
A Review of Research Methods in Strategic Management; What Have Been Done, and What is Still Missing

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Research methods designed to study strategic management, are as varied as the theories of strategy that have been developed over time. From the purely quantitative methods with mathematical models such as structural equations or multiple regression models, even the purely qualitative methods such as ethnography, or direct observation. However, despite the differences, all these methods are intended to build theory about the strategic management. In this sense, the present paper, reviewed the methodologies used in the generation of knowledge regarding the strategic management, and proposes future lines of research on the topic and the methods used.

Keywords: *Research methodology; Research strategy; Strategic management.*

Introduction

Research methodology within strategic management has not been a well-developed field in the academic and scientific literature. The study of strategic management is eclectic in nature, theory based, with substantial empirical research. Much of the strategic management research has been using surrogates for the firm's strategic direction.

A good theory in strategic management must meet the criteria of being uniqueness, parsimony, conservation, generalizability, fecundity, internal consistency, empirical riskiness, and abstraction. "A theory is a systematically related set of statements, including some law like generalizations, (sic) that is empirically testable" (Rudner, 1966: 10). A scientific theory must have generalized conditionals, empirical content, and exhibit nomic necessity. A theory that lacks support based on scientific methodology, it cannot develop into a proposition, hypothesis, conception, or model subject to empirical testing (Van Maanen, Sorensen, & Mitchell, 2007; Xu & Zhou, 2004). Theoretical structures are intended to represent and give insights into the phenomena of the real world. Representations of the real world do not necessarily portray the real world itself. The dominant worldview is the form of framing sciences at any given historical moment by a particular paradigm (Kuhn, 1970; Hesse-Biber & Leavy, 2008).

A paradigm is, "a system of ideas or theoretical principles that determine, maintain and reinforce our way of thinking about an issue or a topic" (Plowright, 2011, p. 177). Plowright (2011, p. 177) argues that a paradigm is a scientific approach in which "the world we inhabit has an ontological reality, an existence that is not dependent on our perception, understanding or descriptions of that reality or world... constructivist paradigm, in contrast, claims that reality is mind-dependent and is socially constructed through the relationships, psychological activities and shared understandings that we all take part in". "The work of Kuhn, and the sociologists of science... showed that scientific change had little to do with the shape science obtains through the application of a general rational method, and more to do with the fact that it is a social institution." (Hughes & Sharrock, 1997, p. 93)

This paper review and examine how strategic management researchers apply research methods, and what strategies use as part of the research process, to locate, organize, manage, transform, create, communicate and evaluate research tools and data and information resources. The objective of this paper is to analyze recent developments on research methodology to create scientific knowledge in theory building and practice in strategic management. The objectives of the analyses offer an overview of methodologies used in strategic management research. The assessment of strategic management's research methodology is based on a review and analysis of strategies for the incorporation of knowledge of managerial research methods. To identify and discuss some methodological

research issues in strategic management, this paper reviews future directions on research methodologies in strategic management.

Methodology

Research methodology is defined as highly intellectual activity used in the investigation of nature and matter and deals specifically with the manner in which data is collected, analyzed and interpreted. A research methodology defines the research purposes, activities, procedures, measurements and applications. The background of research methodology refers to philosophy of research conceived as the way in which is formulated the research strategy and the way in which research is conducted. The research methodology determines the framing of explanations arisen from the analysis of data and observations.

Although the field of strategic management is growing, the development of research methodologies applied has not the same tendency. Research methodology in strategic management has developed from single case studies at firm and industry levels on issues such as corporate strategies and firm performance (Rumelt 1974). Rumelt (1991) based on some methodological features empirically demonstrated that industry was less important than firm characteristics for firm performance. Research methodology used in strategy has contributed substantially to the development of the strategic management and can make significant contributions to the knowledge and study of administration and strategy fields.

Overarching research methodology goals can apply to individual specific projects managing their participants and deliverables. Sharing methodological expertise involves knowledge dissemination of techniques and practices. Changes of research methodology practices may involve some convenience in the use of research methods. Anshen and Guth (1973) argue that the field of research methodology requires some research strategies to improve the research capital such as the study of science and arts, the design and use of analytic concepts and operational approaches, the study of historical relationships and the examination of interfaces with social problems and other institutions. Research methodology is the rationale behind a technique of collecting and analyzing data systematically.

Data collection

Research methodology is the system of collecting data for research projects, either theoretical or practical research. Data collection is treated as a design issue to enhance the construct and internal validity of the study, as well as the external validity and reliability (Yin, 1994).

Data analysis

"Data analysis consists of examining, categorizing, tabulating, or otherwise recombining the evidence to address the initial propositions of a study" (Yin, 1994). Research methodologies and data analysis are increasing in sophisticated domains.

Other data analysis are being used in strategic management research such as repertory grid (Ginsberg, 1988, 1989; Reger & Huff, 1993), cognitive mapping (Huff, 1990), and policy capturing (Hitt & Tyler, 1991). Alternative techniques of data analysis use diverse methods as using arrays to display the data, creating displays, tabulating the frequency of events, ordering the information, etc. (Miles and Huberman, 1984).

Taxonomy of research methods

The taxonomy developed by Van Horn (1973) classifies empirical studies in case studies, field studies, field experiments and laboratory experiments. Alavi and Carlson (1992) presented taxonomy of research methods in three levels: Conceptual, illustrative and applied concepts. Saunders and Thompson (1980, 129) compare conceptual with empirical research and argue that a turn away "from feeble attempts at the insight type and toward hard examination of applicable data in an empirical framework is what is needed now." Keegan and Kabanoff (2008) developed a measurement approach through applying content analysis to annual reports that incorporates managerial discretion into conceptual and empirical models. Thus, a mix of empirical testing and explanatory conceptual search aims at theory building and development for the field.

