I'm not a bot

Published by at August 14th, 2021 , Revised On October 26, 2023 “Deductive reasoning is the procedure for utilising the given information. On the other hand, Inductive reasoning is the procedure of achieving it.” Henry Mayhew. Inductive and deductive reasoning takes into account assumptions and incidents. Here is all you need to know about inductive vs deductive reasoning. Deductive reasoning begins with an assumption and moves from generalised instances to a certain conclusion. On the other hand, inductive reasoning begins with a conclusion and moves from certain incidents to a generalised conclusion. Deductive Reasoning Strategy The deductive reasoning method starts with a theory-driven hypothesis that directs data collection and investigation. If there is an existing theory to explain a specific topic, you form a hypothesis based on that theory that guides data collection and analysis. You might design a particular survey to collect information about a set of variables in your hypothesis which you then evaluate. 1. Existing theory All mangoes are fruits (general statement) All dancers know how to sing. (general statement) 2. Hypothesis All fruits have seeds (general statement) Seems knows how to sing (general statement) 3. Data Collection Collect different types of fruits to see if they have seeds. Collect information about singers and dancers to know how many of them can dance and sing? 4. Conclusion Mangoes have seeds (specific conclusion/confirmation) Hence, Seema is a dancer. (Rejection) Limitations of Deductive Reasoning Deductive reasoning considers no other evidence except the given premises. The conclusion is drawn based on proof. The basic premise needs to be true to draw a positive conclusion about the theory. Example All mangoes are fruits. (Premise) All fruits have seeds. (Premise) Mangoes have seeds. (Conclusion) From the first and second premise in the above example, the third statement is concluded. Great Research/Sources Perfect Language Accurate Sources If not, we can help. Our panel of experts makes sure to keep the 3 pillars of Research Methodology strong. The inductive reasoning method starts with a research-based question and data collection to develop a hypothesis and theory. If you have a research question that is a testable concept, you proceed with data collection about the connection between two or more observations. Based on those observations, you form a hypothesis which you use to evaluate and develop a theory. 1. Research Question Does regular exercise promote maximum weight loss? Are all cats brown? 2. Observation Regular exercise enables maximum weight loss. All cats in this area are brown. 3. Observing Patterns You might begin by collecting relevant data from a group of individuals. Try to understand their views, experiences through conducting surveys and interviews. You can examine cats from different areas to find out if all of them are brown? 4. Confirmation or Rejection Regular exercise promotes maximum weight loss if it is incorporated with a balanced diet and a healthy lifestyle. All cats in this particular area are brown, but all cats are not generally brown. Limitations of Inductive Reasoning Inductive reasoning may be logically true but may or may not be realistically true. Your consequences are likely to be wrong. Example Suppose we take an example of a fruit basket and pick up two raw fruits and assume that all fruits in the basket are raw. It might be apparently true but may not be logically true because there might be ripe fruits along with the raw fruits. Inductive reasoning is the generalised conclusion based on general knowledge by observing a specific outcome. These observations may change or remain constant. It may be logically true or may not be true. Deductive reasoning may seem simple but it can go wrong if the given premise is wrong. However, deductive reasoning concludes based on the given premises and proofs. It is important to implement the logic properly otherwise the entire process of reasoning and its conclusion will be wrong. We use inductive and deductive reasoning in everyday life. We develop beliefs based on our experiences. Both types of reasoning depend on evidence. It helps to get close to the truth. “Never join a group of book burners. You can merely hide evidence, but you can’t suppress the existing truth.” Dwight D. Eisenhower One of the main differences between these two methods is that the conclusion may not be logical and may change. The outcome can be strong or weak but not entirely true or false. We get a new piece of information in the inductive reasoning approach based on the other available information. On the other hand, we don’t get a new piece of information as we already have an existing fact. In deductive reasoning, we already know that our basic information is a fact, and it leads to a new outcome which may be another fact. Whereas in inductive reasoning, the basic information is a hypothesis, and it may sometimes lead to a false conclusion. Inductive reasoning and deductive reasoning depend on the facts and evidence, the search for truth, which can be accepted or rejected. Lawyers and Scientists use facts followed by evidence to prove their statements. However, we can predict the situation based on the collected information, but no one can prove what happened exactly in the past without any strong proof. Example – Arthur Canon Doyle made inductive reasoning prominent. One of his iconic characters ‘Sherlock Holmes’ uses an inductive reasoning approach in his investigations in the quest for truth, which may or may not support a specific incident. Superstitious beliefs are inductive. For instance, it is considered to be a bad omen if a cat crosses someone’s path; it is believed to follow another path to avoid bad luck. It can be sometimes true coincidentally, but we cannot consider it as a logical fact. It happens when someone ignores the good luck experiences and remembers the associated bad experiences to prove an assumption without any strong evidence. The whole legal system is based on inductive reasoning, where a Lawyer’s arguments try to relate the facts based on the evidence to prove their assumption, which can either be strong or weak. One of the main disadvantages of inductive reasoning is that it does not guarantee 100% accuracy. The outcome is likely to be wrong. It turns out to be advantageous if you have incomplete information. Example – All pigeons are white. It is an assumption that needs research based on the shreds of evidence. You need to study pigeons because you haven’t seen all the pigeons. The conclusion may prove your assumption partially wrong as all pigeons are not white, but a few pigeons might be white. “Deductive reasoning is the procedure for utilising the given information. On the other hand, Inductive reasoning is the procedure of achieving it.” Henry Mayhew Inductive reasoning enables you to develop general ideas from a specific logic. You investigate a general hypothesis to get a deep knowledge about it, which enriches your thoughts, enables you to question, and develops an argument, which may not always be true but enriches your perception and knowledge. Deductive reasoning is the opposite of inductive reasoning. As the word ‘deduct’ itself describes that it deducts a specific idea from the general hypothesis. It makes you dependent on the present theory and doesn’t allow you to reason as per your perception because it is already a proven theory which you use to study in detail. “Inductive reasoning makes man master of his environment; it is an achievement.” Mohammed Iqbal It makes it clear that we can’t acquire full knowledge at once. Inductive reasoning gives the ability to question a specific assumption, investigate, and gather evidence to support or reject it based on the consequences. On the other hand, deductive reasoning follows the existing fact without any personal assumption depending on the basics and premises. Hence, both kinds of reasoning methods are used in research and have their specific limitations and advantages depending on the pieces of evidence, facts, and research procedure. Frequently Asked Questions Inductive reasoning involves drawing general conclusions from specific observations or evidence. It moves from specific instances to broader theories without guaranteeing absolute truth. It’s common in scientific research and helps formulate hypotheses based on patterns and trends observed. Inductive reasoning involves drawing general conclusions from