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# Saunders' Research Onion: A Layer-by-Layer Guide to the Model

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## Abstract

A methodology is expected to explain why a study's methods were chosen, not only what they were, and students often find it hardest to show how those choices connect. The research onion, the model of research design presented by Saunders, Lewis and Thornhill in *Research Methods for Business Students*, addresses this by setting out the decisions behind a methodology as six layers, worked through from the outside in. This article describes each layer as it appears in the ninth edition of that textbook: research philosophy, approach to theory development, methodological choice, research strategy, time horizon, and techniques and procedures. For each layer it sets out the options the model names, what the decision settles for a study, and how it constrains the layers inside it, drawing on the wider methods literature for definitions of the approaches and strategies. The article summarizes the layers in a single table, traces one invented study through all six, and closes with the model's limitations and with how to use it in planning without letting it dictate the structure of a methodology. It is intended for students and early-career researchers planning a study, and for the educators who teach research design.

**Keywords:** research onion; Saunders research onion; how to use the research onion; research onion methodology chapter; research design; research philosophy; research strategy; open educational resource

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**About this article:** This is the formal edition of an article first published at gradcoach.com/saunders-research-onion/, where the figures can also be downloaded for reuse. Further open educational resources on research methods are listed at gradcoach.com/open-educational-resources/. The research onion is the work of Saunders, Lewis and Thornhill; this article describes it and is not connected with its authors or publisher.

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## 1. Introduction

A methodology section has two jobs. It reports what a study did, and it explains why those methods suit the research question. The second job is where students most often struggle. A common pattern is to settle on a data collection method first, such as interviews or a questionnaire, and only later to look for a justification. The result can be a methodology in which the stated philosophy, the type of data and the analysis do not obviously belong together, which is the kind of gap a reviewer or examiner is likely to question.

The research onion is a planning model designed to reverse that order. Developed by Mark Saunders, Philip Lewis and Adrian Thornhill for their textbook *Research Methods for Business Students*, it presents the decisions behind a study as six concentric layers. The outer layers concern the assumptions and reasoning on which a study rests; the inner layers concern its practical design; and data collection and analysis sit at the center. Working from the outside in means that each decision is made in light of the ones before it.

This article describes the onion as it appears in the ninth edition of the textbook (Saunders et al., 2023), which is the current edition at the time of writing. It follows the ninth edition's own outline of the layers (pp. 18–20); a reader working from an earlier edition may find a slightly different set of options in some layers. Section 2 introduces the model and summarizes its layers in a single table. Sections 3 to 8 take the layers in turn, from research philosophy to techniques and procedures. Section 9 discusses how the onion should, and should not, be used when writing a methodology, traces an invented study through all six layers and sets out the model's limitations. Section 10 concludes.

## 2. The Research Onion and Its Logic

The onion is a way of organizing the decisions behind a study. The onion's premise is that the visible parts of a study (its questionnaires, interview guides and statistical tests) rest on earlier choices that are less visible but just as consequential. A study's view of what counts as knowledge shapes how it reasons from data to theory; that reasoning shapes the kinds of data it needs; and the kinds of data shape the strategy, the timing and, finally, the specific techniques.

Two features of the model are worth stating at the outset. First, the layers are ordered by dependence, not by importance: the inner layers are where most of the practical work of a study lies, but they are chosen in light of the outer ones. Second, the onion names options rather than prescribing combinations. Some pairings are common, such as positivism with deduction and quantitative data (each explained in Sections 3 to 5), but the model leaves the researcher to argue that a given combination fits a given question.

In the ninth edition, the outermost layer is research philosophy, followed by the approach to theory development. The next three layers (methodological choice, research strategy and time horizon) together make up the study's research design, which Saunders et al. (2023) define as "the way you turn your overarching research question or aim and your objectives into a research project"

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(pp. 18–19). Data collection and analysis, the techniques and procedures layer, form "the core of the research onion" (p. 19). Table 1 lists the six layers with the options the ninth edition names in each, and states what each decision settles for a study.

**Table 1.** The six layers of the research onion, from the outside in.

| Layer | Options named in the ninth edition | What the decision settles |
|---|---|---|
| 1. Research philosophy | Positivism, critical realism, interpretivism, post-modernism, pragmatism | The study's assumptions about reality, knowledge and values |
| 2. Approach to theory development | Deduction, induction, abduction, retroduction | Whether the study tests theory, builds it or moves between the two |
| 3. Methodological choice | Quantitative, qualitative, multiple and mixed methods | The kind of data the study needs, and how many methods it uses |
| 4. Research strategy | Experiment, survey, ethnography, grounded theory, narrative inquiry, archival research, case study, action research | The overall plan for producing data that answer the question |
| 5. Time horizon | Cross-sectional, longitudinal | Whether data are collected at one point in time or over a period |
| 6. Techniques and procedures | Sampling, data collection and data analysis | The specific procedures that produce and analyze the data |

Options from Saunders et al. (2023, pp. 18–20), listed in the order of the textbook's chapter outline.

