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4 THE STATE OF STRATEGIC
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6 MANAGEMENT RESEARCH
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8 AND A VISION OF THE FUTURE
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15 INTRODUCTION
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17 The field of strategic management has advanced substantially in both theory and
18 empirical research over the last 25 years. However, there are “cracks” beginning
19 to occur in the methodology “dam.” To grow as a discipline, strategic management
20 research must meet and deal effectively with methodological challenges in several
21 areas. We address these challenges in each of the following areas: research
22 questions, data collection, construct measurement, analysis of endogenous
23 relationships, and applications. We present a concise view of the future suggesting
24 ways in which these challenges can be overcome and explain the benefits to
25 the field.

26 Derivation of the field of strategic management can be traced to several
27 different dates. Possible starting dates include 1980, 1978, 1962, and 320BC, for
28 example. 1980 was a seminal year because it marked the publication of Porter’s
29 *Competitive Strategy*, as well as the inception of the Strategic Management
30 Society. In 1978, the first textbook for the field – Hofer and Schendel’s *Strategy*
31 *Formulation* was published. 1962 marked Alfred Chandler’s pioneering work on
32 strategy. Finally, the field’s roots in military strategy were sown around 320BC,
33 by Sun Tsu. While acknowledging the discipline’s ancestry in tactics, the field
34 is still very young. Kuhn (1996) suggests that new disciplines have low levels
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1 of paradigm development. As a result, research processes in a new discipline are
2 typically chaotic – there are high levels of disagreement regarding both theory
3 and methods, and the quality of research output is usually weak.

4 However, the field of strategic management has experienced substantial
5 advancement in both theory and empirical research over the last 25 years, and is
6 now considered an important field in the business discipline. It largely evolved
7 from work primarily based on case studies that were atheoretical to a field that
8 is now largely populated by theory-driven empirical research. The popularity of
9 the field of strategic management is growing globally: the Business Policy and
10 Strategy Division is the second largest in the Academy of Management, with
11 25% of the membership from outside the U.S. More directly, approximately 50%
12 of the membership of the Strategic Management Society is from outside of North
13 America. One indicator of the influence of the strategic management discipline
14 was *Business Week's* selection of publications in the *Strategic Management*
15 *Journal* as one of the key indicators of business school “brainpower.”

16 A paradigm represents a shared view of a particular domain (Kuhn, 1996).
17 Typically, such a domain consists of a scientific community that is a subset of a
18 broader discipline; for example, strategy and organizational behavior are commu-
19 nities of the management discipline. A “shared view” is manifested as consensus
20 over both theoretical and methodological dimensions of that community. The
21 paradigm development (Kuhn, 1996) rationale argues that (a) some disciplines are
22 more advanced or evolved than others, and (b) that such differences affect the way
23 research is done in these disciplines. Lodahl and Gordon (1972) characterized
24 those communities with more developed paradigms as having greater structure
25 and predictability. In comparison, Kuhn (1996, pp. 47–48) described the less
26 developed paradigms as being “regularly marked by frequent and deep debates
27 over legitimate methods, problems, and standards of solution.” A field’s level of
28 paradigm development is of particular importance to researchers, as development
29 has been linked to journal rejection rates (Hargens, 1975; Zuckerman & Merton,
30 1971), the length of the manuscript review process (Beyer, 1978), the number of
31 manuscript revisions (Beyer, 1978), and research productivity (Fulton & Trow,
32 1974) among other factors.

33 Where does strategic management fit on this spectrum, and what are the
34 implications for research in this area? In the ranking of paradigm development,
35 hard sciences are considered more advanced than social sciences. The latter, in
36 turn, look down upon even less-advanced disciplines; particularly those dismissed
37 as “professional schools.” Finally, business administration is one of the youngest
38 professional schools, along with education and social work (Parsons & Platt,
39 1973). Similarly, Pfeffer (1993) characterized management as being in a “pre-
40 paradigmatic state” by virtue of being less advanced than psychology, economics,

1 political science, and other social sciences; with ample evidence suggesting
2 the lack of consensus among management researchers (Pfeffer, 1993). Finally,
3 because strategic management is one of the youngest management disciplines, the
4 field would appear to be at or near the nadir of the paradigm development spectrum.
5 In 1990, Hambrick described the field of strategic management as an adolescent.
6 He called for a commitment to generalism, use of multiple methods, more theory
7 testing, use of dynamic models and data and making realistic assumptions about
8 managers and organizations. Several of his suggestions were realized (e.g. more
9 theory testing, use of multiple methods) at least to a degree and others are begin-
10 ning to be more common in strategic management research (e.g. use of dynamic
11 models and data). Yet, it is not certain that the field has broken out of the adolescent
12 stage. More development is needed to do so.

13 Emergent fields are typically characterized by debate, and challenges to
14 existing paradigms (Kuhn, 1996). While the latter are often couched as theoretical
15 discussions, empirical work plays a critical role in confirming, or disconfirming,
16 a particular perspective. Contributing to advancement of the field, is a small
17 research stream that critiques empirical research in strategic management. This
18 stream includes both narrative (Hitt et al., 1998; Venkatraman & Grant, 1986)
19 and quantitative reviews (see Table 1). Regardless of the topic, these reviews
20 have been consistently critical of the rigor of strategic management research.
21 The purpose of this chapter is to identify critical methodology issues in strategic
22 management research, to offer a framework for studying them and to identify
23 specific opportunities for facilitating the advance of the field.

24 Hitt et al. (1998) described the development of the field and explained the
25 analytical tools likely to be used increasingly in strategic management research.
26 Our purpose is not to chronicle the past or to overlap with their explanation of
27 strategic management research, but rather to assess the current state of research
28 in the strategic management field and to discuss the needs for continuing
29 development if the strategic management discipline is to take the next step in its
30 maturity development.

