

Enhancing multi-method research methodologies for more informed decision-making

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Abstract

In today's dynamic and global environment it is essential that decision-makers have valid and reliable information to base decisions upon. It is the duty of researchers to provide that information. In this paper we advocate for one method that researchers can use – a multiple-case study approach. The emphasis is on providing the *research progression*, as well as on procedures necessary for desirable reliability and validity properties. To obtain more robust measures and research findings, a multi-method approach uses in-depths interviews and a quantitative survey in a longitudinal collective research design. As outlined when robust procedures are followed in a multiple case study research design they produce a more detailed picture of the issue under investigation than other methods do. Thus providing decision-makers, especially in the public sphere of administration and governance, a pathway for informed decision-making.

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Introduction

A critical element in the evolution in the fundamental body of knowledge in research methodology, as well as for the improved administration and governance policies, is the development of comprehensive and relevant research methodologies. Although case study methodology is known to benefit researchers by bringing out important details from the viewpoint of the participants by using multiple sources of data, the application of multi-method case studies remains limited. Yin (2009) and Stake (1995) have developed robust procedures based on their wide experience in this methodology. Whether the study is experimental or quasi-experimental, the data collection and analysis methods might occasionally overlook some important details (Stake, 1995). Case studies, on the other hand, are designed to bring out those details by using multiple sources of data (Tellis, 1997).

Hirschman (1986) points out that the key factors in research are essentially socially constructed based on human beliefs and behaviors. Hence, better understanding and application of methods designed to offer “useful” insights into “real” issues and concerns, is required (Schoenfelder & Harris, 2004). We propose that a multiple case study research method can make such a contribution to the ‘applied’ research that has implications for both theory and practice.

The aim of this paper is to focus on the benefits of multiple case study research design, thereby assisting researchers in their choice of research methodology. In this regard, this paper intends to contribute insights that are of interest not only to administration and governance researchers but also to cross-disciplinary researchers. After providing an overview of case study research design, a review of multi-method research methodology is supplied. Following a discussion on establishing reliable and valid measures, the conclusions and implications are presented.

Case study design

Case studies have been used in varied investigations, particularly, in sociological and managerial studies. The aim of the sample study used in this particular paper to illustrate multiple case study methodology was to investigate a corporate brand of three automotive manufactures and the effects of corporate brand's misalignment on internal and external stakeholders' behaviors. To a lesser degree, case studies were employed in marketing research where research studies tend to take either qualitative or quantitative approach, as is the case with most studies in administration and governance.

The case study methodology is chosen as a research design in order to better illustrate a more detailed picture of the corporate brand in each case in a way that generalizations and statistics typically cannot (Yin, 2009). If the focus of a study is to obtain a holistic, in-depth investigation of a given phenomena (e.g. the corporate brand) then case study research design is deemed an ideal methodology for this type of investigation (Feagin, Orum & Sioberg, 1991). To carry out the empirical part of a study, a triangulation approach is favored to ensure the study captures the necessary nuances of the phenomenon under investigation.

One important difference of case study from other methods is that it is not sampling research. This assertion was maintained by leading experts in the field, including Yin (2009), Stake (1995) and Feagin et al. (1991). Therefore, selecting the *unit of analysis* is critical when one applies a case study methodology. In the sample study used here the Australian automobile industry was chosen, as this is an example of a highly competitive industry that operates in multi-stakeholder environment and where brand reputation plays an important role in consumer decision-making. Therefore, as a unit of analysis in the study car manufacturers engaged using a corporate branding strategy were chosen. All the organizations had extensive dealer networks and all were seeking to enhance their competitiveness through enhancing their corporate brand. As is appropriate in multiple case study research, the author accordingly emphasized depth rather than breadth: in other words, a smaller number of cases, but with richer data (Piekkari, Welch & Paavilainen 2009). Thus, as is recommended for a case study approach, the study followed the logic of theoretical rather than random sampling. Thus, the author deliberately chose case settings where the phenomenon of interest was 'transparently observable' (Eisenhardt, 1989, p. 537). So in the sample cases, it was understood that in case of corporate branding, co-creation expands to embrace other stakeholders than consumers. However, in spite of the importance of considering internal and external stakeholders to be co-creators, the only stakeholder groups branding researchers have empirically examined thus far had been consumers and marketers. The sample study's purpose was to go beyond these two groups to include managers, employees, dealers and consumers. Thus one can see why it was important to choose a unit of study that provided an environment where the phenomena was evident and yet large enough to utilize multiple data collection techniques.

The research methodology

Use of several cases qualifies the design as collective (Stake, 1995) or multiple-case (Yin, 2009) research design. The frequent criticism of case study research is that it is not widely applicable in other studies. Another criticism within generalization is that case study research that is not widely applicable in real life. While there is some truth in this criticism, it is argued that one should not approach a case, as though it was a single respondent (Tellis, 1987). Several authors suggest solutions to assist researchers on addressing generalization that this study adheres. Buttriss and Wilkinson (2006) maintain that generalization does not have to be universal or have wide applicability that researchers can acknowledge tendencies and patterns but these do not have to work for them to be present. Stake (1995) proposes the approach-centered on a more intuitive, empirically-grounded generalization, which he termed 'naturalistic' generalization. Yin (1984) refuted criticisms by delineating analytic generalization and statistical generalization. Eisenhardt (1989) argues that case studies can be just a starting point for theory development and suggests a cross-case analysis involving several case studies may provide a good basis for generalization. In the example a processual multiple case study methodology was opted for because this type of approach is generally preferred when 'how' or 'why' questions are posed (Yin 2009).