## 3. Layer 1: Research Philosophy

A research philosophy is the set of assumptions about reality, knowledge and values on which a study rests. These assumptions are commonly divided into ontology (what is assumed to be real), epistemology (how it can be known) and axiology (the role of values in research), and together they direct the selection of methods (Brown & Dueñas, 2020). The ninth edition of the onion names five philosophies at this layer: positivism, critical realism, interpretivism, postmodernism and pragmatism. It also discusses four paradigms within this layer: the functionalist, interpretive, radical humanist and radical structuralist paradigms (Saunders et al., 2023, p. 18). These are not covered further here.

The philosophies differ most visibly in their ontology. Positivism assumes a single, objective reality that can be observed and measured, and a strictly positivist researcher can be expected to favor experimental research with explicit hypothesis testing (Brown & Dueñas, 2020). Interpretivism, at the other end of the range, assumes many subjective realities, each one built socially by people in interaction with one another (Brown & Dueñas, 2020). An interpretivist researcher therefore seeks the meanings that people, singly and as groups, give to their social world (Crowe et al., 2011). Critical realism sits between them: it holds that reality exists apart from the mind, but that what the senses register is then interpreted subjectively, so research has to look beyond what is immediately experienced to the structures and relationships beneath it (Saunders & Tosey, 2013).

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Research in this realist tradition reasons from what is observed toward theories of the mechanisms that produce it (Mukumbang et al., 2021). Postmodernism, in turn, sets out to unsettle claims to certain knowledge and to a single, fixed meaning (Aylesworth, 2015).

Pragmatism stands apart from this range. It judges research by what works in practice for understanding and solving a problem, and it relies on whichever methods best answer the research question, giving less weight to settling questions of ontology and epistemology (Brown & Dueñas, 2020). Johnson and Onwuegbuzie (2004) offer it as a philosophical basis well suited to mixed methods research, and the two are commonly paired. The pairing is not a requirement, however: a pragmatist study need not combine several data collection techniques, so long as its design yields credible data that support action (Saunders & Tosey, 2013). Nor is pragmatism the only proposed basis for combining qualitative and quantitative methods: Mukumbang (2023) presents critical realism as one more firmly grounded than pragmatism in its assumptions about reality and knowledge. A choice of pragmatism should follow from a practical problem the study sets out to help solve, not from a wish to avoid the other philosophies.

The philosophy is the outermost layer because every later decision has to be consistent with it. A positivist study that relies on open-ended interviews, or an interpretivist study built around a large-scale survey analyzed statistically, invites the question of whether the stated philosophy describes what the study actually does. Each philosophy is treated in more depth, with extracts from published theses, in a companion article in this series (Jansen, 2026).

## 4. Layer 2: Approach to Theory Development

The second layer concerns how a study connects theory and data. The ninth edition names four approaches: deductive, inductive, abductive and retroductive (Saunders et al., 2023, p. 18). Figure 1 compares the first three; retroduction is discussed after it.

**Deduction** begins with existing theory and designs research to test or refine it, usually by deriving hypotheses and collecting data to see whether they hold. **Induction** runs the other way: data are collected first and theory is generated from them. Grounded theory, a strategy for constructing theory from systematically gathered and analyzed data (Section 6), is the best-known inductive design, and its originators presented it as an alternative to the traditional route of testing theory deductively (Chun Tie et al., 2019). A study testing whether an established model of technology acceptance predicts which nurses adopt a new prescribing system would be deductive. A study of how delivery riders cope with being managed by an app, starting from the riders' own accounts, would be inductive.

**Abduction** starts from a surprising observation, proposes an explanation that would account for it, and then examines that explanation against further data. Timmermans and Tavory (2012) describe it as a creative kind of inference that generates fresh hypotheses and theories when the evidence turns up something surprising, and they argue that it, rather than induction, should guide theory construction from empirical data. Suppose, for example, that a retailer makes its loyalty program more generous and its members begin to spend less. A researcher might propose that the

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larger rewards led members to save their points rather than redeem them, so that they made fewer of the extra purchases that redeeming a reward used to prompt. A researcher who then gathers purchase data and interviews to examine that explanation is reasoning abductively.