There is not any best single research methodology intrinsically better (Benbasat et al., 1987). For example, it is required to have a more pluralistic attitude towards strategic management research methodologies

(Remenyi and Williams, 1996). To improve the quality of research it requires adapting a combination of methods (Kaplan and Duchon, 1988) and avoiding only using a single research method characterized as methodological monism.

Theory-testing and theory-building

The research methodology should imply the use of both an inductive logic and a deductive logic at different phases of the research based on previous findings and allowing theory-testing and theory-building. Inductive methodology research can be qualitative and quantitative and is being used to generate inductive theory. Quantitative techniques may be used as inductive methodology to generate inductive theory. Empirical findings emerging from the strategic management research have been for the most part inductive oriented in nature and aimed at theory building. Research methods in strategic management provide the theory-testing and theory-building and framework analysis to be applied to practical problems.

Theory-building research seeks to find similarities across many different domains to increase its abstraction level and its importance. The procedure for good theory-building research follows the definition of theory: it defines the variables, specifies the domain, builds internally consistent relationships, and makes specific predictions. Theory-building in strategic management is not developing evenly across all methodologies. If strategic management theory is to become integrative, the procedure for good theory-building research should have similar research procedures, regardless of the research methodology used. Jemison (1981) support the integrative research in content and process advocating the mid-range theories and hypothesis testing. Tyler (2000) discussed procedural justice sustaining that people may apply the heuristic by proper procedures to achieve outcomes.

Theory-building of strategic management research has been approached from the perspective of industry effects. Chandler reported in case study methodology some strategy management problems providing the basis for theory-building. The typology of generic strategies (Porter, 1980) is the framework that has fostered theory-building and empirical work. Some theory-building borrowed from the resource-based theory are amenable to empirical test through methods such as the "rate perspective" (McKelvey, 1997: 365).

Research in theory-building and operational procedures in strategic management needs to incorporate rational-analytical, behavioral-neoinstitutional and political approaches.

E- Limitations of research methods

Given the nature of the phenomena investigated in strategic management, the research methodology may have certain limitations. The research methodology is better suited to investigate phenomena in strategic management where few moderating or intervening variables have an impact on the relationships between dependent and independent variables. The methodological structure of strategy investigations has enduring effects (Hitt, Gimeno, & Hoskisson, 1998). Strong structures in the research methodology ensure guidance to be focused at all times. Thomas (1984, 14) suggests that "theory development should be the most important aim for research" in strategic management to have directions and traditions because it suffers from an identity crisis and lack of consensus.

Research strategies

Strategic management uses a relatively restricted set of research strategies and analytical methodologies of choice (Podsakoff and Dalton, 1987). The research strategies adopted to improve research in strategic management requires analytical concepts, theory building, formal analytical techniques and operational procedures.

Research strategies exist within the knowledge movement. Deploying knowledge governance mechanisms that mitigate costs of creating, sharing and integrating knowledge may have normative and practical implications for the research strategies in strategic management. Tripodi and Epstein, (1978) present potential uses of two strategies for incorporating knowledge of research methods. Foss (2009) discussed the dominant research strategies framed by the "knowledge movement" (Eisenhardt and Santos, 2002; Nonaka, 1994; Spender, 2005) manifesting itself in organization and strategic management. Foss (2009) sustained alternative research strategies distinguishing between "capabilities first", "networks first" and "individuals first" strategies. A research strategy may begin from individual members.

Foss (2009) elaborates a simple taxonomy of research strategies within the knowledge movement that he calls "Capabilities First," "Networks First," and "Individuals First". The capabilities first and the networks first research strategies focus on supra-individual antecedents seeking to account for firm-related outcomes such as integration, knowledge sharing, innovation, etc.

Theory - Review of Literature

The strategy research field borrows from different normative, interpretative, analytic, positive, empirical and the quantitative-qualitative research approaches, among others. The study and research of strategic management is eclectic in nature, theory based and empirical research.

Normative approach

The development of normative theory is enhanced by the differences in determination and explanation of strategies as a salient goal of strategic management research (Schendel & Hofer, 1979). The rational normative model assumes that the nature of the theoretical problem may determine the choice of the appropriate research method (Cohen, March, and Olsen, 1972, Martin, 1982). Normative theory-building is enhanced if a causal relationship is supported between the performance construct and other constructs, where performance is the outcome and not the cause under consideration.

Hinings and Greenwood (1988a) identify configurations as containing elements of both organizational structure and processes strongly underpinned by meaning and interpretive schemes which bind them together in an institutionally derived normative order. The research on strategic management has fruitful developments in strategy content and process research.

Multiple domain configuration research enables to study complex multivariate relationships and the fit among constructs in multiple domains for findings that have normative implications. A more integrated approach to theory-building in strategic management research should consider normative results to guide formulation and implementation of strategies in organizational settings. Erroneous interpretations of firm-level performance

may lead to inaccurate descriptions and interpretations of observed relationships, which in turn mislead findings that may have normative implications for researchers and practitioners alike.

Interpretative approach

One important component of the case studies is the criteria for interpreting the findings (Yin, 1994, p. 20). The analysis and interpretation of research in case studies is dependent upon the aggregation of data collected from many sources and participants. The criteria for interpretation of the findings and data linked to the propositions require development in case studies.

Phillips, N., Sewell, G. and Jaynes, S. (2008) suggests some research methods based on a discourse analysis as a critical approach to strategic management to examine and interpret the social construction of reality and the roles of rhetoric and narrative within strategy processes. In strategic management research, constructs are presented as archetypes, gestalts, and configurations. In both normative and descriptive strategy researches explore issues relevant to their configuration appropriateness (Mintzberg, 1990). Research methodologies should be appropriate for configuration research. Configuration research has as an important role to classify, describe and explain the phenomena. Thus, the discourse analysis provides a deeper understanding of the managers' interpretations, intentions, motivations, expectations and decisions.

