

Research methods: case studies

Dr James Reynolds

July 15, 2024

"...while theory building from cases is increasingly prominent, challenges in writing publishable manuscripts using this research strategy exist. Some reviewers ... may misunderstand the method (e.g., expect random sampling), or simply regard their own methods as superior"<sup>1</sup>.

This two-pager discusses case research methodology, which involves examining a small number of cases in great detail, but seeking generalisable findings<sup>2</sup>. Why you might use this approach is discussed next, followed by an outline of two issues in case research: the duality criterion; and sampling. The two-pager closes with commentary about whether "almost everything" in transport is really just a case study anyway, and consequences for our research.

Why use case research methodology?

Yin [2009] provides guidance on when to use each research method:

Method	Research question	Control of events?	Contemporary events?
Experiment	how, why?	Yes	Yes
Survey	who, what, where, how many, how much?	No	Yes
Archival analysis	who, what, where, how many, how much?	No	Yes/No
History	how, why?	No	No
Case study	how, why?	No	Yes

Case studies are useful for "how" and "why" questions about current events, but where the researcher(s) cannot control what happens. They can be used for building new theory or testing existing theory. Even a single case might be enough to disprove a hypothesis<sup>3</sup>. Looking at only a few cases allows time for greater depth, which might help in understanding the complexities and causal links surrounding a phenomenon. This contrasts to random sampling methods, where many cases are examined, but only shallowly<sup>4,5</sup>.

Some have claimed that case research is an inferior approach, including because of: confusion with other methods or the use of case studies for non-research purposes<sup>6</sup>; misconceptions that the cases themselves have to be representative<sup>7</sup> or that statistical significance is the only way to achieve scientific rigor. However, there is a rich body of methodological literature that explains how and why case research approaches can be used to generate defensible findings<sup>8</sup>.

<sup>1</sup> Kathleen M. Eisenhardt and Melissa E. Graebner. Theory building from cases: Opportunities and challenges. *Academy of Management journal*, 50(1):25–32, 2007

<sup>2</sup> Robert K. Yin. *Case study research: design and methods*. SAGE Publications, Thousand Oaks, CA, USA, 4th edition, 2009; Mark Barratt, Thomas Choi, and Mei Li. Qualitative case studies in operations management: Trends, research outcomes, and future research implications. *Journal of Operations Management*, 29(4):329, 2011; and Mikko Ketokivi and Thomas Choi. Renaissance of case research as a scientific method. *Journal of Operations Management*, 32(5): 232, 2014

Table 1: When to use each research method. Source: Yin [2009].

<sup>3</sup> E.g. this red horse disproves the hypothesis that all horses are black or brown.

<sup>4</sup> Martyn Denscombe. *The good research guide*. McGraw-Hill International UK Ltd, Maidenhead, Berkshire, UK, 2nd edition, 2007

<sup>5</sup> Correlation is not causality!

<sup>6</sup> e.g. for teaching or in journalism

<sup>7</sup> A critical case (that might be non-representative) might be selected to explore why something happened (e.g. Why is this horse red, but all the others are black or brown? Did someone paint it red?).

<sup>8</sup> Thomas V. Bonoma. Case research in marketing: opportunities, problems, and a process. *Journal of Marketing Research*, 21(4):199, 1984; and Eisenhardt & Graebner (2007); Denscombe (2007), Yin (2009).

### *The "duality criterion"...*

...relates to how case research needs to be grounded in the context of the cases being studied<sup>9</sup>, while at the same time seeking findings applicable more widely<sup>10</sup>. Denscombe (2007) suggests providing "an explicit defence against the allegation that you cannot generalize from (the) case study findings"<sup>11</sup> to formally address this issue. For us, this might involve answering "why is what transport is like in Melbourne, with respect to what being studied, going to tell us about what the topic of the research is like elsewhere?"

### *Sampling approaches*

The case research methodology literature describes theoretical reasons to include a case in your sample<sup>12</sup>. Non-theoretical reasons for including a case might be convenience (especially geographical proximity), a forced choice (e.g. because of a study funding source) or opportunistic (e.g. data access)<sup>13</sup>. Such non-theoretical reasons are ok, but should be acknowledged and addressed, and you would want to try and understand how the cases' inclusion might (also) be justifiable on theoretical grounds.

How many cases? Enough to get sufficient breadth. Not so many that you don't have time to get the necessary depth. Eisenhardt (1989) suggests four to ten, Yin (2009) six to ten including two to three chosen for replication and the others chosen to explore differences. One might be enough, especially for theory testing<sup>14</sup>.

### *Is everything in transport research a case study?*

Most transport research is grounded in the context of a city, country or other unit of analysis. Even transport modelling might make assumptions about local traffic laws, cultural practices with respect to pedestrian behaviour or queuing, or other elements that are typical of some, but not all, places. A *consequence for us* therefore is to recognise the need to seek generalisable findings, and to understand the extent to which (and how) our conclusions apply elsewhere<sup>15</sup>

### *In closing...*

...the literature includes recommendations about: framing study questions; protocols; case reports and cross-case comparisons. These can help demonstrate academic rigor, and direct and formalise a study. There is a rich body of theory that supports case research. Chances are you are already studying specific cases, so I suggest explicitly framing it as such so your work is (even) more defensible.

<sup>9</sup> Allowing cases to be examined at great depth, so as to understand how and why something is the way it is. For example, an in depth examination of this red horse, including genetic analysis etc.

<sup>10</sup> Ketokivi and Choi (2014)

<sup>11</sup> i.e. I checked that the red horse in my field was not a brown horse painted red, so therefore we can confidently generalise that red horses do actually exist and that they may be found in some fields.

<sup>12</sup> Including because it is: a leading example; a critical case; a particularly revelatory case; a representative case; a case that can be studied over time; a particularly unusual case; or, together with other selected cases, a case that provides an opposite result, similar results (for replication) or represents a polar extreme.

<sup>13</sup> Kathleen M. Eisenhardt. Building theories from case study research. *Academy of Management Review*, 14(4), 1989; Jack Meredith. Building operations management theory through case and field research. *Journal of Operations Management*, 16(4):441, 1998; I. Stuart, D. McCutcheon, R. Handfield, R. McLachlin, and D. Samson. Effective case research in operations management: a process perspective. *Journal of Operations Management*, 20(5):419–433, 2002; Chris Voss, Nikos Tsikriktsis, and Mark Frohlich. Case research in operations management. *International Journal of Operations & Production Management*, 22(2):195–219, 2002. DOI: 10.1108/01443570210414329; and Barratt et al. (2011), Denscombe (2007), Ketokivi and Choi (2014), Yin (2009)

<sup>14</sup> This one red horse disproves the theory that all horses are brown or black. No, there is no need for me to find another red horse, one is enough. Also, I looked closely at its hair, did genetic analysis and all sorts of other things and now understand HOW a horse might be red.

<sup>15</sup> For example, a survey of Melbourne cyclists is grounded in the context of mandatory helmet laws, an automobile-dominated transport system and a cycling culture that includes many Middle Aged Men In Lycra (MAMILS). To what extent are the findings applicable to places without mandatory helmets and/or where bicycles are used primarily for transport?