specific observations or instances. It goes from specific to general. Deductive reasoning starts with a general statement or hypothesis and examines the possibilities to reach a specific, logical conclusion. It goes from general to specific. Both are critical to scientific and everyday thinking. Inductive reasoning involves drawing general conclusions from specific observations or instances. It goes from specific to general. Deductive reasoning starts with a general statement or hypothesis and examines the possibilities to reach a specific, logical conclusion. It goes from general to specific. Both are critical to scientific and everyday thinking. After observing that the sun rises in the east every morning for years, one concludes that the sun always rises in the east. This is inductive reasoning: drawing a general conclusion from consistent specific observations, even though the observations are not exhaustive or absolute proof of the conclusion. All men are mortal. Socrates is a man. Therefore, Socrates is mortal. This is deductive reasoning: starting with a general principle and applying it to a specific case to reach a logical conclusion. It proceeds from general to specific, ensuring that the conclusion is certain if the premises are true. Inductive reasoning is making broad generalisations from specific observations. Essentially, you observe particular instances and then draw a probable conclusion about the entire group. For example, if all swans you’ve seen are white, you might conclude all swans are white, even if you haven’t seen every swan. About Alvin NicolasNicolas has a master's degree in literature and a PhD degree in statistics. He is a content manager at ResearchProspect. He loves to write, cook and run. Nicolas is passionate about helping students at all levels.View all posts by Alvin Nicolas For example, suppose you are conducting fieldwork with a deductive approach and are examining the effects of waterfalls on local agriculture. In that case, your research question might compel you to collect data primarily about the waterfalls in the area to guide your research toward a specific conclusion. On the other hand, data analysis based on induction might observe a relationship between plant growth and sources of water, guiding additional data collection toward waterfalls and other sources of water. The main idea is that data collection cannot capture all possible phenomena; the reasoning employed by the researcher will determine how the phenomenon is analyzed, which can also inform subsequent data collection and theory development. Whether your data analysis strategy follows inductive logic or deductive logic, ATLAS.ti can help you apply your reasoning to your research data through the data analysis process. At the core of qualitative data analysis is coding, which collects segments of information together so that they are easier to understand. These codes, when organized in a hierarchy, can help you work inductively or deductively and visualize a working theory based on the data and existing knowledge. When it comes to research, there are two distinctly different methods that researchers use to study various phenomena – inductive and deductive research approaches. Inductive research builds on specific observations to provide a bottom-up perspective on which researchers base their conclusions. On the other hand, researchers using a deductive approach arrive at a particular conclusion after examining a general theory. While both approaches have their merits, they are significantly different when it comes to processes and objectives. Combining and employing both approaches enables researchers to develop a more comprehensive understanding of the subject. In this article, we will explain the inductive and deductive research approaches, examine their key differences, and understand how they are used. Inductive Research Approach The inductive research approach is often used in exploratory research to learn more about a new or unfamiliar topic. When using an inductive approach, researchers start with a particular observation and look for patterns and trends to develop a theory about the phenomenon being studied. This approach is commonly associated with qualitative research methods that aim to derive general principles and theories from specific observations or data. Take, for example, a researcher who is interested in conducting exploratory research on the behavioral changes of children due to prolonged online classes during the pandemic. Define the research question: In this instance, the researcher can survey households with children in the 6 to 12 age group. The survey should be designed to specifically elicit responses on the child’s emotional and behavioral changes before and after the pandemic. Data that is generated from the survey will form the basis of the researcher’s observations. Collect data and identify patterns: Once the data has been collected, it needs to be analyzed. The researcher will need to look for patterns and trends that can be used to develop a hypothesis about the phenomenon being studied. For example, he may find that children have become irritable and withdrawn while attending online classes during the pandemic. Conclude: The final step typically includes a summary of the research question, a description of data collection methods, an analysis of the data, and a discussion of the findings. Normally, the conclusions are not definitive but serve as a starting point for further investigation. Deductive research approach Unlike inductive reasoning, deductive research is used to test an existing theory. It is also often called confirmatory research and is driven by the scientific method. This approach is usually associated with quantitative research. Let’s take a look at the example below. Define the research question: The first step in deductive research is to define the research question. It should be something that can be answered with empirical data. As an example, ‘Is the rising cost of petrol leading people to switch to electric cars?’ Develop a hypothesis: The hypothesis should be based on the researcher’s knowledge of the topic being studied and should predict the outcome of the study. So, in the example provided, the hypothesis is ‘Those with electric vehicles save more than those using petrol or diesel cars.’ Collect data to test the hypothesis: Data can be collected through different methods, including surveys, interviews, and observations from a specific study set. In this case, data can be gathered from households in a specific locality who use electric and non-electric cars. Once the data has been collated, it must be analyzed to determine whether the results support the hypothesis. Examining and reporting the outcome: The final step will be to write the research report based on which the hypothesis can be accepted or rejected. If the hypothesis is confirmed, researchers can refine and enhance the existing theories. If the hypothesis is not supported, they may need to revise or develop new theories to explain the research question. Combining inductive and deductive research approaches While inductive and deductive approaches differ in their process and objectives, they are not mutually exclusive. Researchers handling large projects usually choose to utilize both. There can also be cases where a researcher begins with one approach but later combines it with the other to enrich the research study. This helps them develop more effective solutions to problems and make better decisions. The choice of taking either the inductive or deductive research approach depends a great deal on the availability of relevant literature and theories. In instances where data sources are readily available, researchers may prefer a deductive approach, while limited sources mean that an inductive research approach would work better. However, both approaches present a chance for research to be tinged with bias. Therefore, researchers must be vigilant in ensuring that they do not consciously lean towards their ideas as they process insights and data collected during research. Editage All Access is a subscription-based platform that unifies the best AI tools and services designed to speed up, simplify, and streamline every step of a researcher’s journey. The Editage All Access Pack is a one-of-a-kind subscription that unlocks full access to an AI writing assistant, literature recommender, journal finder, scientific illustration tool, and exclusive discounts on professional publication