31 Hitt et al. (1998) recommended that strategic management researchers should
32 make greater use of longitudinal designs and panel data methodologies, dynamic
33 analytical models and more sophisticated statistical tools (e.g. structural equations
34 modeling). Furthermore, they recommended the integration of both quantitative
35 and qualitative approaches in strategic management research. A cursory exami-
36 nation of the published research in the field suggests that researchers have taken
37 heed of these recommendations. However, strategic management research must
38 implement further improvements in the research designs as strategic management
39 scholars face threats to validity of their work. There are important challenges
40 that must be met and barriers to overcome. Therefore, while Hitt et al. (1998)

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Table 1. Recent Methodological Critiques of Strategy Research.

Study	Focus	Sample Size	Journals Reviewed	Time Frame	Journal Pool ^a	General Findings
Short, Ketchen and Palmer (2002)	Sampling	437 studies	5	1980–1999	All	Less than 20% of studies used random sampling; only 40% of studies checked for sample representativeness.
Bergh and Fairbank (2002)	Measurement of change	126 studies	1	1985–1999	All	Strategy researchers tend not to recognize methodological requirements while measuring changes; the typical approach used is usually inappropriate and could lead to inaccurate findings and flawed conclusions.
Bowen and Wiersma (1999)	Cross-sectional designs	90 studies	1	1993–1996	Not reported	Insufficient attention given to common issues associated with cross-sectional designs.
Ferguson and Ketchen (1999)	Power in configuration research	24 studies	6	1977–1996	All	92% of published papers in this research stream had insufficient power.
Hubbard, Vetter and Little (1998)	Replications	37 studies	9	1976–1995	Subset	Few replication studies published; replications more common in <i>SMJ</i> than <i>AMJ</i> or <i>ASQ</i> .
Bergh and Holbein (1997)	Longitudinal designs	203 studies	1	1980–1993	All	More than 90% of studies had Type I bias due to insufficient attention to methodological assumptions.
Ketchen and Shook (1996)	Cluster analysis	45 studies	5	1977–1993	All	Implementation of cluster analysis methodology often less than ideal.
Mone, Mueller and Mauland (1996)	Statistical power	210 studies	7	1992–1994	Subset	Average statistical power of management studies is low, especially for small and medium effect sizes

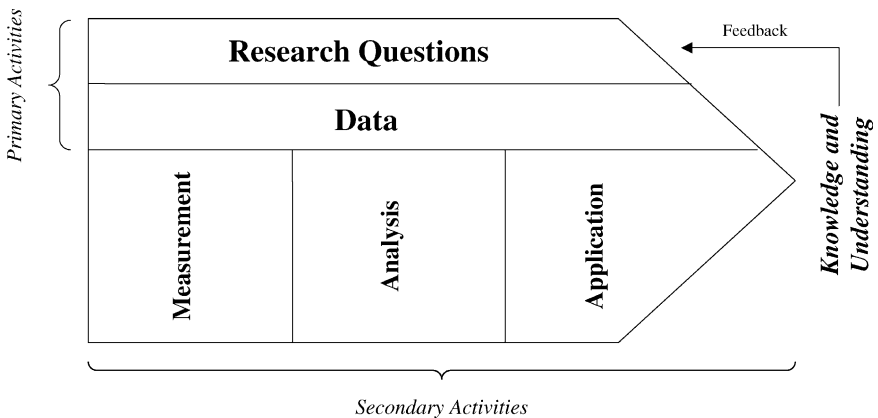
^a“Subset” indicates that a sample of relevant articles were used; “All” indicates that all papers meeting the study criteria/focus were included.

1 concluded that there had been positive developments in the state of strategic
2 management research; now strategic management scholars must take another
3 major step. Unfortunately, there are “cracks beginning to occur in the dam.”
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6 **A FRAMEWORK FOR EXPLORING**
7 **METHODOLOGY ISSUES IN STRATEGIC**
8 **MANAGEMENT RESEARCH**
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10 Ultimately, strategic management research serves two purposes: to advance the
11 level of theory in the field, and to provide useful normative advice to practicing
12 managers. We have modified Porter’s value chain to identify five ways that
13 methodology can add value to these outcomes.

14 As shown in Fig. 1, there are two primary activities in the research process.
15 Research Questions relate to the types of hypotheses that are being asked. We
16 focus on two specific content topics, strategic change and contingency theory.
17 The other primary activity is Data collection. Topics that we address include
18 sampling, statistical power, and the need for a broader geographic (international)
19 focus. Next, we discuss three secondary activities in the research value chain.
20 For Measurement, we review current practices regarding reliability, validity,
21 and other aspects of construct measurement. Under the heading of Analysis,
22 we cover potentially significant problems associated with endogeneity. Finally,
23 Application offers suggestions for improving general processes associated with
24 empirical strategic management research. These topics are interrelated as implied
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40 Fig. 1. A Framework for Studying Methodology Issues in Strategic Management.

1 by the value chain concept. The outcome of this value chain of research should be
2 enhanced knowledge and understanding as shown in the figure. Thus, we attempt
3 to explain some of the more important interrelationships in the discussions in
4 each section.

7 *Research Questions*

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9 Two prominent foci in strategic management research have been contingency
10 theory (fit) and strategic change. We examine each, in turn.

11 *Contingency Theory*

12 A comprehensive review of contingency theory – even one confined to research
13 methods – is beyond the scope of this chapter. Still, it is useful to highlight some
14 of the key issues associated with contingency theory. Contingency theory is one
15 of the oldest, and most prominent components of modern strategic management
16 research. While the idea of contingency may seem obvious in our current
17 environment, it represented a radical departure from Weberian and Taylorist
18 models of organizations as increasingly rational and the process of “scientific”
19 management when first presented. Research on organizational environments, and
20 environmental uncertainty (e.g. Emery & Trist, 1965, and numerous others) led
21 scholars to move away from closed systems models of organizations in favor of
22 open systems models of effective management.

23 From this open systems perspective, contingency emerged as a framework
24 to assist organizations in successfully adapting to their environments. 1967
25 was a watershed year for this research stream, with the concurrent publication
26 of Lawrence and Lorsch’s *Organization and Environment* and Thompson’s
27 *Organizations in Action*. Subsequently, Jay Galbraith extended these works to
28 apply contingency to organization design and strategy implementation (Galbraith,
29 1973; Galbraith & Nathanson, 1978). Together, these and related works sent
30 countless researchers in search of that most elusive grail: “fit.”

