

The Choice of Research Method: Grand Theory versus Middle-Range Theory

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Causal mechanisms versus causal effects

Case studies and surveys are complementary research methods (George and Bennett, 2005). Survey research is a dominant approach in many parts of management research. In this approach – generally speaking – first of all some expectations are formulated about the direction of linear effects between one or more independent variables and a dependent variable. Next, statistical techniques are employed to analyze data from a population to test these – mostly probabilistic - hypotheses. Findings from this quantitative analysis provide insight in the (relative) *strength of causal effects* in a population, i.e. the extent that independent variables cause variation in the dependent variable.

The hypotheses formulated in survey research are typically based on some theoretical arguments why a certain causal effect is expected. These *causal mechanisms* provide the basis for specifying the causal direction of statistical associations. Causal mechanisms themselves can not be studied in survey research however. While causal mechanisms might be very clear for some causal effects, theories in social science are often not very precise in their explanation why and how causal effects are realized (Gerring, 2007). Case study research - while ill-suited for studying the strength of causal effects in a population - is well-suited to study causal mechanisms by investigating individual instances in detail and by comparing them. The benefit of case study research to study causal mechanisms qualitatively becomes more prominent if we do more justice to the complexity of social phenomena by moving beyond bivariate linear theories.

Configurational theory

While survey research has the advantage that knowledge can be developed about the links between paired concepts, a core assumption involves that each independent variable on its own is capable of significantly explaining variation in the dependent variable. Configurational theories, which have a strong tradition in management research (e.g. Burns and Stalker, 1961; Miles and Snow, 1978; Mintzberg, 1979), disagree with this assumption and argue that the complexity of the social world is better reflected by considering configurations of variables (Drazin and Van de Ven, 1985; Doty and Glick, 1994). In this approach it is assumed that - for normative theories – only a limited number of internally consistent configurations results in high performance. Hence, this approach does not focus on the direct relationship between individual independent variables and dependent variables, because the way independent variables combine to determine the dependent variable can vary across the set of high-performing “ideal types” (Gerdin and Greve, 2004).

While the grand configurational hypothesis – that fit with an ideal-typical configuration is associated positively with performance – can be tested rigorously using statistical techniques (e.g. Doty et al., 1993), a fundamental challenge for configurational theories is to generate knowledge about how and why distinct combinations of independent variables result in high performance (e.g. Venkatraman and Prescott, 1990; Miller, 1996). The explanation of the internal consistency among first-order variables and how this internal fit matches contingency variables is the realm of ‘contingent middle-range theories’ (George and Bennett, 2005). Case study research is particularly suitable for studying the complex causal mechanisms in such theories, which can be considered to fill the theoretical vacuum left by the more general models for entire populations (George and Bennett, 2005).

In sum, survey research is more appropriate for studying linear causal effects between independent and dependent variables in broad domains, while case study research is especially suitable for studying causal mechanisms at a lower level of abstraction in middle-range or “sometimes-true” (Davis and Marquis, 2005, p.336 referring to Coleman, 1964, p.516) theories. In any research project the choice between bivariate and configurational theories is fundamental, given their incompatible assumptions about the role of independent variables (Gerdin and Greve, 2004), their distinct levels of abstraction, and their methodological implications. The next section discusses this latter issue in some greater detail.

Aims for case study research

A fundamental problem for any theory-oriented research project is the need for a match between its research aim and its research method. While case studies are mostly applied for theory building purposes and survey research is mostly used for theory testing, both methods can be used for both types of objectives (Forza, 2002; Voss et al., 2002). Because statistical concepts are often inappropriately applied to case study research (George and Bennett, 2005), especially the aims for case study research require greater clarity.

Dul and Hak (2008) argue that case study research is very suitable for testing deterministic hypotheses, while survey research is the preferable research method for testing probabilistic hypotheses. Building on the distinction between middle-range configurational theories and grand linear theories, I argue however that the discussion of theory-testing case studies needs more elaboration. Middle-range theories, because of their focus on limited domains (such as small-N phenomena), typically investigate the necessity or the sufficiency of a variable for a certain outcome rather than its explanatory power. In a precisely formulated deterministic theory a single crucial case can disconfirm the claim that a certain condition is necessary or sufficient for a certain outcome. In the social sciences hardly any (non-trivial) variable takes on such a role however (Gerring, 2007). Hence, the focus typically shifts from individual necessary or sufficient conditions to the necessity or the sufficiency of – possibly equifinal (Gresov and Drazin, 1997) – *configurations of variables*.