services from Editage. Based on 22+ years of experience in academia, Editage All Access empowers researchers to put their best research forward and move closer to success. Explore our top AI Tools pack, AI Tools + Publication Services pack, or Build Your Own Plan. Find everything a researcher needs to succeed, all in one place – Get All Access now starting at just $14 a month! The terms “inductive” and “deductive” are often used in logic, reasoning, and science. Scientists use both inductive and deductive research methods as part of the scientific method. Famous fictional detectives like Sherlock Holmes are often associated with deduction, even though that’s not always what Holmes does (more on that later). Some writing classes include both inductive and deductive essays. But what’s the difference between inductive vs deductive research? The difference often lies in whether the argument proceeds from the general to the specific or the specific to the general. Both methods are used in different types of research, and it’s not unusual to use both in one project. In this article, we’ll describe each in simple yet defined terms. What is inductive research? Stages of inductive research process What is deductive research? Stages of deductive research process Difference between inductive vs deductive research Conclusion Inductive research is a method in which the researcher collects and analyzes data to develop theories, concepts, or hypotheses based on patterns and observations seen in the data. It uses a “bottom-up” method in which the researcher starts with specific observations and then moves on to more general theories or ideas. Inductive research is often used in exploratory studies or when not much research has been done on a topic before. LEARN ABOUT: Research Process Steps The three steps of the inductive research process are: The first step of inductive research is to make detailed observations of the studied phenomenon. This can be done in many ways, such as through surveys, interviews, or direct observation. The next step is to look at the data in detail once the data has been collected. This means looking at the data for patterns, themes, and relationships. The goal is to find insights and trends that can be used to make the first categories and ideas. At this stage, the researcher will start to create initial categories or concepts based on the patterns and themes from the data analysis. This means putting the data into groups based on their similarities and differences to make a framework for understanding the thing being studied. LEARN ABOUT: Data Management Framework These three steps are often repeated in a cycle, so the researcher can improve their analysis and understand the phenomenon over time. Inductive research aims to develop new theories and ideas based on the data rather than testing existing theories, as in deductive research. Deductive research is a type of research in which the researcher starts with a theory, hypothesis, or generalization and then tests it through observations and data collection. It uses a top-down method in which the researcher starts with a general idea and then tests it through specific observations. Deductive research is often used to confirm a theory or test a well-known hypothesis. The five steps in the process of deductive research are: Formulation of a hypothesis: The first step in deductive research is to develop a hypothesis and guess how the variables are related. Most of the time, the hypothesis is built on theories or research that have already been done. Design of a research study: The next step is designing a research study to test the hypothesis. This means choosing a research method, figuring out what needs to be measured, and figuring out how to collect and look at the data. Once the research design is set, different methods, such as surveys, experiments, or observational studies, are used to gather data. Usually, a standard protocol is used to collect the data to ensure it is correct and consistent. In this step, the collected data are looked at to see if they support or disprove the hypothesis. The goal is to see if the data supports or refutes the hypothesis. You need to use statistical methods to find patterns and links between the variables to do this. The last step is drawing conclusions from the analysis of the data. If the hypothesis is supported, it can be used to make generalizations about the population being studied. If the hypothesis is wrong, the researcher may need to develop a new one and start the process again. The five steps of deductive research are repeated, and researchers may need to return to earlier steps if they find new information or new ways of looking at things. In contrast to inductive research, deductive research aims to test theories or hypotheses that have already been made. The main differences between inductive and deductive research are how the research is done, the goal, and how the data is analyzed. Inductive research is exploratory, flexible, and based on qualitative observation analysis. Deductive research, on the other hand, is about proving something and is structured and based on quantitative analysis. Here are the main differences between inductive vs deductive research in more detail: TopicsInductive researchTopicsDeductive researchBottom-upapproachIn inductive research, the researcher starts with data and observations, then uses data patterns to develop theories or generalizations. This is a bottom-up approach in which the researcher builds from specific observations to more general theories.Top-down approachIn deductive research researcher starts with a theory or hypothesis, then tests it through observations and gathering data.This is a top-down approach in which the researcher tests a theory or generalization using specific observations.Develops theories from observationsIn inductive research, theories or generalizations are made based on what has been seen and how it has been seen. The goal is to create theories explaining and making sense of the data.Tests theories through observationsDeductive research aims to use real-world observations to test theories or hypotheses.The person doing the research gathers data to prove or disprove the theory or hypothesis.Used in exploratory studiesInductive research is often used to learn more about a phenomenon or area of interest when there is a limited amount of previous research on the subject. With this method, new theories and ideas can be made from the data.Used in confirmatory studiesResearchers often use deductive research when they want to test a well-known theory or hypothesis and either prove or disprove it.This method works best when the researcher has a clear research question and wants to test a specific hypothesis.Flexible and adaptable to new findingsInductive research is flexible and open to new information because researchers can change their theories and hypotheses based on their findings. This method works best when the research question is unclear, or unexpected results arise.Structured and systematicDeductive research is structured and methodical because it uses a research design and method that have already been decided upon.This method starts with a clear plan for the research, making it easier to collect and analyze data more objectively and consistently.Relies more on qualitative analysisInductive research uses more qualitative analysis, like textual or visual analysis, to find patterns and themes in the data.Relies more on quantitative analysisDeductive research uses more quantitative methods, like statistical analysis, to test and confirm the theory or hypothesis. This method uses numbers to test the theory or hypothesis and draw objective conclusions. LEARN ABOUT: Theoretical Research Inductive research and deductive research are two different types of research with different starting points, goals, methods, and ways of looking at the data. Inductive research uses specific observations and patterns to come up with new theories. On the other hand, deductive research starts with a theory or hypothesis and tests it through observations. Both approaches have advantages as well as disadvantages and can be used in different types of research depending on the question and goals. QuestionPro is a responsive online platform for surveys and research that can be used for both inductive and deductive research. It has many tools and features to help you collect and analyze data, such as customizable survey templates, advanced survey logic, and