31 While many have questioned the value of contingency (e.g. Pennings,
32 1992; Schoonhoven, 1981), the framework has become an integral part of the
33 strategy domain: The idea of “matching” strategy and structure is a central feature
34 of strategy textbooks, and contingency’s influence evident in models as diverse as
35 Miles and Snow’s (1978) *Strategy, Structure and Process*, or the McKinsey 7-S
36 implementation model.

37 However, several of the criticisms leveled against contingency are valid. For
38 example, many aspects of contingency – both theoretical and methodological
39 – are vague and ambiguous. Consequently, despite the passage of more than
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1 30 years since its introduction, the proper role and contribution of contingency
2 to management research remains unclear. To advance the strategic management
3 paradigm, contingency theory must also be advanced. Independent of these
4 criticisms is a more basic concern about the role of contingency in strategic
5 management research. Many questions in the MBA core course in strategic
6 management can be answered with the same, two word answer: "It depends."
7 How well does our research mirror the textured, nuanced explanations given to the
8 classroom questions? While a simple linear regression may be ideal in a Taylorist
9 world, strategic management research requires more sophisticated tools.

10 Venkatraman (1989) described a portfolio of analytic frameworks to analyze
11 the concept of "fit" that is central to contingency research. The first type of fit was
12 moderation, where the relationship between two variables is dependent on a third
13 variable. Moderation can be further decomposed into two varieties: strength and
14 form. *Strength moderation* occurs when the intensity of the relationship between
15 x and y is different at varying levels of z, and is analyzed via subgroup analysis
16 (Arnold, 1982). Alternatively, *form moderation* occurs when the form of the
17 xy relationship is determined by levels of z, and is analyzed via an interaction
18 term. Strength and form analyses test different types of relationships, and hence
19 should not be considered substitutes for each other. For example, Prescott (1986)
20 reported that an organization's environment moderated the strength, but not
21 the form, of the strategy – performance relationships. In practice, however, it
22 is common for many journal submissions to frame hypotheses regarding the
23 strength of a relationship, only to test the hypothesis using interaction. For
24 example, Carpenter and Fredrickson (2001) hypothesized that environmental
25 uncertainty positively moderates the relationship between four types of top
26 management team heterogeneity and the firm's global strategic posture (thus, it
27 moderates the *strength* of the relationship). Yet, they tested it using interactions
28 between uncertainty and different types of TMT heterogeneity in regression
29 models with global strategic posture as the dependent variable. They found that
30 uncertainty changed the *form* of the relationship for at least one of the four types
31 of heterogeneity.

32 The second type of fit is mediation. Here, z is an intervening variable between
33 x and y. Path analysis and structural equation models are used to test such
34 relationships. Greater adoption of tools such as LISREL and EQS promises to
35 improve our understanding of mediators and indirect effects. Tests of mediation
36 are exemplified by the EQS models examined in Hoskisson, Hitt, Johnson and
37 Grossman (2002). They found that the internal governance system (equity owned
38 by inside board members and the percentage of outside directors along with the
39 equity owned by them) served as a partial mediator of the relationship between
40 the shares held by different types of institutional investors and the amount of

1 innovation developed internally and the amount of innovation acquired from
2 external sources.

3 The third type of fit is matching, where certain configurations of x are associated
4 with specific configurations of y. ANOVA, residual analysis, and deviation scores
5 are the analytical tools used to test these types of hypotheses. The fourth type of
6 fit is a gestalt, which focuses on relationships among groups or pools of variables.
7 Tests of such relationships often rely on cluster analysis. The fifth type is profile
8 deviation, which examines departure from a predetermined “best case” or ideal
9 condition. Multidimensional scaling may be used for these types of research
10 questions. The final type is covariation, which examines fit or internal consistency
11 between a set of variables. Tests for this type of fit are typically conducted using
12 first or second order factor models.

13 While Venkatraman’s article is cited frequently, the tools have been used only
14 a moderate amount by the strategic management community. A content analysis
15 of articles published in leading management journals from the mid-1970s through
16 the mid-1990s reported that approximately 10% of all published articles included
17 empirical tests that used one or more of Venkatraman’s analytic tools (Boyd
18 et al., 1996). Additionally, there was a substantial inequality in the types of
19 methodologies used; nearly three quarters of the papers with a contingency model
20 used a regression with interaction terms. Subgroup analysis was the next most
21 commonly used tool, followed by mediation. Very few of the remaining tools
22 were used.

23 Clearly, there is a need for strategic management researchers to make greater
24 use of contingency tools in their research designs. Particularly in the context of
25 firm performance, linear models have provided disappointing results, regardless of
26 the predictor such as diversification, insiders on the board, or some other strategy
27 construct.

28 *Strategic Change*

29 Research on strategic change has become increasingly important in the field of
30 strategic management. In fact, Pettigrew, Woodman and Cameron (2001) suggested
31 that the study of organizational change is one of the most important themes in
32 social science research. Yet, measuring change and its effects can be complex and
33 challenging (Bergh & Fairbank, 2002). Construct measurement is of particular
34 importance in the area of strategic change. In particular, the reliability of measures
35 of strategic change (stability over time) is critical to the accurate determination of
36 the occurrence of such change and its effects. Bergh and Fairbank (2002) examined
37 a large number of studies of strategic change (15 years worth of empirical studies of
38 this phenomenon published in the *Strategic Management Journal*). They found that
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1 less than 5% examined the reliability of their measures of strategic change. And,
2 only slightly more than 3% controlled for the effects of not meeting the necessary
3 reliability assumptions in their analyses. As a result, one can conclude that the lack
4 of attention to unbiased measurement of the strategic change phenomenon may
5 have produced inconclusive research.

