format that is outlined by the publication journal. However, most scholarly reports include an abstract, an introduction, a literature review, a discussion of research methodology, a presentation of findings, and some concluding remarks and discussion about implications of the work. Reports written for scholarly consumption also contain a list of references and many include tables or charts that visually represent some component of the findings. Reading published research in business or economics is an excellent way to develop an understanding of the core components of scholarly research reports and to begin to learn how to write those components.

Reports written for public consumption differ from those written for scholarly consumption. As noted elsewhere in this chapter, knowing the audience is crucial when preparing a written report. Whoever your audience, it is important to keep in mind that scientific evidence is being reported. Writers must take seriously their roles as business researchers and be mindful of their place among peers in the discipline. Findings must be presented as clearly and honestly as possible;

appropriate recognition must be afforded to the scholars who have come before, even if the research raises questions about their work; and readers should be engaged in a discussion about the research and potential avenues for further inquiry. Normally, research writers will never meet the readers face-to-face, but it is beneficial to imagine what the readers would ask and provide a detailed response in the written report.

Finally, it is extremely important to not to commit plagiarism in a research report. Presenting someone else's words or ideas as if they are the researcher's own is among the most egregious transgressions a scholar can commit. Indeed, plagiarism has ended many careers and students' opportunities to pursue degrees[3].

1.4.1 *Writing Style*

Writing generally falls into one of three styles, colloquial, casual, and formal.

1.4.1.1 *Colloquial Style*

Colloquial language is an informal, conversational style of writing. It differs from standard business English in that it often makes use of colorful expressions, slang, and regional phrases. As a result, it can be difficult to understand for an English learner or a person from a different region of the country. Sometimes colloquialism takes the form of a word difference; for example, the difference between a "Coke," a "tonic," a "pop," and a "soda pop" primarily depends on where you live. Colloquial phrases can also take the form of a saying. For example, in certain parts of the United States, the phrases "dumb as a box of rocks" and "sharp as a tack" both refer to a person's intelligence.

Colloquial writing may be permissible, and even preferable, in some business contexts. For example, a marketing letter describing a folksy product such as a wood stove or an old-fashioned popcorn popper might use a colloquial style to create a feeling of relaxing at home with loved ones. Still, it is important to consider how colloquial language appears to the audience. Will the meaning of the chosen words be clear to a reader who is from a different part of the country? Will a folksy tone sound like the writer is "talking down" to the audience? A final point to remember is that colloquial style is not an excuse for using expressions that are sexist, racist, profane, or otherwise offensive.

1.4.1.2 *Casual Style*

Casual language involves everyday words and expressions in a familiar group context, such as conversations with family or close friends. The emphasis is on the communication interaction itself, and less

about the hierarchy, power, control, or social rank of the individuals communicating. Casual communication is the written equivalent of wearing casual attire, like a t-shirt and jeans. When writing for business, a casual style is usually out of place; instead, a respectful, professional tone represents both the researcher and the company well.

1.4.1.3 *Formal Style*

Formal language is communication that focuses on professional expression with attention to roles, protocol, and appearance. It is characterized by professional vocabulary and syntax. That is, writers using a formal style tend to use a more sophisticated vocabulary, a greater variety of words, and more words with multiple syllables, not for the purpose of throwing big words around, but to enhance the formal mood of the document. They also tend to use more complex syntax, resulting in sentences that are longer and contain more subordinate clauses.

The appropriate style for a particular business document may be very formal, or less so. If a subordinate replies to an email from the supervisor, the exchange may be informal in that it is fluid and relaxed, without much forethought or fanfare, but it will still reflect the formality of the business environment. The subordinate will be careful to use an informative subject line, a semi-formal salutation ("Hi Mr. Smith" is typical in e-mails), and a brief discussion about the topic at hand. Probably, the subordinate will also check grammar and spelling before clicking "send."