real-time reporting. With QuestionPro, researchers can do surveys, send them out, analyze the results, and draw conclusions that help them make decisions and learn more about their fields. The platform has advanced data analysis and reporting tools that can be used with both qualitative and quantitative methods of data analysis. Whether researchers do inductive or deductive research, QuestionPro can help them design, run, and analyze their projects completely and powerfully. So sign up now for a free trial! How you analyze qualitative data depends largely on your methodology, your personal organizational and analytic preferences, and what kind of data you have. That being said, all qualitative data analysis processes are going to fall into one of two categories: deductive or inductive. In this post, I’m going outline what each of those terms mean for qualitative analysis, and discuss some general deductive and inductive analytic strategies. Some of what appears here comes from a book chapter I wrote with Dr. Patty Witkowsky on inductive and deductive approaches to qualitative data analysis. The chapter appears in Vanover, Mihas, and Saldaña’s book Analyzing and Interpreting Qualitative Research: After the Interview. I have also recently published another article that expands on the ideas presented here. This article will help you further develop your qualitative data analysis skills.The material presented here can be cited as:Bingham, A.J. (2023). From data management to actionable findings: A five-phase process of qualitative data analysis. International Journal of Qualitative Methods. A.J., & Witkowsky, P. (2022). Deductive and inductive approaches to qualitative data analysis. In C. Vanover, P. Mihas, & J. Saldaña (Eds.), Analyzing and interpreting qualitative data: After the interview (pp. 133-146). SAGE Publications.Deductive AnalysisDeductive, or a priori, analysis generally means applying theory to the data to test the theory. It’s a kind of “top-down” approach to data analysis. In qualitative analysis, this often means applying predetermined codes to the data. The codes can be developed as strictly organizational tools, or they can be created from concepts drawn from the literature, from theory, or from propositions that the researcher has developed.Deductive analysis can help you to: Sort data into organizational categories, such as data type, participant, or time period. To do this, you can develop attribute codes (Miles et al., 2020) to organize your data. These attribute codes are applied to categorize your data by data type (e.g., “interview”), location (e.g., “Binary High School”), participant (e.g., “Mr. Perez”), time period (e.g., “Fall 2017”), etc. I generally do this as a first cycle of coding to create an organizational schema.Organize data into categories to maintain alignment with research questions. Deductive analysis can help you maintain focus on the purpose of your research. Qualitative data can get…unwieldy. So, it’s helpful to have a plan to stay focused on your research questions. To do this, during my first read-through of my data, I create broad topical categories of interest based on my research questions and then sort the data into those categories. For example, if I’m doing study of how teachers’ implement technology-facilitated competency-based learning practices in their classrooms, I might develop the codes “Classroom practice,” “Assessment,” “Technology,” and “Data use” to reflect the broad topics of my research. I then sort the data into those categories, which allows me to focus on relevant data in subsequent rounds of analysis.Apply theoretical or conceptual frameworks. Deductive practices can also help researchers to apply theory or conceptual frameworks. For me, this process generally comes after I do some inductive analysis of my data to identify themes, but you could draw on these strategies at really any point in the analysis process. For my process, I create codes based on the components of my theoretical framework, and then sort my data into those predetermined theory-based categories. Theory-based codes from institutional theory, for example, might include “Isomorphism” or “Decoupling.”Inductive AnalysisInductive analysis, on the other hand, is a more emergent strategy, where the researcher reads through the data and allows codes to emerge/names concepts as they emerge. It’s more of a “bottom-up” analytic strategy. There are many forms of inductive analysis, but some common practices are open coding (sometimes called initial coding), in vivo coding (codes developed from participants’ own words), and constant comparative analysis. Memoing plays a key role for me as well. I memo to keep track of my analysis process and the decisions I make and to make sense of the data I’m reading. I also keep a running memo of the themes and findings I am starting to see, and I have a memo where I keep interesting or generative participant quotes or excerpts from field notes, and any evidence relevant for my themes and findings as they develop.Inductive analysis can help you to:Make meaning from the data. Because I typically use some deductive coding strategies to organize my data first, and sort it into categories that are relevant to my study purpose, my inductive analysis process generally starts after I’ve already done a pass through my data. However, you could start with inductive analysis (though I still recommend some attribute coding first to help you keep organized). When I start my cycle of inductive analysis, I finally begin to make meaning of the data I have. For me, this generally starts with open coding - a pretty classic form of qualitative coding during which the researcher reads through the data and develops and applies codes as they go, to represent what’s happening in the data. I read through the data in each category I created in my first round of deductive coding, creating and applying codes and identifying emerging topics or concepts as I read. I then use what’s called “pattern coding” to identify patterns across and within data sources. This is a process of condensing the codes created during open coding to chunk the data into fewer analytic concepts. This helps me begin to summarize the data. Develop themes and findings. The key purpose of inductive analysis is to really dig into what is happening in the data, to understand the themes present in the data and to produce findings to answer your research questions. In my analysis process, I identify themes from the pattern codes through memoing and further condensing the pattern codes where I can. I then try to capture the themes in short phrases like “Real time data use” or “technology-facilitated competency-based assessment.” Many qualitative researchers use the words “themes” and “findings” interchangeably, which works for them. For me, I like to differentiate. My themes are usually words or phrases, and I develop my findings from those themes, by condensing and rewording the themes into short phrases that clearly answer the research questions. For example, “Teachers relied on real time data use to implement competency-based learning” would be a finding for the research question “How do teachers implement competency-based learning in their classrooms?”Identify representative data to support findings. Throughout my analysis process, I will often develop in vivo codes from participants’ own words to point to data that is representative of particular findings. I also keep a running memo of participant quotes and excerpts from field notes, etc., as well as a memo of my emerging findings, where I will note representative evidence and write deeper descriptions and explanations. This process helps me to keep track of important evidence, and gives me a place to free write about my findings. I am a person who thinks best through writing, so I find this memoing process especially critical.Explain findings using theory and literature. During one of my deductive cycles of coding mentioned above, I apply codes based on my theoretical framework(s) and/or the existing literature. But that doesn’t go far enough in terms of really applying theory and using it to make sense of and explain the findings (and write the discussion section). So, after the deductive cycle of coding in which I sort the data into theory-based categories, I do some inductive analysis, where I memo to develop short phrases that connect my findings with theory and existing literature. Though coding forms the basis for most of my analysis, memoing in