Research methods: Is everything a case study?

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> "...while theory building from cases is increasingly prominent, challenges in writing publishable manuscripts using this research strategy exist. Some reviewers who work on large-scale, hyopthesis-testing research may misunderstand the method (e.g., expect random sampling), or simply regard their own methods as superior"[1].

[1] Kathleen M. Eisenhardt and Melissa E. Graebner. Theory building from cases: Opportunities and challenges. *Academy of Management journal*, 50(1):25–32, 2007. ISSN 0001-4273

Introduction

This is a two-pager discussing case study research methodologies. Case research involves examining a small number of cases in great detail, while at the same time seeking findings that are generalisable[2]. Why you might use this approach is discussed in the next section. This is followed by a section outlining two key issues for case research: the duality criterion and the sampling approach. The two-pager closes with commentary about whether "everything" is really just a case study anyway, and consequences for our research.

[2] 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. ISSN 02726963; Mikko Ketokivi and Thomas Choi. Renaissance of case research as a scientific method. *Journal of Operations Management*, 32(5):232, 2014. ISSN 02726963; and

Why

Case research is particularly useful for "how" and "why" questions about current events, but where the researcher(s) cannot control what happens (ruling out an experimental case-control approach).

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

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

It can be useful for building new theory or testing existing theory, as even a single case might be enough to disprove a hypothesis[3]. The key reason for looking at only a small number of cases is that this allows the research(s) to go into great depth so as to better understand the complexities, causal links and reasons behind a phenomenon, as opposed to random sampling methods where a large number of cases are examined, but only shallowly[4,5].

[3] This red horse disproves the hypothesis that all of the horses are black or brown.

Case research, however, is often considered inferior to other methods, for a range of reasons. These include: confusion with other

[4] Martyn Denscombe. *The good research guide*. McGraw-Hill International UK Ltd, Maidenhead, Berkshire, UK, 2nd edition, 2007

[5] Correlation is not causality!

methods or the use of case studies for non-research purposes[6]; misconceptions that the cases themselves have to be representative[7] or that statistical significance is the only way to achieve scientific rigor[8]

The "duality criterion"

This is that case study research needs to be grounded in the context of the case(s)[9], while at the same time seeking generalisation[10,11]. Denscombe (2007) even suggests that researchers should provide "an explicit defence against the allegation that you cannot generalize from (the) case study findings"[12].

Sampling approaches

The case research methodology literature describes a range of theoretical reasons to include a case in your sample 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 longitudinal case study)' a particularly unusual case; or together with other cases provides an opposite result, similar results (for replication) or represents the polar extremes of what might happen. Non-theoretical reasons for including a case might include that it is convenient (especially if geographically proximate), is a forced choice (e.g. because of study funding source) or if a good opportunity arises (e.g. data access)[13]. Such constraints are find, but should be acknowledged. As well, just because something is initially included for non-theoretical reasons doesn't mean that its inclusion might also be justified on theoretical grounds.

How many cases to include is also an issue. One or only a few might not provide sufficient breadth. Too many and it is difficult to get the depth of research necessary to fully understand the context and mechanisms. Eisenhardt (1989) suggests four to ten, Yin (2009) six to ten including two to three specifically chosen for replication and the others chosen to explore differences. But even one might be enough, especially in theory testing studies[14].

Is everything in transport research a case study?

Most transport research is grounded in the context of a place, be it a city, country or other unit of analysis. From a certain viewpoint, perhaps all of our studies are of specific cases. Even experimental transport modelling might make assumptions about local traffic laws, cultural practices with respect to pedestrian behaviour or queuing, or other elements grounded in the context of the case that is being studied or in which the researcher(s) are themselves located.

[6] e.g. for teaching or in journalism

[7] Sampling approaches are discussed later in this two-pager, but (in short) cases might be selected because they are representative. However, a critical case (that might be non-representative) might be selected instead so as to understand why something happened (e.g. why is this horse red, but all the others are black or brown? Did someone paint it red?).

[8] Thomas V. Bonoma. Case research in marketing: opportunities, problems, and a process. *Journal of Marketing Research*, 21(4):199, 1984. ISSN 0022-2437; and
Eisenhardt & Graebner (2007); Denscombe (2007), Yin (2009).

[9] So as to get to the level of detail and depth of findings that can be achieved by only looking at a few cases (i.e. only looking at one field of horses).

[10] i.e. making/seeking findings than can be confidently assumed to apply to all fields of horses.

[11] Ketokivi and Choi (2014)

[12] i.e. I checked that the red horse in my field was not a brown horse painted red, so therefore we can confidently generalize that red horses do actually exist.

[13] Kathleen M. Eisenhardt. Building theories from case study research. *Academy of Management. The Academy of Management Review*, 14(4), 1989. ISSN 03637425; Jack Meredith. Building operations management theory through case and field research. *Journal of Operations Management*, 16(4):441, 1998. ISSN 0272-6963; 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. ISSN 0272-6963; Chris Voss, Nikos Tsikriktsis, and Mark Frohlich. Case research in operations management. *International Journal of Operations & Production Management*, 22(2):195–219, 2002. ISSN 0144-3577. DOI: 10.1108/01443570210414329; and
Barratt et al. (2011), Denscombe (2007), Ketokivi and Choi (2014), Yin (2009)

[14] Again, 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.

A *key consequence for us* therefore is to recognise the need to seek generalisable findings, that can be confidentially applied to other places and cases. For example, there was a lot of research activity related to COVID-19 impacts on WFH and travel. Results from surveys of people in (the cases of) Melbourne and Perth may represent polar extremes with respect to the impacts of infection fear and lockdowns. Can these results be confidently generalised to other places in Australia or even internationally? Perhaps, if we frame the findings from Melbourne and Perth as being indicative of the two extremes that might be reasonably expected in first-world countries, where infection rates were low, vaccination rates were high, etc. Are these cases generalisable to everywhere? Probably not entirely, but they may be indicative of wider trends or patterns. Even in such quantitative surveys there may be *a need to address the duality criterion*, which may be easier if the fact that you are actually effectively doing a case study (within which there is a quantitative study) is acknowledged.

The case research methodology literature is a rich resource that is applicable to a lot of different research approaches. It includes recommendations with respect to: framing the study questions, an especially which level questions are asked at (overall study, cross-case, case, sub-unit, individual participant); tools such as case study protocols, case reports and cross-case reports that can ensure (and demonstrate) academic rigor, and help to direct and formalise the study; and a body of theory that supports the use of case studies as a research tool.