A formal document such as a proposal or an annual report will involve a great deal of planning and preparation, and its style may not be fluid or relaxed. Instead, it may use distinct language to emphasize the prestige and professionalism of the company. As an example, imagine a marketing letter that will be printed on company letterhead and mailed to a hundred sales prospects. Naturally, the letter should represent the company in a positive light and may include a sentence like "The Widget 300 is our premium offering in the line; we have designed it for ease of movement and efficiency of use, with your success foremost in our mind." But in an e-mail or a tweet, an informal sentence may be used, "W300 – good stapler."

1.4.1.4 *Plagiarism*

Writing in a business context means that writers represent both themselves and the company. While good writing can be part of both the writer's and the company's success, it can also expose the company to unintended consequences and legal responsibility. It is important to keep in mind that the words will keep on existing long after the writer has moved on to other projects. This can become an issue if

the words exaggerate, state false claims, or defame a person or legal entity such as a competing company. Another important issue is plagiarism, which is using someone else's writing without giving credit to the source. Whether the "cribbed" material is taken from a printed book, a Web site, or a blog, plagiarism is a violation of copyright law and will also likely violate company policies.

Closely related to plagiarism is libel, which is the written form of defamation, or a false statement that damages a reputation. If a false statement of fact that concerns and harms the person defamed is published, including publication in a digital or online environment, the author of that statement may be sued for libel. If the person defamed is a public figure they must prove malice or the intention to do harm, but if the victim is a private person, libel applies even if the offense cannot be proven to be malicious. Under the United States First Amendment writers have a right to express opinions, but the words used, and how they are used, are relevant to their interpretation as opinion versus fact. Writers must always be careful to qualify what they write and to do no harm.

1.4.2 *Report Format*

Research reports tend to follow a format that has evolved over many years.

TITLE This should be a concise description of the research findings.

ABSTRACT This is a very brief synopsis of the research findings. The exact size of the abstract is determined by the publisher, but they generally tend to be about 250 words in length.

TABLE OF CONTENTS A TOC is not always used, especially for shorter reports. The publisher would determine if a TOC is important in the report.

INTRODUCTION This is a short description of the research project, why it was pursued and the anticipated result. The research thesis is often included in the introduction. Also, a few brief details of the methods and results is often found in the introduction.

LITERATURE REVIEW This is normally one of the longer parts of the report. It surveys all of the related research in an effort to position the current research in the universe of prior research. Some literature reviews are structured chronologically while others are structured thematically. Regardless, there is a clear indication of where the current research project "fits" among prior research.

METHODOLOGY This is a description of the method used during the research project. It would include information on how the

sampling frame was selected, what sorts of data were gathered, and how those data were analyzed. This should be written thoroughly enough that another researcher could duplicate the project if desired.

RESULTS This details the results of the research project; however, the *interpretation* of the results is normally saved for the "discussion" section of the report.

DISCUSSION This is a discussion about the relevance of the research project and how it fits with other research identified in the literature review. This would also describe any weaknesses of the research project and offer suggestions about how those could have been overcome.

CONCLUSION This is a brief final summary of the entire research project, including the major findings. This would also suggest future research that would complement the current project.

APPENDICES While appendices are not commonly used, when needed they are included at this point in the report.

BIBLIOGRAPHY All references used in the report are fully cited here so a reader could find all original research reports mentioned in the literature review if desired.

While there are almost as many formal research report formats as there are publishers or universities that process those reports, the above is a good general-purpose guideline of the types of sections often needed for publication.

1.5 DISSEMINATING FINDINGS

This section focuses on disseminating the written results of a research project. Dissemination refers to "a planned process that involves consideration of target audiences and the settings in which research findings are to be received and, where appropriate, communicating and interacting with wider policy and... service audiences in ways that will facilitate research uptake in decision-making processes and practice" (Wilson, Petticrew, Calnan, & Natareth, 2010, p. 91). [1] In other words, dissemination of research findings involves careful planning, thought, consideration of target audiences, and communication with those audiences. Writing up results from a research project and having others take notice are two entirely different propositions. In fact, the general rule of thumb is that people will not take notice unless they are encouraged to do so. To paraphrase the classic line from the film *Field of Dreams*, just because you build it does not mean they will come.