The critical theory research approach to strategic management opens possibilities to examine, analyze an expose hidden agendas of the strategic agents and actors. An alternative framing of research methods in strategic management may suggest an additional layer and level of investigation when applying specific theoretical approaches. Framing is described as the "selection, emphasis, exclusion, and elaboration" (Weaver, 2007, p. 143). Framing is the way a phenomenon is seen which depends what is chosen to include or exclude aspects to emphasize or elaborate on. Selection is inevitable arbitrary, "and, the greater the mass of information from which a selection has to be made, the more disputable will be the investigator's choice." (Toynbee, 1976, p. x).

Analyses may be valuable if focusing on data definition and interpretation considering institutional structures, and applying evidences from elsewhere. Institutional structure, funding attached to issue?specific

research and data limitations the established databases and large volumes of existing research may affect the research possibilities. Triangulation of methods for interpretation occurs when there some followers of one approach which can increase confidence in interpretation (Denzin, 1984).

Analytic strategies

Significant analytical research has been made in strategic management beyond the typologies and taxonomies of strategies. Any research methodology has a general analytic strategy supported by some analytic techniques which rely on some theoretical assumptions. Strategies for research in strategic management are chosen to provide varying definitions of what strategic management research is, or should be in the development of a theoretical body and formal analytic techniques.

Traditional approaches to strategic management research emphasize some sources of data and analytical technique downplaying some variables while overlooking some others. Researchers that have access to data reduction analytical methods and secondary data sources can develop and test hypotheses related to the field of strategic management from multiple approaches (Ketchen, Thomas & Snow, 1993; Nath & Gruca, 1997). The multiple methods involve data collection of behaviors through personal interviews, focus groups, and webometrics. Thus, there is a range of possibilities for more diverse approaches and sources of information.

Researchers in strategic management must frequently demonstrate their capabilities of the archives and databases, which is a critical task of knowledge dissemination. Data collection and analysis methods in experimental and quasi-experimental research can hide some details (Stake, 1995). Corpus based methods collect data using interviews and newspaper articles marking up using some parts of the speeches to identity portions of sentences, frequencies, concordances, etc., which are processed using text-mining and analysis tools.

The use of corpus-based methods in research requires creating instruments to analyze the concordance through packages and resources such as newspaper data. Corpus-based methods examine concordance by creating a spreadsheet to check and reorder data. Corpus linguistics researchers' methods rely upon machine-readable texts in the "analysis of specially-designed collections of texts by computer" (Anderson, 2008).

Corpus linguists use complex datasets, diverse methods and a variety of theoretical perspectives to tackle research questions. Scanning activities are the gathering of information "about events and relationships in a company's outside environment, the knowledge of which would assist top management in its task of charting the company's future course of action" (Aguilar, 1967, p. 1).

Researchers and scholars show limited uptake of advanced tools for data management and sharing. Organizational strategies are formulated and implemented among managers with the more savvy professionals using document management systems, databases, LaTeX for word processing and other more sophisticated software.

The difference between analytic generalization and statistical generalization was explained in these terms "In analytic generalization, previously developed theory is used as a template against which to compare the empirical results of the case study" (Yin, 1984). Evaluative research methodology aims to provide some useful feedback using standard social research methods. Some analytical tools as event studies, event history analysis, logistic regression, simultaneous equations analysis, and multidimensional scaling are used in strategic management research. Yin (1994) presented some analytic techniques such as pattern-matching, explanation-building, and time-series analysis. Pattern-matching compares a predicted pattern with an empirically based pattern enhancing the internal reliability of the study when both patterns match.

Some analytical tools are become more used in strategic management research such as repertory grid (Ginsberg, 1988, 1989; Reger & Huff, 1993), event studies, event history analysis, logistic regression, simultaneous equations analysis, multidimensional analysis, cognitive mapping (Huff, 1990), and policy capturing (Hitt & Tyler, 1991). Narrow categories for analytic tools such as single versus multiple regressions are used by Shook et al (2003). Multiple regressions became the dominant statistical technique used in strategic management research after the research in the strategic management field was dominated by cross-sectional, static studies and employed few control variables (Ketchen, Boyd, and Bergh,). Regression may not be the most appropriate analytical method to apply where the research design and the causal relationship between two variables is not clear. Keats and Hitt (1988) employed causal modeling approach with longitudinal or time ordered data in their research in

strategic management. Advanced methods of data analyses on strategic management based on databases and text mining tools are bringing greater changes in research methods.

Methodological contributions in conceptualization and measurement of firm-level performance have implications (Meyer, 1991) to analyze formation, adaptation and evolution of organizational configurations on strategic management research.

There is value in additional analysis of processes of change both for assessing desirability and for understanding feasibility. Research value should not be judged solely on the sophistication of the techniques or the quality of available data but on the existing body of knowledge. Analytic modeling provides rational approaches to research in strategic management. However, to determine the correctness of analytic data is not necessary the confrontation of these data with real facts. Model estimation is only part of the way towards addressing feasibility, magnitudes change, costs and benefits, etc., considering also the legitimate research questions that incorporate additional factors.

The use of analytical techniques in management research to develop strategy knowledge can be comparable in scope and impact to the behavioral approach. Aldag and Stearns (1988) review a sample of organizational research topics. Shook, Ketchen, Cychota & Crockett (2003) searched for data analytic trends on 297 papers published between 1980 and 2001 found that the use of analytical techniques is growing, although many scholars report that they are ill-equipped to use these techniques.

Positivist approach

The positivist upbringing favor to have full control of field research under a well-structured research protocol. Amitabh, M. and Gupta, R. K (2010) found that the logical positivism-empiricism paradigm, one way linear causality in the strategy-structure-performance relationship is favored by researchers instead of two-way causality that will increase contributions using innovative designs and archival data.

There are several research methodologies that have been identified by Galliers (1991, p. 149) in two paradigms, the positivist and interpretive. Lack of objectivity associated with interpretive research methods has resulted in adopting a more positivist quantitative approach. Debate has

arisen in between the areas of positive versus normative perspectives (Friedman, 1953). Mixing quantitative and qualitative methods is becoming more common, and Guba and Lincoln's criticisms of positivist approaches in the social sciences cannot be ignored. The positivist perspective has been criticized in the social sciences field. Hughes & Sharrock (1997, p. 197) argues that "Had the social sciences measured themselves against one or other of the natural sciences apart from physics...then the status of the social sciences as sciences might have seemed a good deal less problematic".