Individual cases can also provide strong tests for configurations. A most-likely case is a case that perfectly matches an ideal configuration. The absence of the expected outcome for such a case, e.g. high performance, would seriously challenge the theory. Similarly, the observation of high performance for a least-likely case, i.e. for a case

that constitutes an extreme misfit with the ideal configuration, has strong implications for the validity of the theory as well. The actual test for deterministic configurational theories simply means comparing the observed values of the outcome variable and the elements of the configuration with the respective expected values (e.g. Jaspers and Van den Ende, 2007). Such a pattern-matching analysis (Yin, 2003) can be based on a visual inspection of the data, for instance of a truth table.

Next to simply observing the values of variables and to assess whether a configuration as a whole “favors” a certain outcome, in-depth case studies can also provide strong tests for middle-range theories that precisely predict how and why different variables interact to produce a certain outcome. For such theories so-called *process-tracing cases* can provide strong tests, because each relationship between the elements of the configuration must hold for the middle-range theory as a whole to be confirmed (George and Bennett, 2005). In this way a within-case (process-tracing) analysis can also serve theory-testing purposes. Individual causal effects between elements of a configuration might also be tested separately as individual hypotheses using pattern matching analysis, but this is contrary to the logic of configurationalism, which argues that the configuration as a whole provides the synergy needed to produce a certain effect.

Many variables in business research are continuous in nature. This makes the precise definition of theories – as required for process-tracing tests – very difficult and also makes it difficult to select cases which completely rule out rival explanations. In addition, for each ideal-typical configuration there might be equifinal causal paths and mechanisms (Gerring, 2007). Many theories therefore – and especially middle-range configurational theories - are usually ambiguous regarding the inner workings of the hypothesized causal effect. As a result, we can identify an additional aim for case study research. For *already validated* causal effects namely, a so-called *pathway case* (Gerring, 2007) can be employed to trace the causal mechanisms between causal factor and effect. Insights from pathway cases do not result in the reformulation of (either deterministic or probabilistic) hypotheses, but rather in the reformulation of the theory itself by ‘elucidating’ causal mechanisms (Gerring, 2007).

For example, one might find an association between technological uncertainty and vertical integration. The question remains however whether this effect is brought about by transaction costs or by other mechanisms. In the absence of opportunism, technological uncertainty might also cause vertical integration as a result of intense information-processing and coordination, which is typically more efficient intra-firm than inter-firm (Gulati et al., 2005). This question can be addressed by studying the causal mechanisms in cases for which we have reasons to believe that the causal effect is as strong as possible. This for instance involves cases that show the expected values of the independent and the dependent variable and for which rival explanations are absent, or cases ‘close to the regression line’ (see Gerring (2007) for more details on this).

In sum, case studies can be used to test deterministic theories in two ways. First of all, a pattern matching analysis can be performed to compare the values of relevant variables. Secondly, very detailed theories can also be tested using process-tracing cases. In contrast to pattern matching this approach tests the causal mechanisms within cases. In addition to theory building and theory testing, case studies can also

serve the purpose of “theory elucidating,” i.e. finding the possible causal mechanisms for already confirmed hypotheses.

Conclusion

Case study research and survey research are highly complementary. Both methods can be applied for theory-building and theory-testing objectives, but survey research is most appropriate for the study of causal effects in grand theories, while case study research is most suitable for the study of causal mechanisms in configurational middle-range theories. While survey research for the study of causal effects is a dominant approach in many areas of management research, middle-range theories should explicitly be recognized as an important sources of additional theoretical insight, “because the quality of explanation is enhanced by an explicit focus on the cogs and wheels behind the regression coefficients” (Davis and Marquis, 2005, p.341). An additional benefit of middle-range theory involves that its theoretical insights are closer to the reality of decision-makers than abstract causal effects (George and Bennett, 2005). Hence, Davis and Marquis (2005) argue that these theories are the way forward for organization science (Davis and Marquis, 2005).

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