Disseminating research findings successfully requires determining who the audience is, where that audience is located, and how to reach them. When considering who the audience is, think about who is likely to take interest in the research project. The audience might include those who do not express enthusiastic interest but might nevertheless benefit from an awareness of the research. Of course, the research participants and those who share some characteristics in common with those participants are likely to have some interest in what was discovered in the course of the research. Other scholars who study similar topics are another obvious audience for the work. Perhaps there are policymakers who should take note of the work. Organizations that do work in an area related to the topic of the research project are another possibility. Finally, any and all inquisitive and engaged members of the public represent a possible audience for the work.

Where the audience is located should be fairly obvious once the composition of that audience is determined. The research participants are known since they were part of the study. Interested scholars can be found at professional conferences and via publications such as professional organizations' newsletters and scholarly journals. Policymakers include state and federal representatives who, at least in theory, should be available to hear a constituent speak on matters of policy interest. Organizations that do work in an area related to the research topic can be found with a simple web search. Finally, disseminating findings to the general public could take any number of forms: a letter to the editor of a local newspaper, a blog, or even a Facebook post.

Finally, determining how to reach the target audience will vary depending on which specific audience is of interest. The strategy should be determined by the norms of the audience. For example, scholarly journals provide author submission instructions that clearly define requirements for researchers wishing to disseminate their work via that journal. The same is true for newspaper editorials; check your newspaper's website for details about how to format and submit letters to the editor. To reach out to political representatives, a call to their offices or a simple web search should information about how to proceed.

Researchers who have conducted high-quality research and have findings that are likely to be of interest to any constituents besides themselves would have a duty as a scholar to share those findings.

1.6 SUMMARY

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Part VI

APPENDIX

GLOSSARY

action research	A research method where actions are taken during the research project with the goal of correcting problems rather than developing a theory. Action research is commonly found in education where a teacher may "try out" some new teaching method with the aim of improving a lesson rather than developing a theory or publishing a peer-reviewed paper. 25
ANOVA	A test used to analyze the difference in three or more groups of samples that are normally distributed. *see* t-test
applied research	Research that is intended to be applied to a situation rather than further the knowledge of some topic. For example, if a researcher completes a project designed to increase the sales of bottled water in a small town it would be considered applied research. *see* basic research
basic research	Research that is intended to be further the knowledge of some topic rather than be applied to a specific situation. For example, if a researcher completes a project designed to refine some aspect of the Law of Supply and Demand it would be considered basic research. *see* applied research
bivariate	A type of analysis involving two variables. Examples of bivariate analysis include finding a correlation and regression. *see* univariate
concurrent validity	The degree that a measure relates to an outcome that is presumed to occur simultaneously. For example, the results of a new employee attitude test would be the same as an older test if those tests have high concurrent validity. *see* predictive validity

construct validity
: The degree to which a test measures what it claims to measure. For example, if a research project purports to investigate some aspect of local farmers' markets, does the project actually research that aspect? Construct validity is sometimes thought to be the overarching type of validity since research projects that do not address the construct of interest can have no other validity. *see* validity

content validity
: A determination of whether a measure correctly assesses the construct's content. For example, if a research project is attempting to determine the drivers for total sales in a store but only measured the price of the merchandise being sold then ignoring factors like advertising, competition, and even the general economy of the region would call into question the content validity of the study. *see* validity

continuous data
: Continuous data are a type of quantitative data that can represent any measured value, including fractions and decimals. In mathematics terms, continuous data are members of the real number system. *see* quantitative data

convergent validity
: The closeness that two measures relate to, "converge on," a single construct. For example, if a research project measures the amount of sales of carbonated drinks, fruit juices, and bottled water in a store it would be expected that those would converge on a construct of "drink sales." *see* discriminant validity

criterion validity
: The degree to which a measure is related to an outcome. *see* validity

cross-sectional
: A type of research that is conducted in a single point in time that crosses multiple analytical units. This is most often in reference to a survey but could be applied to other research methods. For example, a survey of several different small business owners in a single city would be cross-sectional. *see* longitudinal