Empirical research

Few studies have attempted to empirically determine the extent of the use of a restricted and exclusively set of methodologies in strategic management. There have been major changes in the methodologies of strategic management research despite that the field is still very young.

Hoskisson, Hitt, Wan, W.P. and Yiu (1999) examine the primary theoretical and methodological bases of strategic management through its history. They concluded that the early works (Chandler, 1962, Ansoff 1965) centered on the relationship between strategy and structure can be characterized from a contingency perspective. Early theoretical and methodological developments in strategic management took a contingency approach in Chandler's (1962) *Strategy and Structure* and the resource-based framework in Ansoff's (1965) *Corporate Strategy*.

Miller & Friesen (1978) conducted empirical research to demonstrate the existence of configurations or archetypes that exhibit internal logic, stability and integrity based on what Miller (1987) terms the imperatives such as environment, structure, leadership and strategy. However, due to difficulties in data collection and analysis, empirical research in organizational configurations has lagged behind the development of theoretical approaches. Empirical studies of configurations used cross-validation of responses to assess reliability and convergent validity (Miller, 1986; 1987b; 1988 and Miller & Friesen (1980; 1983).

Theory of the firm

Theories of the firm provide a framework for analyzing important research issues in strategic management (Seth, and Thomas, 1994). Seth and Thomas

(1994) demonstrate the usefulness of economic theories of the firm as a framework for guiding and analyzing strategy research and evaluate the conceptualization of the theory of firm to research strategic management compared to the traditional assumptions of strategy.

To enhance descriptive analysis of the firm as well as to the human agents in organizational research in strategic management, it has arisen a repertoire of cognitive and motivational assumptions from very different sources, such as the economics model of man, behavioralism, social and motivational psychology as a critical reaction to the economic agent theory (Simon, 1955; Cyert and March, 1963).

Industrial organization economics

Industrial organization (IO) economics provides a foundation for research on strategic management with some econometric tools for the analysis competitive dynamics. The macroeconomic approach of industrial organization, the five-force framework (Porter, 1980) and the resource-based view (RBV) (Wernerfelt, 1984) Schmalensee (1985) of firm-specific qualities required new research methodologies, such as analyses of variance decomposition techniques and regression analysis despite the operationalizing the attributes of competitive advantage and firm specific qualities. Empirically the relative advantage of small firms has advantages that have been ill-understood by the discussion (Zenger and Lazzarini, 2004).

Empirical analysis based on Porter's framework has been conducted by Dess & Davis (1984), Hawes & Crittenden (1984), Kim & Lim (1988), Miller & Dess (1993), White (1986), Wright, Kroll, Tu, & Helms (1991). To test the arguments of Porter the method of regression analyses was ushered. Other studies use other methodologies and analytical techniques to sample and measure the firm and industry effects on performance (McGahan & Porter, 1997; McGahan & Porter, 2005, and Ruefli & Wiggins, 2005).

Resource-based theory

The research on firm resources strategy has introduced some descriptive theories from industrial organization economics such as the studies on teamwork production (Alchian & Demsetz, 1972) and the relationship of

price and quality (DeVany & Saving, 1983). Conceptual and empirical research based on resource based-view is very limited in terms of augmenting the original knowledge sustained by Barney (1991) as it has been treated by Bates & Flynn, 1995; Brush & Artz, 1999; Litz, 1996; McWilliams & Smart, 1995; Michalisin, Smith, & Kline, 1997; Mosakowski, 1998; Powell, 1992a,b; Rindova & Fombrun, 1999; Yeoh & Roth, 1999).

The industrial organization economics supports the resource based theory as a descriptive and explanatory approach (Barney, 1992; McWilliams & Smart, 1995; Meyer, 1991) whereas the strategic management has a prescriptive orientation. Empirical research on strategic management based on the resource-based view has used course-grained measures of firm intangible resources. The resource-based view provides some foundations for research on strategic leadership and process research on decision theory. However, the resource-base view of the firm supports the assumptions of heterogeneity and the imperfect mobility of resources of firms within an industry (Barney, 1991: 101). Recent research in strategic management has accepted the application of the resource-based view of the firm despite that it is difficult to test empirically because of the complexity and difficulties in operationalizing and measuring idiosyncratic firm resources and capabilities that are valuable, rare, costly to imitate and no substitutable (Barney, 1991). Armstrong & Shimizu (2007) examined 125 papers employing methods in resource-based view studies from 1991 to 2005 finding that although researchers have overcome some challenges in studying resources and their effects, others challenges still remain.

Capabilities

The dominant resource-based analytics in strategic management is considered to be the sustained competitive advantage emerging through firm-specific capabilities (Dierickx & Cool, 1989; Barney, 1991). Empirical research on the resource-based view and capabilities theory has been using some course-grained measures and proxies of firm resources, such as human capital leverage, intangible resources, technological and organizational capabilities, etc.

A critical methodological challenge for strategic management is the capabilities development to offer evidence-based findings those organizations and managers can use to improve and attain the best

performance (Locke & Latham, 1990). A starting point for scientific analysis in knowledge in firms is the collective levels rather than an empirical proposition despite that there is significant evidence at individual level, such as the empirical research on routines and capabilities predominantly mono-level (Gupta, Tesluk & Taylor, 2007).

Stinchcombe (1991: 379-380) argues that "[w]here there is rich information on variations at the collective or structural level, while individual-level reasoning (a) has no substantial independent empirical support and (b) adds no new predictions at the structural level that can be independently verified, theorizing at the level of [individual level] mechanisms is a waste of time."The Knowledge-based theory of economic organization (Grandori, 2001, Kogut & Zander, 1992; Nonaka, 1994; Spender, 1996; Grant, 1996; Nickerson & Zenger, 2004) brought to research in strategic management fresh concepts and analytical methods, constructs, dimensions (Winter, 1987) and measures (Heimeriks & Duysters, 2007).