this cycle helps me understand what it all means and why anyone should care about it. Combining deductive and inductive coding and memoing supports the development of the discussion and implications sections. It also helps you to understand your findings in relation to existing research, examine how the theoretical framework explains the findings (and where it doesn’t, which allows for theoretical contributions), and can support you in providing actionable, meaningful implications and recommendations.As I see it, both deductive and inductive strategies are important in qualitative analysis, so in my work, I draw on both. I use deductive strategies to organize and focus myself, and I use inductive strategies to understand what is happening in the data, without forcing the data into what I think I’ll see. In short, a data analysis process that draws on both deductive and inductive analysis supports a more organized, rigorous, and analytically sound qualitative study. See below for an example of how I organize deductive and inductive analytic practices into cycles. This figure, adapted from Bingham & Witkowsky (2022) and Bingham (2023), gives an overview of my analysis process. Five cycles, encompassing both deductive and inductive processes. I’ve got a new book out with Routledge that focuses on how theoretical and conceptual frameworks can be applied in research. In this book, we explore a variety of theories and further discuss their application in data collection and analysis. Please take a look!The material presented here can be cited as:Bingham, A.J., & Witkowsky, P. (2022). Deductive and inductive approaches to qualitative data analysis. In C. Vanover, P. Mihas, & J. Saldaña (Eds.), Analyzing and interpreting qualitative data: After the interview (pp. 133-146). SAGE Publications.Bingham, A.J. (2023). From data management to actionable findings: A five-phase process of qualitative data analysis. International Journal of Qualitative Methods. Describe the inductive approach to research, and provide examples of inductive research Describe the deductive approach to research, and provide examples of deductive research Describe the ways that inductive and deductive approaches may be complementary Theory structures and informs social work research. Conversely, social work research structures and informs theory. Students become aware of the reciprocal relationship between theory and research when they consider the relationships between the two in inductive and deductive approaches. In both cases, theory is crucial but the relationship between theory and research differs for each approach. Inductive and deductive approaches to research are quite different, but they can also be complementary. Let’s start by looking at each one and how they differ from one another. Then we’ll move on to thinking about how they complement one another. Inductive approaches and some examples When a researcher utilizes an inductive approach, they begin by collecting data that is relevant to their topic of interest. Once a substantial amount of data have been collected, the researcher will take a break from data collection to step back and get a bird’s eye view of their data. At this stage, the researcher looks for patterns in the data, working to develop a theory that could explain those patterns. Thus, when researchers take an inductive approach, they start with a set of observations and then they move from those particular experiences to a more general set of propositions about those experiences. In other words, they move from data to theory, or from the specific to the general. Figure 6.1 outlines the steps involved with an inductive approach to research. Figure 6.1 Inductive research There are many good examples of inductive research, but we’ll look at just a few here. One fascinating study in which the researchers took an inductive approach is Katherine Allen, Christine Kaestle, and Abbie Goldberg’s (2011) study of how boys and young men learn about menstruation. To understand this process, Allen and her colleagues analyzed the written narratives of 23 young men in which the men described how they learned about menstruation, what they thought of it when they first learned about it, and what they think of it now. By looking for patterns across all 23 men’s narratives, the researchers were able to develop a general theory of how boys and young men learn about this aspect of girls’ and women’s biology. They conclude that sisters play an important role in boys’ early understanding of menstruation, that menstruation makes boys feel somewhat separated from girls, and that as they enter young adulthood and form romantic relationships, young men develop more mature attitudes about menstruation. Note how this study began with the data—men’s narratives of learning about menstruation—and tried to develop a theory. In another inductive study, Kristin Ferguson and colleagues (Ferguson, Kim, & McCoy, 2011) analyzed empirical data to better understand how best to meet the needs of young people who are experiencing homelessness. The authors analyzed data from focus groups with 20 young people at a homeless shelter. From these data they developed a set of recommendations for those interested in applied interventions that serve youth that are experiencing homelessness. The researchers also developed hypotheses for people who might wish to conduct further investigation of the topic. Though Ferguson and her colleagues did not test the hypotheses that they developed from their analysis, their study ends where most deductive investigations begin: with a theory and a hypothesis derived from that theory. Deductive approaches and some examples Researchers taking a deductive approach will start with a compelling social theory and then test its implications with data. In other words, they utilize the same steps as inductive research, but they will reverse the order, moving from general to more specific levels. Deductive research approach is most associated with scientific investigation. The researcher studies what others have done, reads existing theories of whatever phenomenon they are studying, and then tests hypotheses that emerge from those theories. Figure 6.2 outlines the steps involved with a deductive approach to research. Figure 6.2 Deductive research Although not all social science researchers utilize a deductive approach, there are some excellent, recent examples of deductive research. We’ll take a look at a couple of those next. In a study of US law enforcement responses to hate crimes, Ryan King and colleagues (King, Messner, & Baller, 2009) hypothesized that law enforcement’s response would be less vigorous in areas of the country that had a stronger history of racial violence. The authors developed their hypothesis from their reading of prior research and theories on the topic. They tested the hypothesis by analyzing data on states’ lynching histories and hate crime responses. Overall, the authors found support for their hypothesis. One might associate this research with critical theory. In another recent deductive study, Melissa Milkie and Catharine Warner (2011) studied the effects of different classroom environments on first graders’ mental health. Based on prior research and theory, Milkie and Warner hypothesized that negative classroom features, such as a lack of basic supplies and even heat, would be associated with emotional and behavioral problems in children. One might associate this research with systems theory. The researchers found support for their hypothesis, demonstrating that policymakers should be more attentive to the mental health outcomes of children’s school experiences, just as they track academic outcomes (American Sociological Association, 2011). Complementary approaches While inductive and deductive approaches to research seem quite different, they can be rather complementary. In some cases, researchers will plan for their study to include multiple components, one inductive and the other deductive. In other cases, a researcher might begin their study planning to utilize only one approach but then discover along the way that the other approach is needed to help illuminate findings. Here is an example of each such case. The original author of the textbook from which this textbook is adapted, Dr. Amy Blackstone, relates a story about her collaborative research on sexual harassment. We began the study knowing that we would like to take both a deductive and an inductive approach in our work. We therefore administered a