deductive research
: A research methodology that works from a general theory to specific observations. This is sometimes called the "theory-testing" form of research. 25

dependent variable
: Dependent variables are the outcomes for an observation. For example, if a medical researcher conducts an experiment where a drug is administered and then the patient's blood pressure is measured, the blood pressure reading is the dependent variable; that is, the blood pressure depends on the drug being administered. *see* independent variable

descriptive research
: Research that is designed to describe observed phenomena. The goal is to improve understanding rather than explore new ideas. *see* exploratory research

discrete data
: Discrete data are a type of quantitative data that can be counted with integers. In mathematics terms, discrete data are integers, though negative values are rather rare. *see* quantitative data

discriminant validity
: The degree that a measure does not measure, "discriminates between," one of two competing constructs. For example, a measure of the sale of toiletries in a department store would not be related to the construct of "drink sales." *see* convergent validity

epistomology
: A branch of philosophy that is concerned with the sources of knowledge.. 25

ethnography
: A research method where a culture is studied in depth. Typically, researchers "join" a culture and observe social interactions from within. As a example, a researcher who lives in a commune for several years and then writes about social interactions observed is conducting ethnographic research. 25

explanatory research
: Research that is designed to explain an observed phenomena or process. *see* exploratory research

external validity
: The degree to which a research project's results can be applied outside the context of the study. For example, if the results of a research project that studied manufacturing firms in the mid-west could be applied to firms in the south then that study would have high external validity. *see* validity

face validity
: A determination of whether an indicator is a reasonable measure of an underlying construct "on its face." For example, is the amount of money spent on live theater tickets a measure social class? *see* validity

hawthorne
: An effect first described in the 1950s when Henry A. Landsberger observed workers in the Hawthorne Works electric company. He noticed that when workers thought that they were being observed they tended to work harder and perform better. Thus, the hawthorne effect is the alteration of peoples' behavior when they think that they are being observed. 8

hermeneutics
: The study of the methdology of interpreting texts. This was originally applied to Biblical studies but now includes most humanities like law, history, and philosophy. 12

hypothesis
: A proposed explanation for an observed phenomenon. Often, a hypothesis that may be based on incomplete information is the starting point for further investigation. As an example, if a merchant notices that eye-level shelves tend to need restocking more frequently a hypothesis may be proposed that shoppers purchase goods from eye-level shelves first. 25

independent variable	Independent variables are those that create an observed effect. For example, if a farmer conducts an experiment where different types of fertilizer are applied to two fields in order to see which is more effective then the type of fertilizer is the independent variable; that is, the type of fertilizer is the variable that is creating the observed effect. *see* dependent variable
inductive research	A research methodology that works from specific observations to a general theory. This is sometimes called the "theory-building" form of research. 25
internal validity	The degree to which a research project avoids confounding multiple variables within the study. A project with high internal validity facilitates selecting one explanation over an alternate since the number of confounding variables are controlled. *see* validity
interpretive research	Interpretive research explores an observed phenomenon within its social context in an effort to discern the meaning people ascribe to the action. This type of research is firmly grounded in constructivism where it is believed that reality is shaped by perception rather than a knowable "truth." 25
interval data	Interval data are a type of quantitative data that are measured along a scale where each point is an equal distance from the next. It is possible to compare the distance between two points on an interval scale; for example, the difference between 90 and 100 degrees is the same as the difference between 40 and 50 degrees. However, since an interval scale does not have a zero point, stating 100 degrees is twice as hot as 50 is not possible. *see* quantitative data

longitudinal
: A type of research that is conducted over a long period of time. This is most often in reference to a survey but could be applied to other research methods. For example, repeated surveys over a period of five years of small business owners in a single city would be longitudinal. *see* cross-sectional

meta-analysis
: A research method that examines the data collected from many different studies of the same subject in an attempt to detect trends or overall observations. 13

nominal data
: Nominal data are a type of qualitative data that are grouped but with no order implied in the grouping. As an example, the gender of survey respondents is nominal data. *see* qualitative data