One important benefit in applying research methodology such as case study is an opportunity to use a triangulated research strategy. In case studies, this can be done by using multiple sources of data (Yin, 1984). The example study follows Denzin's (1984) recommendation on applying triangulation in both theoretical and

methodological sense. Theory triangulation allowed this study to investigate the phenomenon from various viewpoints. In the example cases this meant that the corporate brand was analyzed from the customer, dealer, manager and employee perspectives. The quality of triangulation also increases, relative to the number of data sources and methods on which the case study's analysis and conclusions are based (Yin, 1984). Thus, to carry out the empirical part of the example study, a combination of qualitative and quantitative approaches was favoured.

Qualitative stage: exploratory study

In the example study in-depth interviews were utilized since the use of such a method has been advocated as a means to that is both rich in contextual information and deep in understanding (Harris, 2010). In-depth interviews were deemed ideal for investigating, where researchers are seeking individual interpretations and responses. In-depth interviews are also valuable for researching people with busy lifestyles who would be unlikely to attend a focus group - e.g. senior businesspeople, which was the case in the sample study.

The information-oriented sampling (Yin, 2009) was representative and consists of a wide range of individuals. Thus in the sample study individuals responsible for marketing and sales, brand management, product development, corporate and marketing communication, public affairs, and external individuals from advertising agencies were chosen as the target sample population. The primary goal of the interviews was to determine common themes for the development of a questionnaire for use in a survey. Existing academic and practitioner literature, industry reports, printed company materials also served as sources to develop the survey constructs. As the respondents were busy executives, the use of semi-structured in-depth interviews was deemed the most appropriate mode. Semi-structured interviews are conducted with a fairly open framework which allows for focused, conversational, two-way communication that allows both giving and receiving information; unlike more a more formalized interviewing. The interview coding involved determining the frequency with which each interviewee mentioned a certain theme. All the interviews lasted two hours and were tape-recorded. Content analysis was employed in order identify the recurring themes for the quantitative questionnaire.

Yin (1994) and Stake (1995) argued that using multiple sources of data is important for ensuring construct validity. In addition to the primary research methods, the example study used multiple sources of evidence including organizational charts, corporate brochures, annual reports, and published internal case descriptions. In addition, the researcher employed external sources of information from independent media sources and databases as well as alternative, rival interpretations in the analysis. In total, 28 in-depth interviews with senior managers were conducted across the three case firms in the example study. This meant that multiple informants per case added to the richness and validity of the data.

Reliability can also be achieved in several ways in a case study. One of the ways of achieving reliability is the development of the case study protocol (Tellis, 1997). Yin (1994) also asserts that the development of the rules and procedures contained in the protocol enhance the reliability of case study research. For example, in the sample study data analysis commenced with written case reports which were also

returned to key informants for factual verification. The researcher also used audio-taping to ensure the tapes were available for subsequent analysis by independent observers. A coding frame was developed to characterize each utterance in relation the relevant topics concerning the phenomena under study (e.g. Krippendorff, 1980). The majority of the interviews were recorded and an NVivo database was created to assist in maintaining a project journal/protocol and consistent coding and analysis of data.

The quantitative questionnaire

The questionnaire in the example study was an eight-page long, double-sided document. The constructs were measured using seven-point Likert scale. As noted by Jaeschke and Guyatt (1990), 5-point scales do not provide sufficient sensitivity to detect small, clinically significant differences. Also, Diefenbach et al. (1993) found a 7-point scale to be more sensitive than a 5-point scale. The questionnaire was standardized and undisguised for all the respondents. To enable measure validity, the neutral response alternative was included (Churchill and Iacobucci, 2002). In the process of developing new constructs, a number of procedures recommended by Churchill (1979) were employed to ensure the appropriate scale development. These procedures included the employment of multiple item measures, which enables more comprehensive portrayal of the concepts under the measurement, ranging from seven to fifteen measures. Thus it can be seen that all avenues were followed to ensure reliability and validity of the results as well as providing a detailed database for analysis.

Quantitative stage: the pilot study

In total, 20 randomly sampled questionnaires from the population of a local university, as well as managers in the participating organizations participated in a pre-test survey. Market research literature has surprisingly few sample size recommendations for pilot studies. However, some relevant articles bring attention to the matter. Isaac and Michael (1995) suggested that "samples with N's between 10 and 30 have many practical advantages" (p. 101). For similar reasons, Hill (1998) suggested 10 to 30 participants for pilots in survey research. The pilot resulted in 97 per cent response rate. Using the results from the pre-test, all the measures were further refined to capture the each construct comprehensively. This illustrates the importance of using a pilot study. A pilot study helps the researcher uncover possible errors such simple grammatical or comprehension errors.