6 The problem is much more complicated than the above arguments suggest,
7 however. Serious divergence in the use of strategic change constructs has existed
8 in prior literature. Strategic change has been measured in various ways. For
9 example, two major ways strategic change has been operationalized are the
10 shifts in historical core business (e.g. Kraatz & Zajac, 2001; Zajac et al., 2000) and
11 the change in degree of product market or geographic diversification (e.g. Boeker,
12 1997; Guillen, 2002; Webb & Pettigrew, 1999; Westphal & Fredrickson, 2001).
13 Carpenter (2000) categorized strategic changes that might affect CEO pay into
14 strategic variation (in firm strategy) and strategic deviation (from industry strategic
15 norms). A recent qualitative study conducted by Markoczy (2001) proposed a rela-
16 tively broader range of strategic changes. It seems that strategic changes as defined
17 by these authors include one or a combination of following change components
18 – change in organizational hierarchy, introduction of new technology, change of
19 cost control and productivity measures, investment of new plants, divestment,
20 adjustment in incentive system, layoff of employees and training, and mergers
21 and acquisitions.

22 Pettigrew et al. (2001) stated that organizational change research is under-
23 developed and suggested that future studies must attend to several factors in
24 the design of such research. First, research on change needs to involve multiple
25 contexts and levels of analysis. The change literature has been enriched to
26 incorporate the analysis from the level of global economy to the level of individual
27 firms' structures. Second, the research designs should include considerations for
28 temporal effects, along with history, processes and actions. Third, they argued for
29 a stronger linkage between changes implemented and firm performance. Fourth,
30 they expressed a need to study changes in international contexts and to make
31 cross-cultural comparisons. Finally, they recommended studying sequencing,
32 pace and episodic vs. continuous changes. Incorporating these factors into the
33 design greatly complicates the measurement issues. To reveal the complexity
34 between multiple levels of context requires a time series sufficiently long to
35 show how firm, sector, and economic levels of the context interact to energize
36 change processes.

37 Endogeneity problems are prevalent in strategic change research. Perhaps
38 no other topic offers a better context for the analysis of endogeneity problems
39 than strategic changes involving the entangled relationships among different
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1 components of an organizational system. Usually, changes in one or several
2 dimensions of an organizational system may cause changes in other dimensions
3 before the final outcomes were manifested in dependent variables (e.g. per-
4 formance). The ultimate manifestations usually are not the outcome of simply
5 one or several independent variables. Also the unsatisfactory performance has
6 oftentimes been considered as one of the major catalysts of strategic changes
7 (Greve, 2002). As Pettigrew et al. (2001) noted, “it is now timely to combine
8 the learning from studies of the determinants of organizational performance with
9 the experience that change scholars have had in trying to study the reciprocal
10 relationship between change processes and performance outcomes” (p. 701). A
11 recent effort along this vein, the study by Anderson and Lenz (2001), introduced
12 a Bayesian network approach for the analysis of strategic changes. This approach
13 provides a mechanism for diagnosing the key changes necessary for system
14 improvement and for predicting the effects of potential change actions.

15 The concerns related to measurement of strategic change apply to a broad set of
16 important problems such as strategic change in an industry, particularly with refer-
17 ence to strategic groups (e.g. Fiengenbaum & Thomas, 1995) and the antecedents
18 and consequences of strategic change (e.g. Zajac & Kraatz, 1993). The issues are
19 also relevant in research on the effects of boards and top management teams on
20 changes in strategy (e.g. Golden & Zajac, 2001; Goodstein et al., 1994; Westphal
21 & Fredrickson, 2001). The means of creating strategic change such as the inter-
22 vention of a new CEO and especially in turnaround situations and restructuring
23 are especially important in strategic management research (cf. Barker & Duhaime,
24 1997; Greiner & Bhambri, 1989; Hoskisson & Johnson, 1992). The questions of
25 strategic fit and the adaptation of the firm’s strategy to its environment have been
26 important in the strategic management field as suggested by Smith and Grimm
27 (1987), Wiersema and Bantel (1993) and Zajac, Kraatz and Bresser (2000).
28 Additionally, the relationship between top management teams, the decision
29 processes and strategic change have been relevant in a large variety of research in
30 the strategic management field (e.g. Denis et al., 2001; Gioia & Chittipeddi, 1991;
31 Markoczy, 2001; Sakano & Lewin, 1999; Simons, 1994). Additionally, a variety
32 of other research questions such as the application of chaos theory to strategic
33 change and the outcomes of incremental strategic changes have been examined
34 in strategic management research (cf. Johnson, 1988; Stacey, 1995). Therefore,
35 conducting research on strategic change and particularly the measurement of the
36 construct are of critical importance to advancement of knowledge in the field.
37 Bergh and Fairbank (2002) conclude that understanding the potential problems
38 and understanding how they can be avoided or overcome will allow strategic man-
39 agement researchers to improve their research rigor and provide stronger empirical
40 bases for theory development.

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Sampling

Much strategic management research involves the use of rather large samples of firms and oftentimes these samples are drawn from secondary sources. As a result, on the surface, it would seem that strategic management researchers have the opportunity to develop healthy and quality samples from which to draw the data to test their theoretical propositions. Yet, recent research questions the validity of this conclusion. For example, Short, Ketchen and Palmer (2002) examined a large number of strategic management studies published in major scholarly journals during the period of 1980–1999. Their examination of the 437 studies published in the top journals showed that less than 20% used a random sample and only about 40% of the scholars checked for the representativeness of their sample. Although Short et al. (2002) found that sample sizes weighted by the number of variables were generally more than adequate in published strategic management research, inadequate sample sizes are common for particular statistical techniques, structural equation modeling, for instance. Also, when multilevel analysis is involved, an adequate sample size is required to ensure sufficient between-unit variability (Klein & Kozlowski, 2000). The inadequate sample sizes and inappropriate sample distributions may induce the lack of sufficient power to detect certain effects; even when detected, the effects may be misestimated in terms of magnitude (Cheung & Rensvold, 2001).