Empirical research within strategic management supports the argument that productive knowledge at the firm level has an impact (Hoopes & Madsen, 2008). However, the knowledge movement has some difficulties in identifying theoretically as well as empirically the causal mechanisms. Self-determination theory (Deci & Ryan, 1985), form motivational psychology has supported successfully both theoretical and empirical research in knowledge-related behaviors (Cabrera, Collins & Salgado, 2006).

Other empirical approaches

Stake (1995) proposed a naturalistic generalization as an intuitive empirically grounded approach based on relationships between the experiences of the researcher, the readers and the case study itself, facilitating the understanding and explanation of the unit of analysis. The empirical implications regarding the unit of analysis are related to the operationalization and the types and sources of data in research using the configuration approach. The empirical use of more holistic methods on the research of configurations (Venkatraman & Prescott, 1990) such as canonical correlation analysis, cluster analysis and q- factor analysis empirically facilitates to capture multivariate interconnections among strategy, structure, organizational behavior, process and environment.

Econometric methods

Empirical strategic management research may get more support from econometric theory models. The empirical research in strategic management is increasing with the use of econometric methods, changing the appropriate use of empirical research methodologies in strategic management. Empirical methods centered on the use of econometric techniques taking account for endogenous and omitted variables for discrete strategy choices is becoming more widely applied in strategic management research. Econometric data only describe and analyze situations that are history because they have already occurred. Econometric techniques are such as classical regression, limited dependent variables, and methods that account for omitted variables.

Common econometric research techniques automatically exclude much available information. An empirical research analysis of performance as a function of decision variables, assume that are exogenous, to yield right results should correct endogeneity based on the assumption that managers make decisions to achieve higher performance. The empirical research approach is common in experiments assuming that strategy choice can be exogenous and assigned randomly to participants. Econometrics implicitly excludes from the analysis much of the information coming from a variety of sources of data and research methods used by other sciences by selecting only the functional forms and information suitable for econometric analysis.

Empirical research in the field of strategic management is concerned with endogeneity. Empirical papers should consider endogeneities to be corrected econometrically. Empirical research in strategic management is beginning to focus on correcting for endogeneity, and must benefit from econometric advances. To achieve highly pertinent empirical strategic management research is required the implementation of econometric methods to correct for endogeneity. Empirical strategy research in firm-level performance outcome should consider correcting for endogeneity.

Hamilton and Nickerson (2001) reviewed more than a decade of empirical research and assessed the econometric methods used and found that few papers econometrically correct the endogeneity of management decisions and the expected performance. Hamilton and Nickerson (2001) report in their study that 169 of the 196 performance-related papers (86%)

do not control for endogeneity. They also report that out of 601 papers, 426 empirical papers published, only 27 papers explicitly econometrically correct for potential endogeneity concerns. The authors argue that empirical research in strategic management is a failure due to the low number of papers that account for endogeneity. Failure to statistically correct for endogeneity leads to faulty conclusions contaminating the direction of empirical research difficult to predict *ex ante*. The empirical research in strategic management simply reports coefficient estimates and "robust" standard errors that account for heteroscedasticity but not pre-estimation error.

No-econometric methods

Non-econometric are simple statistical descriptors or multivariate analysis, exploratory data analysis such as principal component analysis or clustering analysis, etc.

Research strategy in strategic management is having a major shift away from more basic analyses, such as descriptive studies with a rise in the use of regression and ANOVA models. Empirical papers use descriptive statistics, means and correlations as their primary analysis, chi-square tests of contingency tables, regression and ANOVA for analysis, and discriminant and cluster analyses in the context of strategic groups. Cluster analysis has been applied as a research technique in strategic management research since the late 1970s. Ketchen & Shook (1996) focused on cluster analysis of 45 papers published during the period 1977-1993 found that the implementation of cluster analysis methodology often less than ideal.

Logical empiricism as a research approach has been used for example to identify performance indicators of implemented strategies. Empirical strategy research is emerging in the form of a broad-based narrative reviews, content analyses and best practice guidelines. Collaboration among researchers involves detailed methodological and content analysis and discussions, often taking into account the established standards and even challenging them. The empirical content criterion addresses the logic and semantic of theory rather than vagueness, as Bacharach (1989) argues that many organizational-level theories are so vague they can never be empirically tested.

Empirical strategy research has gained from the use of contingency tools. Boyd, Haynes & Hitt (2007) identified moderation in form or strength (Venkatraman, 1989) such as interaction, as the most prevalent tool used to analyze contingency studies. There is little empirical research to support the assertion that control of strategic assets determines the profitability of firms (Miller and Shamsie, 1996).

An empirically based pattern may be confronted to the initial theoretical framework for theoretical validation. Empirical tests include field-based case study and comparative outlier (Hitt, Harrison, Ireland, and Best, 1996) and the case survey (Larsson, 1993) methodologies used for theory development and for theoretical replication and extension. Field research methods have been used to develop strategic management theory supported by a multiplicity of research approaches and data analysis techniques.

Results and research findings in empirical research should be reasonably accurate despite the implicit assumptions due to loss of information to portray the phenomena under investigation. Results based on empirical research pertaining to scanning practices have contributed to the development to theoretical approaches to strategic management.

Anshena and Guth (1973) emphasize the need of integrative, multidisciplinary research in strategic management. Empirical methodology research in strategy, model building and new techniques should be emphasized (Saunders and Thompson, 1980). Jeremy Bentham advocated utilitarianism, the dominant consequentiality position. A utilitarian believes in 'the greatest happiness for the greatest number.' (PHG Foundation, 2011).