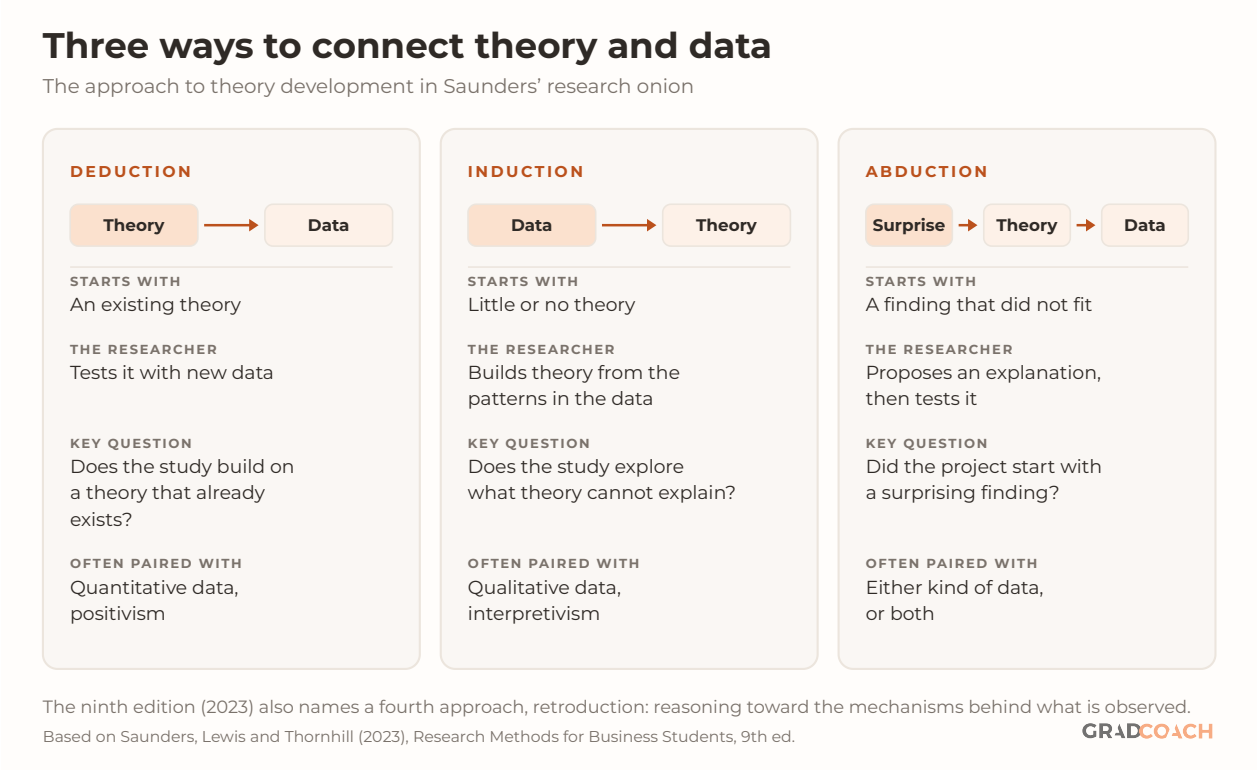



**Figure 1.** Deduction, induction and abduction: three ways to connect theory and data.

**Retroduction**, the fourth approach the ninth edition names, is the form of inference most closely associated with critical realism. It works toward theories of the underlying mechanisms that could produce what is observed, and it is regarded as the central evidence-generating activity in realist-informed research (Mukumbang et al., 2021). Even so, Mukumbang et al. (2021) found that few realist-informed studies describe their retroductive reasoning explicitly.

The approaches are often aligned with philosophies and types of data: deduction with positivism and quantitative data, induction with interpretivism and qualitative data. These are tendencies, not rules. Chun Tie et al. (2019) note that inductive, deductive and abductive reasoning can all play a part in the analysis of a single grounded theory study. A methodology should therefore name its approach and explain why it fits the research question, rather than leave the reader to infer it from the type of data.

## 5. Layer 3: Methodological Choice

The third layer is the first of the three that make up the research design. It concerns the kind of data a study will use and how many methods it will combine. The ninth edition describes this layer as comprising quantitative, qualitative, multiple and mixed methods, and places within it the question of whether the research is exploratory, descriptive, explanatory or evaluative (Saunders et al., 2023, p. 19).

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A quantitative study works mainly with numerical data, and a qualitative study with non-numerical data such as words and images. Saunders and Tosey (2013) separate two ways of using more than one method. A multimethod design uses more than one data collection technique of the same kind, such as a questionnaire and structured observation (both quantitative) or interviews and diaries (both qualitative). A mixed methods design combines quantitative and qualitative techniques and analysis within one study. A survey of how often residents use a new community service, analyzed statistically, alongside interviews about why they use it, would be a mixed methods design. Johnson and Onwuegbuzie (2004) see mixed methods research as a natural counterpart to traditional quantitative and qualitative research, and argue that its methodological pluralism, the use of more than one method, frequently produces better research than a single method.