non-probability sampling
: A type of sampling that does not involve a random selection from the population. This is called non-probability sampling since some members of the population have no probability of being selected. *see* probability sampling

nonparametric
: Nonparametric data are data that do not conform to a distribution, are skewed, or are qualitative in nature. Statistical tests that work with nonparametric data are generally less powerful and predictive than tests that work with parametric data. *see* nonparametric

ontology
: The branch of philosophy that is concerned with the nature of reality.. 25

ordinal data
: Ordinal data are a type of qualitative data that are grouped where the groupings have an implied order. As an example, the "satisfaction" rating on a customer survey typically permits respondents to choose from several levels where one level is somehow better than another. *see* qualitative data

paradigm — A pattern or model of how things work in the world. *see* theory

parametric — Parametric data are data that conform to a distribution, usually a normal distribution. Statistical tests that work with parametric data are generally much more powerful and predictive than tests that work with nonparametric data. *see* nonparametric

population — A set of similar items or events of interest to a researcher. For example, the set of small business owners in the United States would be a population. *see* sample

positivist — A researcher who uses positivist techniques on research projects. 25, *see* positivism

predictive validity — The degree to which a measure predicts an outcome. For example, does increasing beer sales (a measure) predict increasing potato chip sales? *see* concurrent validity

probability sampling — A type of sampling that involves a random selection from a population. It is called probability sampling since every member of the population has a probability to be selected. This is frequently called "random sampling" since members of the population are chosen at random. *see* non-probability sampling

qualitative data — Qualitative data approximates or describes attributes that cannot be directly measured, like employee morale, customer relationships, and management effectiveness. Typically, qualitative data attempt to answer questions like "why" and "how come." 26, *see* quantitative data

qualitative research — Qualitative research typically intends to explore observed phenomena with a goal of developing hypotheses and dive deep into a problem. Qualitative data collection involves semi-structured activities like focus groups and ethnographies. 25, *see* quantitative research

quantitative data
: Quantitative data are numeric measurements of attributes, like the number of employees, the median value of housing, and total revenue. Quantitative data are gathered and analyzed using statistical methods. 26, *see* qualitative data

quantitative research
: Quantitative research typically uses numerical data and statistical analysis to find patterns and generalize results to a large population. Quantitative data collection involves structured activities like surveys, interviews, and systematic observations. *see* qualitative research

ratio data
: Ratio data are a type of quantitative data that are measured along a scale where each point is an equal distance from the next and there is a zero point. An example of ratio data is people's heights, which is measured along a uniform scale, e. g.inches or centimeters. Because there is a true zero point, it is possible to determine that one person is twice as tall as another. *see* quantitative data

reliability
: A descriptor for the consistency of a concept's measure. It is desirable to achieve the same, or nearly same, values for each sampling. For example, if the mean age of the people in one sample is 30 while in another is 50 then this would indicate a problem with reliability of the data. *see* validity

sample
: A subset of a population from which data are drawn in order to make inferences about the entire population. *see* population

statistical conclusion validity
: The degree to which the conclusions found in a research project are correct. Studies with high statistical conclusion validity minimize the two types of statistical errors: Type I (finding a correlation when there is none) and Type II (failing to find a correlation when one exists). *see* validity

t-test
: A test used to analyze the difference in two groups of samples that are normally distributed. *see* ANOVA

theory
: A system of ideas that is intended to explain phenomena. Theories that are accepted by scientists have been repeatedly tested and can be used to make accurate predictions. Unlike common usage, a scientific theory is a tested, falsifiable explanation for phenomena. 25, *see* paradigm

translational validity
: The degree to which a construct has been measured by a research project. Translational validity is divided into two types: face and content. *see* validity

univariate
: A type of analysis involving a single variable. Univariate analysis findings include the central measure, standard deviation, and frequency distributions. Graphic tools include box plots for continuous data and bar plots for discrete data. *see* bivariate

validity
: A descriptor of whether a research project is measuring the variable under question. For example, if a project hypothesis is that older men tend to tip more than younger men then the validity of the study would be in question if the researcher only sampled men under the age of 40. *see* reliability

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