Case study

Case studies are fine-grained research methodologies (Harrigan, 1983). Case study methodology has applications to investigate empirical phenomena in real-life contexts. A case study model can be applied to explain and describe complex causal links in real-life interventions, to describe the intervention itself and to explore some situations (Yin, 1994). A case study can be used to analyze by building an explanation as a pattern - matching, for exploration send a hypothesis-generating process. One of the characteristics of the research methodology of case studies is that researchers have no control over behavioral events (Tellis, 1997).

Moreover, case studies, has been used, particularly in exploratory research, where the case is so relevant, and particular that must be studied from an inductive perspective in order to give the researcher the opportunity of theorizes about some particular relations among actor, organizations or whatever combination (Eisenhardt, 1989).

As a research tool of strategic management investigations, the case study methodology has been employed since the 1930's subject to criticisms that consider is not a reliable research methodology. The methodology of case study recommended by Yin (1984) and a version of the questionnaire developed by Levy (1988) were modified and adapted for use at Fairfield University. Levy (1988) used the methodology of the case study in his investigation aimed to show the impacts of information technology at the University of Arizona.

While the exploratory strategy examined the environmental and economic aspects of information technologies, the explanatory strategy analyzed the patterns followed by institutions of higher education when acquiring and using information technology. The single-case study methodology used by Levy (1988) was based on the contributions of Yin (1984) and Feagin, Orum, and Sjoberg (1991).

Case study research is not necessarily sampling research considering that it is a system of action focusing on some selective issues where the most critical factor is the unit of analysis. Each case study is unique in such a way that the data collection, questions and unit of analysis cannot have the same form. The unit of analysis in a case study could be "an individual, a community, an organization, a nation-state, an empire, or a civilization" (Sjoberg, Williams, Vaughan, & Sjoberg, 1991). Case studies have been used in varied strategic management investigations an ideal methodology when a holistic, in-depth investigation is needed (Feagin, Orum, & Sjoberg, 1991).

The case study methodology requires a discussion of procedures and their application. "good use of theory will help delimit a case study inquiry to its most effective design" (Yin, 1993, p. 4). To consider case studies as a research strategy in strategic management consideration must be given to construct internal validity, external validity, and reliability (Yin, 1989). The reliability, internal and external validity of any case study research can be enhanced by the rules and procedures stated in the protocol, more essentially in multiple-case studies (Yin, 1994) that follow replication logic. To ensure accuracy in case studies, and to confirm validity of the research

processes is required triangulation to establish meaning with explanations using multiple sources of data (Yin, 1984).

Case studies can be exploratory, explanatory, descriptive (Yin, 1993) intrinsic, instrumental and collective (Stake, 1995) and multiple-case applications. Exploratory case studies may be used to prelude research. Exploratory case studies aim to find causal relationships in research. Descriptive case studies are based on descriptive theory.

The multi-site study is a research strategy that combines several approaches merging on case study research (Eisenhardt, 1989; Yin, 1993, 1994). Audet, J. and d'Amboise, G. (2001) conducted a case study research in a multi-site study to analyze data of an organizational phenomenon by combining the positivism, interpretative and qualitative theoretical approaches using cross-case comparisons and explanation building techniques.

Yin (1994) recommended as a case study methodology to design, conduct, analyze the evidences and develop the conclusions, recommendations and implications. The development of the case study protocol is required in the case study methodology (Yin, 1994). A complete description of the research explains what available information is necessary to use. Design of case studies as a research strategy should satisfy the conditions of the research question posed, the extent of control and the degree on focus over behavioral events (Yin, 1994). Case study as a research designs are not variants of other research designs (Yin, 1994).

Case studies are designed to use multiple sources of data bringing out the details from diverse viewpoints of the involved participants. The case study as a strategy of research in strategic management has the characteristic to consider points of view of all parties, agents and actors involved regarding the selected issues to study (Feagin, Orum, & Sjoberg, 1991). The nature of the research questions lead to the relevant strategy to be used in an explanatory-exploratory case study (Levy, 1988).

The analysis presented in a case study must include relevant evidence, use of rival arguments. Using multiple sources of data for case study research based on documentation, archival records, interviews, direct observation, participant observations and physical artifacts (Yin, 1994) is an important strategy to achieve reliability of the research (Stake, 1995; Yin, 1994). Yin (1984) analyzed the strengths and weaknesses of the different sources of evidence, which are presented in table 1.

Yin (1994) recommended conduct as the second stage of the methodology used in a case study, to be carried out by the activities of preparation for data collections, distribution of the questionnaire and conducting interviews. As a field method, data collection is treated in isolation from the research process (Yin, 1994), although this would not be productive in case study research.

Table 1: Types of Evidence

Source of Evidence	Strengths	Weaknesses
Documentation	<ul style="list-style-type: none"> • Stable - repeated review • Unobtrusive - exist prior to case study • Exact - names etc. • broad coverage - extended time span 	<ul style="list-style-type: none"> • Difficult • Biased selectivity • Reporting bias - reflects author bias • Access - may be blocked
Archival Records	<ul style="list-style-type: none"> • Same as above • Precise and quantitative 	<ul style="list-style-type: none"> • Same as above • Privacy might inhibit access
Interviews	<ul style="list-style-type: none"> • Targeted - focuses on case study topic • Insightful - provides perceived causal inferences 	<ul style="list-style-type: none"> • Bias due to poor questions • Response bias • Incomplete recollection • Reflexivity - interviewee expresses what interviewer wants to hear
Direct Observation	<ul style="list-style-type: none"> • Reality - covers events in real time • Contextual - covers event context 	<ul style="list-style-type: none"> • Time-consuming • Selectivity - might miss facts • Reflexivity - observer's presence might cause change • Cost - observers need time
Participant Observation	<ul style="list-style-type: none"> • Same as above • Insightful into interpersonal behavior 	<ul style="list-style-type: none"> • Same as above • Bias due to investigator's actions

Physical Artifacts	<ul style="list-style-type: none">• Insightful into cultural features• Insightful into technical operations	<ul style="list-style-type: none">• Selectivity• Availability
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Source: (Yin, 1994, p. 80)

The case study methodology has the data analysis of case study as one of the least developed areas of research methods. Research based on case study has a frequent criticism of the generalization of results that are not being widely applicable in real and some other specific situations. There has been a lot of criticism of some research techniques and methodologies of not being scientific in nature, such as the case study because it is not possible to replicate it.