The research purpose (exploratory, descriptive, explanatory or evaluative) sits in this layer because it bears on the choice of data. An exploratory study of a little-researched situation, for example, may favor open-ended data, whereas a study that explains the relationship between variables is more likely to need quantitative data. The research aims and objectives remain the deciding factor, together with a practical consideration: which data can realistically be obtained within the time available. A mixed methods design can be powerful, but it requires the work of two strands of data collection and analysis, and their integration.

Methodological choice sits outside research strategy in the onion. A study decides what kinds of data it needs before choosing the strategy that will produce them.

## 6. Layer 4: Research Strategy

The research strategy is the overall plan for answering the research question. Many methods textbooks call these strategies research designs, a narrower use of the term than the onion's, which applies it to Layers 3 to 5 together. The ninth edition names eight strategies: experiment, survey, ethnography, grounded theory, narrative inquiry, archival research, case study and action research (Saunders et al., 2023, p. 19). Figure 2 summarizes what each is best suited to and the data it usually uses.

An **experiment** manipulates an independent variable under controlled conditions and observes its effect on a dependent variable, usually against a control group, to test a hypothesis. A **survey** gathers its data by asking a sample of people to answer questions (Check & Schutt, 2012, as cited in Ponto, 2015), which allows answers to be compared in a standard way and, with an appropriate sample, generalized to a wider population. Its strength is scale; its limitation is depth, since a survey shows more readily what is happening, and how often, than why.

**Archival research** uses records that already exist rather than data the researcher generates, such as annual reports, minutes, policies and correspondence. A **case study** allows an in-depth, multifaceted exploration of a complex issue in its real-life setting (Crowe et al., 2011). Case studies are often qualitative, but they need not be: they can be approached from positivist, interpretivist or critical standpoints and can draw on quantitative data alongside interviews, documents and observation (Crowe et al., 2011).

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**Figure 2.** The eight research strategies of the research onion, with the data each usually uses.

The order of the cards is not significant; Table 1 follows the order of the textbook's outline.

**Ethnography** involves relative immersion in the setting being studied. It is usually conducted in a single setting, relies largely on participant observation and interviews, and is characterized by long-term fieldwork (Goodson & Vassar, 2011). Its aim is to understand a group's way of life from the inside, so its conclusions concern the group studied rather than a wider population. **Action research** is conducted in practical settings such as classrooms, hospitals and workplaces, and aims to solve a real problem while studying it. Meyer (2000) describes it as a style of research rather than a specific method, marked by its participatory character, its democratic impulse and its simultaneous contribution to social science and social change.

**Grounded theory** aims to build theory from data that are gathered and analyzed systematically, using constant comparison. Data collection and analysis proceed together, and later sampling is guided by the developing theory (Chun Tie et al., 2019). Although it is usually qualitative, both qualitative and quantitative data can be used in a grounded theory study (Chun Tie et al., 2019). **Narrative inquiry** rests on the view that people lead storied lives, so that studying narrative is a way of studying how people experience the world (Connelly & Clandinin, 1990). It collects people's accounts and analyzes them as stories, keeping their sequence and context intact rather than dividing them into separate themes.

The strategies are not mutually exclusive. A case study can contain a survey, and an action research project can include an experiment. The strategy a methodology names should be the one that organizes the study as a whole, with any others described in relation to it. As with every layer, the choice should follow from the research question and be consistent with the philosophy, the approach and the methodological choice already made.

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## 7. Layer 5: Time Horizon

The fifth layer concerns when data are collected. It has two options. A **cross-sectional** study collects data at a single point in time. Writing for the health sciences, Wang and Cheng (2020) add that no one in such a study is followed up later, that these studies tend to be cheap and simple to run, and that they can give early evidence for planning a fuller study. A **longitudinal** study collects data at several points over a period, which allows it to study change and development.

This layer is independent of the type of data. A longitudinal study may follow the same organizations through repeated interviews or repeated questionnaires, and a cross-sectional study may be entirely qualitative. The deciding question is whether the research aims concern a situation at one moment or a process of change. Time is also a practical constraint: a dissertation or thesis rarely allows a long period of data collection, which is one reason why many student projects are cross-sectional. A study that is cross-sectional but asks about change can sometimes use archival records to look back over a longer period, although it should acknowledge the limits of that approach.