quantitative survey, the responses to which we could analyze in order to test hypotheses, and also conducted qualitative interviews with a number of the survey participants. The survey data were well suited to a deductive approach; we could analyze those data to test hypotheses that were generated based on theories of harassment. The interview data were well suited to an inductive approach; we looked for patterns across the interviews and then tried to make sense of those patterns by theorizing about them. For one paper (Uggen & Blackstone, 2004), we began with a prominent feminist theory of the sexual harassment of adult women and developed a set of hypotheses outlining how we expected the theory to apply in the case of younger women’s and men’s harassment experiences. We then tested our hypotheses by analyzing the survey data. In general, we found support for the theory that posited that the current gender system, in which heteronormative men wield the most power in the workplace, explained workplace sexual harassment—not just of adult women but of younger women and men as well. In a more recent paper (Blackstone, Houle, & Uggen, 2006), we did not hypothesize about what we might find but instead inductively analyzed interview data, looking for patterns that might tell us something about how or whether workers’ perceptions of harassment change as they age and gain workplace experience. From this analysis, we determined that workers’ perceptions of harassment did indeed shift as they gained experience and that their later definitions of harassment were more stringent than those they held during adolescence. Overall, our desire to understand young workers’ harassment experiences fully—in terms of their objective workplace experiences, their perceptions of those experiences, and their stories of their experiences—led us to adopt both deductive and inductive approaches in the work. (Blackstone, n.d., p. 21) Researchers may not set out to employ both approaches in their work, but sometimes their use of one approach leads them to the other. One such example is described eloquently in Russell Schutt’s Investigating the Social World (2006). As Schutt describes, researchers Lawrence Sherman and Richard Berk (1984) conducted an experiment to test two competing theories of the effects of punishment on deterring deviance (in this case, domestic violence). Specifically, Sherman and Berk hypothesized that deterrence theory would provide a better explanation of the effects of arresting accused batterers than labeling theory. Deterrence theory predicts that arresting an accused spouse batterer will reduce future incidents of violence. Conversely, labeling theory predicts that arresting accused spouse batterers will increase future incidents. Figure 6.3 summarizes the two competing theories and the predictions that Sherman and Berk set out to test. Figure 6.3 Predicting the effects of arrest on future spouse battery After conducting an experiment with the help of local police, Sherman and Berk found, that arrest did deter future incidents of violence, thus supporting their hypothesis that deterrence theory would better predict the effect of arrest. After conducting this research, they and other researchers went on to conduct similar experiments in six additional cities (Berk, Campbell, Klap, & Western, 1992; Pate & Hamilton, 1992; Sherman & Smith, 1992). The follow-up studies yielded mixed results. In some cases, arrest deterred future incidents of violence while in other cases, arrest did not. These results left the researchers with new data that they needed to explain, so they utilized an inductive approach to make sense of their latest empirical observations. The new studies revealed that arrest has a deterrent effect on individuals that are married and employed, while arrest may encourage future battering offenses in individuals that are unmarried and unemployed. Researchers thus turned to control theory to explain their observations, as it predicts that stakes in conformity are developed through social ties like marriage and employment. Figure 6.4 Predicting the effects of arrest on future spouse battery: A new theory Sherman and Berk’s research and the associated follow-up studies demonstrate that researchers can start with a deductive approach and move to inductive approach when confronted with new data that must be explained. The inductive approach begins with a set of empirical observations, seeking patterns in those observations, and then theorizing about those patterns. The deductive approach begins with a theory, developing hypotheses from that theory, and then collecting and analyzing data to test those hypotheses. Inductive and deductive approaches to research can be employed together for a more complete understanding of the topic that a researcher is studying. Though researchers don’t always set out to use both inductive and deductive strategies in their work, they sometimes find that new questions arise in the course of an investigation that can best be answered by employing both approaches. Deductive approach– when a researcher studies what others have done, reads existing theories of whatever phenomenon they are studying, and then tests hypotheses that emerge from those theories Inductive approach– when a researcher starts with a set of observations and then moves from particular experiences to a more general set of propositions about those experiences Inductive research involves deriving generalizations from specific observations, while deductive research involves testing hypotheses based on existing theories. Inductive vs Deductive Research is a common topic in research methodology, referring to two distinct approaches to data analysis. Both methods have their unique advantages and disadvantages, and choosing the right approach can greatly impact the results of a research study. What is Inductive Research? Inductive research is a research approach that involves gathering and analyzing data to develop a theory or hypothesis. In this approach, researchers begin with specific observations and data and then work toward more general theories and conclusions. This research is often used when little is known about a topic or when there is no existing theory to explain the observations being made. The goal of inductive research is to develop a theory grounded in data and use it to explain patterns or relationships in the data. Process of Inductive Research The process of inductive research involves the following steps: Data collection: The first step in inductive research is to collect data. This can be done through a variety of methods, including interviews, observations, surveys, and document analysis. Data analysis: Once the data has been collected, the next step is to analyze it. This involves identifying patterns and themes within the data. Inductive research relies heavily on qualitative data analysis methods, such as coding and thematic analysis. Identification of themes: After analyzing the data, the researcher will begin to identify themes that emerge from the data. These themes represent patterns or commonalities within the data. Development of theories: Once themes have been identified, the researcher will begin to develop theories or explanations for these patterns. Theories are grounded in the data and are used to explain the phenomena that have been observed. Reporting of findings: The final step in the inductive research process is to report the findings. This can be done through a variety of formats, including academic papers, presentations, and reports. The reporting of findings should be grounded in the data and should clearly explain the theories that have been developed. What is Deductive Research? Deductive research is a form of research that begins with a theory or hypothesis and seeks to test its validity through the collection and analysis of data. The researcher starts with a general theory or idea and then develops specific hypotheses based on that theory. These hypotheses are then tested through the collection of data, which is analyzed to determine whether it supports or refutes the initial theory or hypotheses. Deductive research is often used in quantitative research, where data is collected through structured methods such as surveys, experiments, or statistical analysis. Process of Deductive Research The process of deductive research typically involves the following steps: Formulation of a research question or hypothesis: This step involves the identification of a research question