Quantitative and qualitative research

There is a trend in strategic management research projects toward the integration of both quantitative and qualitative data (Judge and Zeithaml, 1992) that requires using multiple methods and measures (Hitt, Hoskisson, Johnson, and Moesel, 1996). The increasing sophistication of some research methodologies combines both quantitative and qualitative approaches and statistical tools. Combined qualitative and quantitative data approaches as a strategic management research design methodologies is gaining more grounding and popularity. There is an increased tendency in the quantity and quality of research developments in the theoretical and methodological fields of strategic management (Hitt, 1997). Research in strategic management tends to integrate in complex models both quantitative and qualitative data (Judge and Zeithaml, 1992) requiring multiple methods and multiple measures of specific constructs (Hitt, Hoskisson, Johnson, and Moesel, 1996).

Quantitative research

The analytical mathematical research methodology, analytical statistical and causal relationships are popular quantitative research methods used in strategic management to test for internal validity. Quantitative research is

the systematic scientific investigation used to measure and gather quantitative data of everything that is measurable.

Quantitative research methodology in strategic management emphasizes longitudinal data, dynamic analysis, and focus on specific strategic decisions and actions. Data for quantitative research can be collected through interviews, structured questionnaires, surveys, etc. Quantitative measures are likely to facilitate cross-case comparisons comparison between scores, and the use of multiple indicators with scales provides more confidence in the validity of the measure.

However, Quantitative methodologies have some limitations if they are confined in studying configurations, despite overcoming problems associated with conventional statistical analysis.

Qualitative research

Qualitative research methodologies have evolved beyond the techniques of qualitative data collection helping researchers to improve understanding and explaining a variety of complex management phenomena. The qualitative research approach can be used to analyze the strategic management phenomenon barely researched that is both adaptive and innovative. Given the complexity and ambiguity of the qualitative methodological components (Lee, 1999), the researcher has more room to design a research strategy more suitable to his skills and his specific objectives and needs.

Qualitative research is a multi-focal investigation to get an in-depth insight of behaviors, values, attitudes, motivations, etc., based on unstructured interviews, feedback and recordings methods. Qualitative data are useful for uncovering emic views (Guba & Lincoln, 1994, p.106).

Greckhammer, Misangyi, Elms, and Lacey (2008) introduce the research technique termed qualitative comparative analysis (QCA) for strategic management research aimed to diagnose interdependent causal effects across different levels of analysis. Longitudinal qualitative analysis as a research strategy in strategic management provides meaningful insights about the inter relationships among the environment, strategy, structure, processes and outcomes and the different constructs of organizational evolutive configurations (Eisenhardt, 1989; Bourgeois & Eisenhardt, 1988). A qualitative research design may support and combine theory testing and

generation (Lee, 1999). Qualitative research does not require and justifies probabilistic sampling (Merriam, 1998, p. 61). Patton (1999, p. 1190) argues that, "it need not be antithetical to the creative aspects of qualitative analysis to address issues of validity and reliability". Other research methodologies such as case replication (Leonard-Barton, 1990) and retrospective event histories (Glick et al., 1990) are designed to overcome some of these problems.

Some approaches to strategic management include action (Birks, 2010; Stringer, 2007) and grounded theory (Strauss & Corbin, 2008), approached that differ from the "detached observer" view of research. Egon Guba describe action research as a reaction to the search for common, general findings (Stringer, 2007, p. ix) that combines qualitative and quantitative research methods in a close involvement in specific situations.

Qualitative studies are being the target of criticism which considers has limitations because they are subject to the researcher bias, non-replicability and labor intense (Van de Ven & Huber, 1990). It is also criticized the impartial observer view of detached researchers (Guba & Lincoln, 1994) as unrealistic, because their subjectivity. The concept of "street-level epistemology" (Hardin, 2002 states that information and views are passed on from others, including academic disciplines.

Conclusions

As a field of strategic management advances, so should its level of research methodological rigor. Research methodology improves the scientific background and framework of strategic management, and contributes to enhance confidence in the results and findings generated. McGuire (1986) argues that researchers and managers can benefit from each other if their needs and modes of thinking are compared. Bower (1982) argues that research in strategic management should concentrate on issues of concern to the top management of the firm to enrich the field by well-structured problems although it may emerge the problem of rewarding academics.

The interest in strategic management research has been increasing over the last three decades. Research methods in strategic management have evolved over time growing since its inception in the late 1970s (Bowman, Singh & Thomas, 2002; Kay, McKiernan & Faulkner, 2003; Mintzberg, Ahlstrand, & Lampel, 1998). Some academic papers presented the research

methodological implications in a broad overview of strategic management's development, such as hypothesis formulation, quantitative and qualitative analytic tools among other important methodological issues (Hitt, Gimeno and Hoskisson, 1998).

Strategic management is one of the most recent fields of the management discipline (Boyd, Finkelstein & Gove, 2005; Hambrick, 1990). Strategic management has become one of the most popular fields (Bergh, 2001; Ramanujam & Varadarajan, 1989) since a pioneering research by Rumelt (1974) found that "strategy matters" and gives rise to a notable research in the field (Bergh & Holbein, 1997; Greve & Goldeng, 2004). Research in strategic management has focused on some specializations such as strategic leadership, competitive dynamics, restructuring, etc.

The conceptual, theoretical and methodological frameworks challenged by Williamson's (1975, 1985) model of transaction cost economics, the following investigations on strategic management by Miles and Snow (1978), Meyer (1982), Eisenhardt (1989), and Henderson and Cockburn (1994) produced influential conceptual, theoretical and methodological frameworks. During the 1980s, different approaches to research methodologies resulted in the new theoretical developments of strategic management; among them the transaction cost economics (TCE) (Williamson, 1975, 1985) that provided theoretical and conceptual frameworks, although it is difficult to capture and measure not observed transaction costs in bargaining and negotiating processes.