## 8. Layer 6: Techniques and Procedures

At the center of the onion are the techniques and procedures for collecting and analyzing data. In the ninth edition this core covers negotiating access and research ethics; sampling; the use of secondary data; the collection of primary data through observation, through interviews and diaries, and through questionnaires; and, finally, the quantitative and qualitative analysis of the data (Saunders et al., 2023, pp. 19–20). In practical terms, this is the layer at which a study decides:

- which data it will collect, and how;
- whom or what it will sample, and by which sampling technique;
- which analysis method it will use to answer each research question;
- which instruments it needs, such as a questionnaire, an interview guide or an observation schedule.

These techniques have to be consistent with every layer outside them. A study that has adopted a deductive approach and a quantitative methodological choice, for example, will usually need numerical data from a sizeable sample, which a structured questionnaire provides more readily than in-depth interviews. A study that has adopted an interpretivist philosophy and an ethnographic strategy will usually rely on participant observation and conversation rather than standardized instruments. Where a technique does not fit the layers above it, either the technique or one of the earlier decisions needs revisiting.

## 9. Using the Research Onion

### 9.1 A planning tool, not a template

The onion is most useful early, while a study's design can still be changed. Working through it layer by layer, and recording a sentence or two on each decision and why it fits the research question, gives a researcher the justifications that a methodology section needs. Those notes also make it

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easier for a supervisor or advisor to comment on the design before data collection begins.

The onion is not, however, a structure for the methodology itself. A methodology does not need to be organized as philosophy, approach, choice and so on, and many institutions prescribe a different structure. The program handbook and recent methodology sections from the researcher's own department are the better guides to structure; the onion's decisions can then be placed within whatever structure is expected. Not every program expects a statement of philosophy, and in some fields, particularly the laboratory sciences, methodology sections rarely include one.

### 9.2 A study traced through the six layers

Box 1 traces one invented study through the six layers, to show how each decision narrows the next.

**Box 1.** An invented study of missed clinic appointments, traced through the six layers.

A health clinic wants to reduce the number of patients who miss their appointments, and a researcher is asked to find out why patients miss them and what might help.

**Philosophy:** pragmatism, because the aim is a workable solution to a practical problem and the question calls for both measurement and explanation. **Approach:** abduction, since the study begins from a puzzling pattern (the patients who miss the most appointments are not the ones the clinic expected) and moves between data and possible explanations. **Methodological choice:** mixed methods, combining booking records with patients' own accounts.

**Strategy:** a case study of one clinic, within which an analysis of existing booking records (archival data) is followed by interviews. **Time horizon:** cross-sectional, with a year of past records analyzed at one point in time. **Techniques and procedures:** descriptive statistics on the records, purposive sampling of patients who miss appointments often, semi-structured interviews and thematic analysis.

Each decision in Box 1 could have been different, but each later decision depends on the earlier ones. Had the clinic asked only how many appointments were missed, and by whom, a quantitative, descriptive design using the booking records alone would have been enough, and the interviews would have had no clear role.

### 9.3 Limitations

The onion's concentric form suggests a linear, outside-in sequence, but research seldom proceeds that way. A researcher may begin with access to a particular data set, or with a strategy already common in the field, and work outward to the assumptions it implies. Saunders et al. (2023) themselves caution that the research process as a whole, which the textbook charts in its Figure 1.2, is "far messier than a brief glance at Figure 1.2 suggests!" (p. 14). They also warn that stages of a project overlap and that each is likely to be revisited more than once (p. 12). The onion is better read as a check that the decisions cohere than as an order in which they must be made.

The model also comes from a textbook for business and management students. Its decisions apply to much of social science research, including education, nursing, psychology and management, but fields that frame their methods differently, such as the laboratory sciences and the humani-

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ties, may find that some layers fit poorly. Finally, real studies do not always fit a single option in each layer: a study may draw on two approaches to theory development, or combine strategies. In such cases the methodology should say so and explain how the parts relate, rather than force the study into one option per layer.

## 10. Conclusion

The research onion sets out the decisions behind a methodology as six layers: research philosophy, approach to theory development, methodological choice, research strategy, time horizon, and techniques and procedures. Its central argument is one of consistency. Data collection and analysis sit at the center because they depend on everything outside them: the techniques have to suit the strategy and timing, the strategy has to produce the kinds of data the study needs, and all of these have to follow from the study's reasoning about theory and its assumptions about knowledge. Used early, as a checklist of decisions to make and justify, the onion helps a researcher build a methodology in which each choice can be explained by reference to the research question and to the choices already made. Used as a rigid sequence or as a template for the methodology section, it can obscure how research is actually done.

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