Heckman (1979) argued that the use of nonrandom samples creates sampling bias that can then lead to errors in the statistical results and the interpretation and generalization thereof. Heckman (1979) suggested that the use of nonrandomly selected samples to estimate behavioral relationships produces a specification bias due to an omitted variables problem. He specifically referred to the self-selection bias and provided the following example. “One observes market wages for working women whose market wage exceeds their home wage at zero hours of work. Similarly, one observes for union members who found their nonunion alternative less desirable. The wages of migrants do not, in general, afford a reliable estimate of what nonmigrants would have earned had they migrated. The earnings of manpower trainees do not estimate the earnings that nontrainees would have earned had they opted to become trainees” (Heckman, 1979, p. 153). Each of these examples suggest the presence of self-selected samples with a specification bias. A similar problem occurs in strategic management research and is further discussed in the section herein on endogeneity.

A particular problem in strategic management research has been the number of equivocal findings where multiple studies examined the same relationship. Short et al. (2002) suggested that one of the problems for these equivocal findings

1 is the variance in sampling approaches used by different scholars studying the
2 same phenomena. To show the potential problems with using different sampling
3 approaches, [Short et al. \(2002\)](#) conducted a large study on the relationship between
4 CEO duality (when the CEO holds both the chief executive officer position and
5 the chairman of the board position simultaneously) and firm performance using
6 four different samples. Different results were found when they used different
7 sampling methods. Their results showed no relationship between CEO duality
8 and firm performance, a statistically significant positive relationship, and a
9 statistically significant negative relationship, across studies that used different
10 sampling methods.

11 In general, one would believe that a simple random sample or a stratified random
12 sample (based on a knowledgeable or intended focus on particular types of firms)
13 would provide more accurate and generalizable results, at least to the universe
14 intended, in contrast to other sampling approaches. Two basic sampling designs
15 are probability sampling (i.e. random sampling) and nonprobability sampling.
16 Simple random sampling and stratified random sampling are two frequently used
17 types of probability sampling approaches. While the utilization of simple random
18 samples and stratified random samples ensures the exclusion of systematic errors,
19 reliance on available samples requires extreme circumspection in analysis and
20 interpretation of data ([Kerlinger & Lee, 2000](#)). However in their content analysis
21 of published studies on the determinants of organizational performance, [Short
22 et al. \(2002\)](#) found a heavy reliance on the purpose of sampling with the focus
23 on available data. The wide usage of purposive samples has prevented scholars
24 from comparing findings from different studies even if the same relationships are
25 under investigation.

26 While there are a number of examples of ineffective sampling in strategic man-
27 agement research, some exemplars exist in trying to develop samples that provide
28 quality data (attempts to reduce sampling error). For example, [Carpenter and
29 Westphal \(2001\)](#) sent surveys to a random sample of the *Fortune* 1000 firms. They
30 obtained a 44% response rate from CEOs, a high rate compared to recent research
31 suggesting an expected response rate from this group to be approximately 20%.
32 They also collected data from the directors of each responding company, obtaining
33 a 43% response rate from this group. They then checked for non-respondent bias
34 and found that the sample represented the universe from which it was drawn. They
35 concluded that sample selection bias was not evident in their data. [Christmann
36 \(2000\)](#) devoted almost the same amount of space to describe her data collection
37 as that dedicated to the discussion of sample representativeness. Two types of
38 tests were conducted to assess the representativeness of survey respondents
39 – comparison across respondents and nonrespondents and wave analysis of
40 self-selection bias. She concluded that the results from these two tests provided

1 evidence of the representativeness of responding sample firms and the unlikelihood
2 of self-selection bias.

3 The increasing usage of Internet surveys in recent research has facilitated
4 our understanding of their benefits and costs in contrast to conventional mail
5 surveys. Simsek and Veiga (2001) suggested that electronic surveys provide
6 an advantageous data collection method because of the better means of sample
7 control as the survey can be directed specifically to the individuals identified as
8 appropriate for providing the data. Regular mail surveys provide much less control
9 because while addressed to the person desired, they may be screened by assistants
10 and sent to others or trashed. Of course, both types of survey require the ability
11 to identify the universe. Hitt, Bierman, Shimizu and Kochhar (2001) identified
12 all partners of the top 100 law firms and sent them an electronic survey. Because
13 of the speed, efficiency and low cost of such a survey, they were able to send it
14 to the over 12,217 partners rather than a much smaller sample usually required
15 for mail surveys (because of the cost). They received well over 3,000 responses.
16 Levin (2000) argued that sampling error can be minimized with extremely large
17 samples. The potential problem with electronic surveys is that they may not reach
18 the universe chosen for study because not all have access to or use the Internet.
19 However, this is less of a problem for the targets of most strategic management
20 research (e.g. top executives) unless the research is focused on lesser-developed
21 or emerging market countries that fail to have adequate infrastructure.

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23 *U.S. Centric Focus*

24 A major issue in empirical research is the ability to identify the universe to which
25 researchers want to generalize. A common criticism of management research in
26 general is that it is too U.S. centric: Even the *Journal of International Business*
27 *Studies* was reported to have an overwhelming majority of articles focusing on
28 North America (Thomas et al., 1994). Bettis (1991) suggested that much strategic
29 management research seems to assume that the most important work does not cross
30 the U.S. Border and that most industries are not involved in global competition.
31 While international strategic management research does have special challenges,
32 it is also important to highlight the progress that has been made to date. To assess
33 the degree of internationalization of strategic management research, we reviewed
34 articles published in the 2001–2003 volumes of *Strategic Management Journal*
35 (Note: 2003 was partial year to date at time of this writing). Empirical articles
36 using international data comprised roughly one third of all published articles in
37 the journal during this period. By default, the proportion of international samples
38 among the pool of empirical articles is even higher. There was a mix of comparative
39 studies that had samples from multiple countries, and single-country studies. For a
40 historical comparison, we also reviewed the first volume of *Strategic Management*

1 *Journal*, published in 1980. For that year, empirical articles comprised 20% of all
2 papers published, regardless of the geographic focus of the sample. Overall, we
3 conclude that the field has made a significant effort to develop research that can
4 be generalized to multiple borders.

5 To enhance generalizability, researchers should consider the type of interna-
6 tional sample to be used. In the context of governance research, [Boyd, Carroll](#)
7 [and Howard \(1996\)](#) described three levels of focus among international studies:
8 The least sophisticated were descriptive analyses. Such studies focused on single
9 countries, and sought mainly to identify characteristics of certain variables, or to
10 replicate analyses which had been done elsewhere. Comparative analyses were
11 more sophisticated, and relied on multi-country samples. The most sophisticated
12 level were explanatory studies. Such papers sought to develop and test integrative
13 frameworks to explain how governance functions differed across nations.