Content analysis in strategy research has been improving for the last three decades (Bergh & Holbein, 1997; Boyd, Gove & Hitt, 2005; Shook, Ketchen, Hult & Kacmar, 2004). Bergh & Holbein (1997) looking at longitudinal designs in 203 papers on strategic management from 1980 to 1993 found that more than 90% of studies had insufficient attention to methodological assumptions, thus, the investigations were affected by type I bias. Sarker and Lee (2001) using a case research methodology in business process reengineering to test competing theories, found evidences to refute the dominant techno centric theory and the alternative socio centric view while providing support to adopt the socio-technical approach.

Bergh & Fairbank (2002) found that strategy researchers reach flawed conclusions and inaccurate findings because when measuring changes they do not recognize the required research methodology. Hitt, Boyd and Li (2004) summarized key content analyses of research

methodology employed in strategic management. Ketchen, Boyd and Bergh, D. D. (2008) reviewed the research methods applied in strategic management between 1980 and 2004 observing a growth in the number of articles devoted to strategy topics using empirical tools.

Lohrke (2008), Shook (2008), and Wright (2008a) have reviewed different topics of research methodology, integrating them in a coherent analytic framework and making important contributions to research on strategy methods. Among the traditional methodological tools are reviewed meta-analysis, strategic groups, survey data collection, etc. Among the more specialized methods the authors review cause mapping, conjoint analysis, internet data collection, repertory grids, etc.

Management research is aimed to analyze recent developments on research methodology in strategic management. Organizational location using spatial research methodology in strategic management is a research topic that has called the attention of some researchers such as Dohn and Hahn (2008). Venkatraman (2008) highlights the improvements on research methodological sophistication of the strategic management field.

Research methods used at the different levels of analysis to capture motives, preferences, and decisions of industries, firms, management strategic groups and individuals are very limited on the design, implementation and monitoring strategies. The simplicity of some methods used to analyze multi-level phenomena, such as variance decomposition, is not suitable for more complex analysis of situations. The integrative nature of strategy research leads to an imperative for adoption of multiple theoretical frameworks. Innovations in research methodology provided new insights out of the debate industry versus firm provided new insights. "...every new innovation consists of a new combination of existing ideas, capabilities, skills, resources etc. It follows logically from this that the greater the variety in these factors within a given system, the greater the scope for new combinations of these factors, that is, new innovations..." (Fagerberg, 2003, p. 7). Researchers and scholars address identified methodological areas of omission.

Strategic management has borrowed some research methods and techniques from other fields such as economics, sociology, psychology, politics, and more recently geography, etc. Research in strategic management influences other fields such as organizational theory (Oliver

1991, 1997) and human resource management (Huselid, 1995; Wright, Dunford & Snell, 2001).

Ketchen, Boyd and Bergh (2008) argue that the research methodology used to analyze strategic management are as robust as the findings generated, although the methods still face some challenges despite the accomplishments. Not all case studies require or have absolute necessity of statistical robustness. However, researchers in strategic management repeat past mistakes of adopting a technocentric or sociocentric approaches without considering the interactions between the social and the technological (Collins, R. S. and Cordon, C., 1997).

Challenges for research methodology strategy

New communication and information technologies have changed the pace, volume and nature of available information but also in the methods for analyzing such data. Sources of data are more easily accessible and searchable depending of type and mix of research methods and techniques used. Analysis of textual information as an input derived from data sources and literature review has many forms and is itself research (Johnson & Christensen, 2012; McKee, 2003) that may require some quantitative, mathematical and econometric modeling. Meta analyses and combinations of existing knowledge can give valuable insights.

Research methods in strategic management face several challenges due to the methodological limitations for the examination and analysis of the strategy's processes and phenomena complexities. Longitudinal methods help to the analyses of evolving events over time although the complexity, uncertainty and immeasurability variables associated to these phenomena. The strategy phenomena pose a challenge for researchers due to the multidimensional nature of constructs. Strategic management might be enriched through inclusion and use of alternative techniques in addition to conventional tools.

The strategies of research in strategic management should consider the actions and interactions of all agents and actors involved in organizational activities. Research on the processes of formulation, design and implementation of strategies in organizations has called the attention not only of scientists, scholars and practitioners but also common people

interested in the topic, despite the fact that the research methods have limitations.

Research methodology still has plenty of perverse problems that limit the application of research findings in design, measurement and analysis. Research methodological practices prevail that provide limited insights in strategic management.

Less developed economies have a small budget for scientific research, innovation and technology transfer. It is difficult to introduce new research methodologies in less developed countries where the scientific culture is not widely promoted and adapted as the common ground among the scientific community. "Conventional wisdom" (Galbraith, 1999) considers that group culture and political influences shape dominant views.

Samik-Ibrahim (2000) proposes a grounded theory methodology (GTM) in a developing country at the stage where research activities have a lot of obstacles and many shortages such as low effectiveness-productivity and efficiency, lack of funding, etc. Grounded Theory Methodology (GTM) is a "general method of comparative analysis" to discover theory with four central criteria: Work or generality, relevance or understanding, fit or valid, and modifiability or control.

The understanding of human behaviors became relevant to the strategic research in terms of the questions that new theories make about the assumptions of the behaviors within organizations. The paradigms that are the foundations of the strategic theories are based on individual assumptions, which over the years have been strongly challenged by new theories.

The future research in strategy process research has the tendency to be more holistic, more integrative, with an emphasis on team work, corporate management and be more oriented and supportive of action research methodologies (Hitt, Gimeno y Hoskisson, 1998). Future research in strategic management phenomena will include integration of multiple theoretical and empirical complex models supported by sophisticated statistical tools such as structural equations modeling and multinomial logit analysis.

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