Survey

In order to increase response rate, the principle of Dillman's (1991) "Total design method" were employed in the example study. Three central concepts of Dillman's total design method are: cost minimization for respondents, perceived reward, and increase of consumer trust. Therefore the survey package consisted of an outgoing envelope, two cover letters, the questionnaire and a return envelope. To increase confidentiality the three organizations were responsible for distribution of the survey packages. For the organizations this meant that an outsider did not gain access to their databases. This tactic is strongly recommended because it demonstrates to the participating organizations and the gatekeepers within those organizations that the researcher or research team respects the organizations privacy.

Often a major issue when requesting research assistance from organizations is access to their internal databases. One must understand that these databases often are considered an important aspect of competitive advantage for these organizations. In the example study it was expected that since companies distributed surveys from their internal databases, that there would be a small number of 'return to sender' occurrences. The response rates presented in Table 1 illustrate the success that can be achieved when working collaboratively with the organization.

Table 1. The response rates in the example study

The response rate of usable surveys	Case study A	Case study B	Case study C
Managers	51% (11)	33% (50)	60% (90)
Employees	57 % (220)	28% (195)	50% (223)
Dealers	40% (150)	42% (200)	42% (200)
Consumers	25% (235)	33% (280)	30% (260)

The numbers in brackets are the usable questionnaires

Establishing psychometric properties of the measures

To begin, it is necessary to ensure that the data gathered from the quantitative produces reliable and valid information. This can be done through testing the psychometric properties. In other words, how well did the survey capture/measure the constructs under investigation? When a researcher has a general idea regarding the structure of the data comprising the research constructs but there is no preconceived thoughts about this data, is it recommended to undertake both types of factor analysis: Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) (Hair et al. 1998). Undertaking EFA is viewed as critical in the absence of a sufficiently detailed theoretical foundation (Churchill, 1979). Undertaking EFA allows a researcher assessing the construct unidimensionality and determining hidden dimensions (Ahire and Devaraj, 2001).

Reliability

The importance of multiple sources of data to the reliability of the study is well established (Stake, 1995; Yin, 1994). The reliability in the quantitative stage of the example research was established using a measure of internal consistency of a set of items is provided by the *coefficient alpha* as per recommendations by Churchill (1979) and Nunnally (1967). A low coefficient alpha is an indication of the sample of items performing poorly in capturing a construct within the research. Nunnally (1967) suggests a coefficient alpha of .50 to .60 would suffice to validate a construct.

Two types of validity are critical and were established in the example study. These were construct and discriminant validity. The former is established through ensuring that the construct measures exactly what was intended to be measured. Discriminant validity ensures that the concepts under the investigation are diverse. Fornell and Larcker's (1981) formula of *average variance extracted* (i.e. the average

variance shared between a construct and its measures) (AVE) and Chi-square differences should be used to evaluate discriminant validity.

Analysis

The performance impact of misalignment was measured using Pearson correlations (Van de Ven and Drazin, 1985; Venkatraman and Prescott, 1990) and Multiple Regression analysis. While correlations are useful for determining the strength of the association between the variables, the correlation coefficients do not reveal cause and effect. Therefore, in order to examine the relationship between independent or predictor variables, multiple regressions followed the correlation analysis (see Vorhies and Morgan, 2005).

Measure development

Churchill (1979) suggests that there are six steps that are essential in developing better measures. This works hand in hand with reliability and validity and creates research that is verifiable. Thus when doing research, especially in the public sphere of administration and governance, it is paramount that the data collected and the information garnered from it creates pathways for informed decision making. One can see the six steps were followed throughout the example study. The first is to specify domain of construct. This was established by a careful review of the available literature thus gaining a deep understanding of the intended phenomena, and doing a qualitative study to gain insights. The second step, generating sample of items, was again established through the qualitative study. The third step, purifying the measures, was accomplished through the use of the pilot study and through the use of analytical statistical tools such as coefficient alphas. The fourth and fifth steps again were done with the use of the various analytical tools and the triangulation, which was deliberately created within the study. The last step, finalize measure, speaks to the ability to use the measure to assess the given phenomena in different environments. Therefore one can see it is important to provide an arena of research that allows for a multiple source of data as a multiple case study approach allows.

Conclusions and implications

During the past decades, research collaboration between researchers from different disciplines has become more frequent. However, there is a need to look into the need for cross-disciplinary frameworks for research methodology. These activities provide unique opportunities for 'networking' between disciplines and for assisting researchers in facing the problems outside their own disciplines.

This article is an attempt to provide one such framework to assist researchers in the application of multi-method approach within multiple case study research design. The emphasis is on providing the *research progression*, as well as on procedures necessary for desirable reliability and validity properties. Finally, the article provided suggestions about analyses approaches. The real rationale as to why the methodological and analytical approaches of multiple case study methodology are presented is too provide researchers with stronger methodological approaches to facilitate informed decision making in the private and public spheres.

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