or hypothesis based on existing theory or knowledge. Development of a research design: Once the research question or hypothesis has been formulated, the next step is to develop a research design that outlines the methods and procedures that will be used to test the hypothesis. Data collection: This step involves the collection of data using methods that are appropriate for the research design. For example, if the research design involves a survey, then data will be collected through the use of questionnaires. Data analysis: Once the data has been collected, the next step is to analyze it in order to test the hypothesis. This involves the use of statistical techniques and other methods of analysis to determine whether the data supports or refutes the hypothesis. Interpretation of results: The final step in the process of deductive research involves the interpretation of the results. This involves drawing conclusions based on the analysis of the data and determining whether the hypothesis has been supported or refuted. Pros and Cons of Inductive Research ProsConsAllow the exploration of new ideas and perspectives.May not produce replicable results.Can lead to the development of new theories.Findings may be subject to researcher bias.Provides rich and detailed data.May not be suitable for testing specific hypotheses.Flexible and adaptable to changing research needs.Requires large sample sizes to establish general patterns.Well-suited to qualitative research methods.Analysis can be time-consuming and resource-intensive.Can capture the complexity of real-world phenomena.May not establish causality.Allows for the discovery of unexpected findings.May not generalize to larger populations or contexts.This can lead to the development of new research questions.Findings may be difficult to interpret or explain.Can incorporate the perspectives of participants.May be difficult to standardize methods across studies.Can be used to generate hypotheses or theories.May not be suitable for making concrete predictions.Can be used to study complex social phenomena.May be subject to errors or inconsistencies in data collection. ProsConsAllow for testing of specific hypotheses.May not capture the complexity of real-world phenomena.Results are often replicable and reliable.Can be limited in exploring new ideas and perspectives.Statistical analyses can establish causality.May overlook important contextual factors or outliers.Well-suited to quantitative research methods.Requires a priori knowledge or assumptions.Results can inform evidence-based practices.Can be resource-intensive and time-consuming to conduct.Offers precise and quantitative data.Can suffer from measurement errors or inaccuracies.Can provide data that can be generalized to a population.May not capture individual experiences or variability.Allows for control of extraneous variables.May not reflect real-world situations or environments.Can lead to theoretical advancements.May not be able to account for all possible variables.Can be used to confirm or refute existing theories.Can be influenced by researcher bias or assumptions.Provides clear and structured research protocols.May not be suitable for studying subjective experiences. A researcher observes patterns in the behavior of a particular group of individuals and uses those patterns to develop a theory about the underlying psychological processes that drive their behavior. A researcher conducts a series of interviews with patients who have recovered from a particular disease and uses the information obtained to generate hypotheses about the potential causes of the disease

research approach is a procedure selected by a researcher to collect, analyze, and interpret data. Based on the methods of data collection and data analysis, research approach methods are of three types: quantitative, qualitative, and mixed methods. However, considering the general plan and procedure for conducting a study, the research approach is divided into three categories: 1. Inductive Approach The inductive approach begins with a researcher collecting data that is relevant to the research study. Post-data collection, a researcher will analyze this data broadly, looking for patterns in the data to develop a theory that could explain the patterns. Therefore, an inductive approach starts with a set of observations and then moves toward developing a theory. 2. Deductive Approach The deductive approach is the reverse of the inductive approach. It always starts with a theory, such as one or more general statements or premises, and reaches a logical conclusion. Scientists use this type of reasoning approach to prove their research hypothesis. 3. Abductive Approach This type of reasoning approach is set to answer the weakness associated with deductive and inductive approaches. While following the abductive reasoning approach, researchers start the process with surprising facts or puzzles while studying some empirical phenomena which cannot be explained with the existing theories. Abductive reasoning will assist researchers in explaining the facts or puzzles. Despite its popularity, the abductive approach is challenging to implement and researchers are advised to use traditional deductive or inductive approaches. Inductive Vs Deductive Reasoning Inductive Reasoning Deductive Reasoning Inductive reasoning, also called induction, constructs or evaluates general prepositions derived from specific examples Deductive reasoning is the process of reasoning from general statements to reach a logical conclusion Arguments in inductive reasoning are strong or weak. · Strong arguments are cogent if the premise is true. · Weak arguments are uncogent. Arguments in deductive reasoning are valid or invalid. · If the logic is correct, then the argument is valid. · If there is no theory, then deductive reasoning cannot be conducted. Conclusions may be incorrect even with strong arguments and true premises. Conclusions could be proven valid if the premises are true. Example of Inductive Reasoning: Most men are right-handed. John is a man. Therefore, John must be right-handed. Example of Deductive Reasoning: All men are mortal. John is a man. Therefore, John is mortal. What Is Inductive Reasoning? Inductive reasoning moves away from more specific observations to broader generalizations and theories. Usually, this is against the scientific method, an empirical method of acquiring results based on experimental findings. Inductive reasoning makes generalizations by observing patterns and drawing inferences. Inductive reasoning is based on strong and weak arguments. When the premise is true then the conclusion of the argument is likely to be true. Such an argument is termed a strong or cogent argument. Meanwhile, weak arguments may be false even if the premises they are based upon are true. An argument is a cogent argument if it is weak or the premise is false. Types of Inductive Reasoning 1. Inductive Generalization Inductive generalization uses observations about a sample to conclude the population from which the sample was chosen. In simple terms, you use statistical results from samples to make statements about populations. One can evaluate large samples or random sampling using inductive generalizations. 2. Statistical Generalization Statistical generalization uses specific numbers to create statements about populations. This generalization is a subtype of inductive generalization, and it is also termed statistical syllogism. 3. Causal Reasoning Causal reasoning links cause and effect between different aspects of the research study. A casual reasoning statement starts with a premise about two events that occur simultaneously, followed by choosing a specific direction of causality or refuting any other direction, and concluding a causal statement about the relationship between two things. 4. Sign Reasoning Sign reasoning makes correlational connections between different things. Inductive reasoning works on a correlational relationship where nothing causes the other thing to occur. However, sign reasoning proposes that one event may be a ‘sign’ to impact another event’s occurrence. 