14 There are, however, several barriers to international samples. For example,
15 scholars doing research in foreign countries, particularly in lesser-developed
16 economies, often do not have access to secondary data sources listing all firms
17 in particular industries or even within the country borders. [Hoskisson, Eden, Lau](#)
18 [and Wright \(2000\)](#) suggest that it is difficult to obtain a representative sample
19 in emerging market countries because publicly available data are scarce or often
20 outdated or inaccurate. For example, because the privatization process in Russia
21 has been decentralized and regional, there is no national list of privatized firms
22 in the country. As a result, convenience samples are quite common in such
23 international strategy research (cf. [Hitt et al., 2000, 2004](#)). [Hoskisson et al. \(2000\)](#)
24 also suggest that collecting primary data can also be difficult. Mail surveys often
25 have very low return rates, partly because of the ineffective mail systems in
26 these countries. The reliability of responses may be questionable because of the
27 translation of the terms and the differences in cultures. Even archival data may be
28 suspect in some countries, as is the case with measures of financial performance
29 among Chinese firms. In some countries and cultures, respondents are reluctant
30 to provide information on surveys or in interviews because of a lack of trust
31 regarding how the data will be used. Such problems are especially problematic in
32 the former communist countries in Eastern Europe and throughout Asia.

33 Finally, defining the appropriate level of analysis for certain variables is another
34 sampling challenge for international research. Industry-level variables, such
35 as concentration ratios, rates of growth, or degree of regulation, are typically
36 measured at the national level when studying U.S. firms. What is the appropriate
37 equivalent for countries that are more closely connected, either via geography or
38 economic interdependencies? For example, if studying environmental uncertainty
39 in Germany, is country-level data preferable when calculating munificence
40 and dynamism scores, or would scores reflecting the European Union be more

1 relevant? A final challenge for sampling in international research is the size of the
2 potential subject pool. Firm-level samples in some countries, such as Australia
3 and New Zealand, are constrained by the relatively smaller universe of firms.
4 Researchers studying these countries may find themselves in the quandary of
5 having a sample that represents a significant part of the GDP for the nation, yet
6 one that is considered small by journal reviewers.

7 The relevance of certain variables also varies widely from country to country,
8 and should be factored into the choice of a nation for sampling purposes. A scholar
9 who is interested in CEO duality, for instance, will find far fewer occurrences of
10 this phenomenon in France or Australia than in the U.S. or the U.K. Similarly, it
11 is arguable whether the ratio of insiders has much relevance for Asian firms.

12 To address the selection of variables and countries, researchers should make a
13 greater effort to identify the reasons for studying a particular country or region.
14 Too often, the country is only identified in the methods section, when discussing
15 sources for data collection. Instead, authors should develop stronger explanations
16 of why a region is relevant to the primary research question driving the study. Are
17 the authors expecting a similar relationship as found with U.S. firms, or a new
18 configuration, based on culture, business practice, institutional factors or other in
19 the country under study? As an example, it is arguable whether the agency model
20 is relevant to managers of Asian businesses. The root determinants of agency
21 problems – individualism, risk aversion, and short- vs. long-term orientation, are
22 quite different for Asian managers than for their U.S. and British counterparts.
23 Additionally, there are marked differences even among Chinese ethnicities on
24 these cultural dimensions: Scores are not monolithic for Chinese people in Hong
25 Kong, Singapore, Taiwan, and the People’s Republic of China (Hofstede, 2001).
26 An agency study that samples from these regions should identify the relevant
27 cultural and business conditions, and formulate whether or not the theory should be
28 applicable in that setting.

29 *Statistical Power*

31 Inattention to statistical power is one of the greatest barriers to advancing the
32 strategic management paradigm. As we discuss in this section, the threat of weak
33 power is compounded by construct measurement problems discussed later, and the
34 nature of effect sizes found in management research. Power is the potential of a
35 statistical test to yield a significant result. Issues relevant to statistical power are
36 a researcher’s willingness to consider Type I and Type II errors, sample size, the
37 magnitude of the effect being studied, the test being used, and the quality of the
38 data (Cohen, 1988, 1992).

39 Type I error is the risk of mistakenly rejecting the null hypothesis – i.e. a false
40 positive finding. This type of error is routinely addressed in empirical studies:

1 By using the $p \leq 0.05$ level a researcher can be 95% sure that a relationship
2 is not a false-positive. Type II error is the risk of failing to reject the null, even
3 though a meaningful relationship does exist. In other words, Type II error occurs
4 when the researcher mistakenly concludes that a relationship between variables
5 is nonexistent. Statistical power is an estimate of the probability that a null
6 hypothesis will be rejected for a given effect size. The recommended threshold
7 for power assessment is 0.80, or an 8 in 10 chance that an existing relationship
8 will be successfully detected (Cohen, 1988).

9 Holding everything else constant, a more stringent p -level for a Type I error
10 leads to a greater risk of Type II error, and vice versa. Sample size also affects
11 the likelihood of Type I and Type II error. For instance, consider two variables
12 that have a population correlation of 0.30. When using a significance criterion
13 of $\alpha = 0.05$, a sample of 30 subjects has only a 50% probability of successfully
14 detecting this relationship. The probability improves to 70% with the addition
15 of 20 subjects, however, and to over 90% when the sample size is increased to
16 100 subjects.

17 While the Type I error commonly is considered by both the authors and
18 reviewers, Type II error frequently is not; surveys of management authors reveal
19 that power analyses are unusual, and that the perceived need for such analyses
20 is low (Mone et al., 1996). In reality however, the power of most studies is weak.
21 Strategic management articles have been characterized as having only *half* the
22 recommended power levels, or only a 4 in 10 chance of rejecting the null hypoth-
23 esis (Mazen et al., 1987). More recently, Ferguson and Ketchen (1999) reviewed
24 the research stream on organizational configurations, and concluded that only 8%
25 of published studies had sufficient statistical power. Finally, Mone and colleagues
26 (1996) reported that the statistical power of many strategic management studies
27 was significantly lower than in many other management subdisciplines.

28 Thus, while there is strong evidence that statistical power is critical in the
29 design of academic research, the power of studies in strategic management has
30 been weak. This issue is compounded by problems associated with construct
31 measurement and the magnitude of effects in management research in general.
32 We explore the implications of these concerns next.

33 Models of organizational processes have three elements: (1) a theoretical
34 language that describes causal relations between constructs; (2) an operational
35 language that links certain indicators to their respective constructs; and (3) an inte-
36 grative theory that links the causal ties between constructs and indicators (Blalock,
37 1979). The second component is of particular relevance to strategy research.

38 Most strategic management research is framed using Blalock's first component
39 – a hypothesis that relates two unobserved concepts. So, for example, research
40 may posit that the presence of an agency problem can lead to opportunistic actions

1 by executives. However, this hypothesis is not tested directly. Instead, a researcher
2 may study the relationship between two indicators which serve as proxies for
3 the respective constructs. For instance, the ratio of insiders on the board may be
4 used to predict levels of diversification; insiders serving as the proxy for agency
5 problems, and diversification strategy serving as the proxy for opportunism.

6 If the indicators fully represent the latent concepts, power is unchanged. In
7 practical terms, this requires all variables to be valid, and measured without
8 error. However, even moderate amounts of measurement error can have sub-
9 stantial negative implications for power (Schmidt et al., 1976; Zimmerman &
10 Williams, 1986). Power analyses do not consider measurement error – instead,
11 the calculations to determine a minimum N assume exact measurement of
12 predictor and outcome variables. Consequently, even researchers who conduct
13 power analyses “will take samples that are too small and will be too unlikely to
14 reject the null hypothesis, even when a reasonable hypothesis is actually true”
15 (Maxwell, 1980, p. 253).

16 As an example, consider a researcher who is designing a study and the
17 population effect size is believed to be moderate to small ($r = 0.30$). Setting
18 $p = 0.05$, a sample size of 150 is needed to have a power level of 0.80 (Cohen,
19 1988). However, Cronbach’s alpha for predictor and outcome variables are each
20 0.60. Because of the measurement error associated with each term, the observed
21 correlation will be much smaller – approximately $r = 0.10$. The sample of 150
22 now has only a 1 in 3 chance of detecting the observed relationship.

23 As we have described, statistical power levels are often unacceptably low,
24 in both the broader management field, and in strategic management research in
25 particular (Ferguson & Ketchen, 1999; Mone et al., 1996). More importantly,
26 the presence of measurement error indicates that prior reviews may actually
27 *underestimate* the magnitude of this problem: “The bottom line is that unrelia-
28 bility shrinks observed effect sizes and therefore reduces power, and increases in
29 reliability enhance observed effect sizes and therefore increase power” (Cohen,
30 1988, p. 537).

31 Power analysis is particularly relevant given the nature of effects found in
32 behavioral research. For example, Cohen (1988) noted that observed effect sizes
33 can be diminished if either the measure used or research design are less than
34 robust. Therefore, “what may be a moderate theoretical effect size may easily, in
35 a ‘noisy’ research, be no larger than what is defined here as small (Cohen, 1988,
36 p. 413).” Sample size requirements change dramatically, depending on expected
37 magnitude of the effect being studied. Cohen (1992, p. 158) offered a simple
38 comparison: consider a regression model with three predictors; the researcher
39 desires a significance level of $p = 0.05$, and an 80% likelihood of successfully
40 detecting the relationship. Minimum sample size is 34 for a large effect, 76 for

1 a moderate one, and 547 for a small effect. Arguably, one could conclude that
2 many effects in strategic management research are small. For instance, there have
3 been several published articles on compensation strategy that have reported R^2
4 for multiple regressions of 0.20 or less. In such cases, the effect of an individual
5 predictor will be quite weak. Similarly, meta-analyses of variables, such as board
6 composition or diversification strategy with firm performance, have yielded
7 modest results.

8 Thus a greater awareness of statistical power in the design and review of
9 empirical research is needed. Scholars should consider the likely magnitude of an
10 effect, and the role of measurement attenuation in order to boost predictive power.
11 We conclude, however, that even excellent analytical tools may lessen but cannot
12 overcome misspecification that may occur because of sampling bias or error in
13 construct measurement (Cheung & Rensvold, 1999). Construct measurement is
14 a potentially significant issue in the empirical research conducted in the field. We
15 examine this concern next.

16 17 18 *Measurement* 19

20 Hitt et al. (1998) identified the lack of attention to construct measurement in
21 strategic management research as a potential problem. However, they did not
22 explore this issue in any depth. Additionally, when the first author was editor of
23 the *Academy of Management Journal*, he observed that micro researchers (e.g.
24 scholars in organizational behavior and human resource management) were much
25 more attentive to construct measurement concerns than many macro researchers,
26 especially scholars in strategic management.

27 Recent research by Boyd, Gove and Hitt (2003) explored and explicitly iden-
28 tified construct measurement in strategic management research as a substantial
29 problem. They suggested that little thought is given to construct measurement
30 in strategic management research. Proxies for variables are assumedly selected
31 without concern for their reliability or validity. When the linkage between
32 indicators (proxies) and their constructs are strong (variables are measured
33 without error), the lack of attention to reliability and validity would be of no
34 concern. However, it seems that many scholars in strategic management do not
35 pay attention to the reliability and validity of the indicators used. If error exists,
36 a much larger sample is required (referring back to the sample size concerns).