5. Analogical Reasoning Analogical reasoning concludes something based on its similarities to another thing. It links two things together and then concludes based on the attributes of one thing which holds for another thing. Analogical reasoning could be literal or figurative. However, literal comparison usually uses a much stronger case while reasoning. Stages of Inductive Research Approach Begin with an observation Seek patterns in the observation Develop a theory or preliminary conclusion based on the patterns observed Limitations of an Inductive Approach A conclusion drawn based on inductive reasoning cannot be proven completely, but it can be invalidated. What Is Deductive Reasoning? Deductive reasoning starts with one or more general statements to derive a logical conclusion. Moreover, while conducting deductive research, a researcher starts with a theory. This theory could be derived from inductive reasoning. The approach of deductive reasoning is used to test the stated theory. If the general statement or theory is true, the conclusion derived is valid and vice-versa. Deductive reasoning produces arguments that may be valid or invalid. If the logic is correct, conclusions flow from the general statement or theory and the arguments are valid. Researchers use deductive reasoning to prove their hypotheses. However, if there is no theory yet, then one cannot conduct deductive research. Types of Deductive Reasoning There are three common types of deductive reasoning: 1. Syllogism Syllogism takes two conditional statements and forms a conclusion by combining the hypothesis of one statement with the conclusion of another. For example — 2. Modus Ponens Modus ponens is another type of deductive reasoning that follows a pattern that affirms the condition of the reasoning. For example — This type of reasoning affirms the previous statement. Meanwhile, the first premise sets the conditional statement to be affirmed. 3. Modus Tollens Modus tollens is yet another type of deductive reasoning known as ‘the law of contrapositive’. It is the opposite of modus ponens because it negates the condition of the reasoning. For example — Stages of Deductive Research Approach Begin with an existing theory and create a problem statement Formulate a hypothesis based on the existing theory Collect and analyze data to test the hypothesis Decide if you could reject or accept the hypothesis Limitations of the Deductive Approach The conclusions drawn from deductive reasoning can only be true if the theory set in the inductive study is true and the terms are clear. Combination of Inductive and Deductive Reasoning in Research When researchers conduct a large research project, they begin with an inductive study. This inductive reasoning assists them in constructing an efficient working theory. Therefore, post inductive reasoning, a deductive reasoning could confirm and conclude the working theory. This helps researchers formulate a structured project and mitigates the risk of research bias in the research study. After doing thorough research in understanding inductive and deductive reasoning, Karl concluded that: Inductive reasoning is known for constructing hypotheses based on existing knowledge and predictions. Deductive reasoning could be used to test an inductive research approach. People tend to rely on information that is easily accessible and available in the world. While theorizing a research hypothesis, this tendency could introduce biases in the study. Inductive reasoning could cause biases which can distort the proper application of inductive argument. A good scientific research study must be highly focused and requires both inductive and deductive research approaches. After a few hours of focused research, Karl understood his supervisor’s approach to creating a well-planned research hypothesis for his research study. Karl dived deeper and understood that he had only touched the tip of an iceberg, and there is much more to induce and deduce before he holds his doctorate! Have you ever encountered a situation like Karl’s? Trying to understand which research approach to use? Did you find this blog informative? Do write to us or comment below and tell us what you feel! Published 16 October, 2023Inductive and deductive are basically two research approaches. While performing the investigation it is very crucial to select the best research approach. Making the right choice of research approach is very much essential for raising the efficiency of the research process. The difference between Inductive and Deductive Reasoning is that one starts with a generalization and then gathers evidence to test it, while the other starts with specific observations, use them to generate new ideas or theories. The latter approach is more exploratory in nature. This blog post will help you learn how these two approaches differ from each other so that you can apply them correctly in your own research.Introduction of Inductive & Deductive Reasoning Here is the brief introduction of inductive and deductive reasoning, as follows: Inductive Research It is research that researchers use for performing qualitative research. Researchers use such a type of research approach when they have no idea about research results. You can use an inductive approach for developing a new Hypothesis in research. Students, in order to generate a new theory, will require analyzing the previous hypothesis. The inductive approach begins with the observation of phenomena and theories which researcher designs after completion of the research procedure. Inductive research will allow you to provide a justifiable reason for specific situations by providing examples of real life. In the context of inductive reasoning, before beginning the investigation you need to gather information according to the research topics or subject. You can utilize inductive research there is a lack of previous literature on a particular subject or topic. The inductive research approach consists of three stages: Observation Observe a pattern Develop a theory For example, Suppose you have observed a hundred flights at the airport. There was a delay in all flights. After a continuous delay of all hundred flights, you still can’t state that there will delay in 101 flights also. Still, the larger your dataset, the more reliable the conclusion. Deductive Research Deductive reasoning is the approach that is supported by the basic idea for developing specific circumstances. This approach is relevant to the Positivism paradigm. While using the deductive approach in research you need to first examine the hypothesis in research. It is a type of research approach that researcher mainly use for performing scientific studies. The choice of the type of research approach that you are going to select is dependent on the objective of performing an investigation on a specific topic or subject. The deductive research approach consists of four stages: Start with existing theory Formulate a hypothesis based on existing theory Collect data to test the hypothesis Analyze the result For example, it has been said that all man is mortal which is basically a premise. Roman is a man that is second premises. Roman is a mortal that is the conclusion. Difference between inductive and deductive research approach Basis of Difference Inductive Research Approach Deductive Research Approach You can utilize an inductive research approach in a situation when there no hypothesis exists to test. Students apply the deductive research is only in the case when theory exits for testing. Formulation of new hypothesis by utilizing the information which you have collected through research. The aim of deductive reasoning is to test previous theories. The different phases you need to undergo while using the inductive approach for investigation include Collection of facts, Observation or analysis And the formulation of hypothesis The different stages which researchers need to undergo while applying the deductive approach to the investigation include: Formulation of theory Data analysis Determining theories supported or not. By applying an inductive approach you can mainly concentrate on exploring new aspects of your study. The deductive approach mainly emphasizes causality. One of the main advantages of the inductive research approach is that it helps you in generalizing your findings. An important benefit of the deductive research approach is that it enables you to define the causal relationships between different types of variables or concepts. One of the biggest limitations of the inductive approach is that you can prove the conclusion that you have made from the information gathered through investigation. The limitation of the deductive approach is that it can prove to be right only when all the terms are clear. Inductive research is mainly applied in Qualitative research. Deductive research is mostly used in Quantitative research.