37 Boyd et al. (2003) found that single indicators were used for constructs
38 quite commonly in strategic management research. Additionally, they found
39 that it was uncommon to report the reliability, validity and/or measurement
40 error of the indicators used. They examined a large number of the published

1 empirical strategic management research in the years 1998–2000 to identify
2 construct measurement approaches. They found that measurement approaches
3 were used that disallowed the assessment of reliability in a large majority of this
4 research. For example, they found that such approaches were used disallowing
5 reliability assessment for over 70% of the independent variables, almost 60% of
6 the dependent variables and over 90% of the controlled variables in the recent
7 strategic management research. Therefore, construct measurement obviously is
8 a substantial problem in strategic management research. When measurement is
9 known or can be estimated, the appropriate sample size to maintain adequate
10 statistical power can be determined and used. However, one might conclude
11 that such a lack of knowledge would suggest that many studies have inadequate
12 statistical power to develop the conclusions noted. As we have noted above, both
13 reliable and valid construct measurement and adequate sample size are a high
14 priority; ignorance of either may lead to insufficient statistical power.

15 To show the potential effects of construct measurement problems, [Boyd et al.](#)
16 [\(2003\)](#) examined research on the relationship between agency problems and firm
17 diversification. There have been differences in the findings presented in recent
18 research on this important research question in strategic management. [Boyd](#)
19 [et al. \(2003\)](#) found that inadequate measures of the constructs have been largely
20 responsible for the variance in the findings in prior research. Clearly, strategic
21 management scholars can be faulted for their lack of attention to validity and
22 reliability issues in construct measurement. Their colleagues in micro areas of
23 management, such as organizational behavior and human resource management,
24 are much more attentive to such important research design issues. The prob-
25 lems of measurement error are relevant in the important research domain of
26 strategic change examined next.

27 Oftentimes the approaches taken with archival data and survey data differ. For
28 example, while single indicators are frequently used with archival data, multiple
29 items are commonly used to measure variables in a survey. The use of multiple
30 items or indicators allows the evaluation of the reliability of the measure. Various
31 analytical tools can be used to assess the reliability of multi-item measures and
32 reduce the number of variables. While most of the statistical packages offer
33 the reliability statistics for sample data, confirmatory factor analysis (SEM) has
34 the advantage of allowing researchers to insert theoretical rationales into the
35 factorial structure of multiple items. For example, scholars have control over the
36 error covariance among items of one or even more measurements. In addition to
37 reliability consideration for constructs, further steps may be required to establish
38 the validity of the measures. In recent study, [Zahra, Ireland and Hitt \(2000\)](#) used
39 multiple and different data sources to validate the survey data obtained. They
40 reported 20 different sources used to obtain archival data to validate the survey

1 responses. More research of this nature is necessary to ensure the reliability and
2 validity of the construct measures used.

3 Next we consider a potential problem that can emanate from sampling, that of
4 endogeneity, with critical issues for the analytical approach used.

7 *Analysis*

8
9 Endogeneity problems may take the form of a self-selection bias. As noted earlier,
10 Heckman (1979) identified the potential problem of self-selection bias in some
11 research. This potential problem is clearly evident in much strategic management
12 research. For example, Shaver (1998) stated that, “Firms choose strategies based
13 on their attributes and industry conditions; therefore, strategy choice is endoge-
14 nous and self-selected. Empirical models that do not account for this and regress
15 performance measures on strategy-choice variables are potentially misspecified
16 and their conclusion incorrect” (p. 571). To demonstrate this notion, Shaver
17 (1998) conducted a study in which he found greenfield ventures had survival
18 advantages as a means of entering new markets when compared to acquisitions.
19 In fact, these results were similar to prior findings. However, he also found
20 that the effect of greenfield ventures as a market-entry mode on firm survival
21 disappeared once he accounted the self-selection of entry mode in the empirical
22 estimates. As a result, without the control for the self-selection bias in this case,
23 errors could be made in the conclusions and in the implications drawn from
24 the research.

25 In addition, strategic management research also suffers from another potential
26 form of the endogeneity problem. This problem exists when there is a reciprocally
27 interdependent relationship between the assumed independent and dependent
28 variables. In this case, the causal relationship may be misspecified if not controlled
29 during the analyses. A study by Kochhar and Hitt (1998) demonstrated this
30 potential problem. They proposed that firms following an unrelated diversification
31 strategy were likely to rely on debt financing as a primary source of financing
32 any new strategic moves to support this overall corporate strategy. In addition,
33 they argued that strategic moves that increased related diversification were more
34 likely financed by equity than debt. However, they also noted that some scholars
35 had argued that a firm’s existing capital structure may influence the type of
36 diversification sought. Furthermore, the mode of entry is likely influenced by the
37 type of business entered. As a result, they needed to examine the potential for
38 reciprocally interdependent relationships. They used a three-stage simultaneous
39 equation modeling approach accounting for the potential endogeneity of the di-
40 versification strategy and mode of financing. Their results showed that there were,

1 indeed, reciprocally interdependent relationships as some assumed. Therefore,
2 one could not assume that there was a causal relationship only in the direction of
3 diversification strategy to the mode of financing.

4 Perhaps, of greater importance in strategic management research is the rela-
5 tionship between a firm's strategy and performance. In fact, the central question
6 in most strategic management research is "Why do some firms perform better
7 than others?" As a result, a substantial amount of strategic management research
8 examines the effects of strategies and strategic actions on firm performance.
9 In other words, it is assumed that firm strategies lead to (produce) particular
10 performance outcomes. Much of the research examining the relationship between
11 diversification and firm performance assumes causal direction (cf. [Hoskisson &](#)
12 [Hitt, 1990](#)). Yet, research has shown that performance can affect strategic moves.
13 For example, research by [Fiegenbaum and Thomas \(1988\)](#) showed that firm
14 performance affected the degree of risk that firms were willing to take in their
15 strategic moves.

16 [Chang \(2003\)](#) offered another interesting example. His results from the
17 analysis of a sample of group-affiliated public firms in Korea showed that
18 performance determines ownership structure but not vice versa. Additionally,
19 even if performance is the only object of analysis, performances at different levels
20 also exhibit reciprocal influences on each other. [Brush, Bromiley and Hendrickx](#)
21 [\(1999\)](#), for example, considered explicitly the reciprocal relationship between
22 corporate ROA and segment ROA.

23 Furthermore, there is a substantial amount of research suggesting that firm
24 performance affects the succession in the CEO position (and, in turn, the CEO
25 affects the strategies formulated and implemented). As an extension, performance
26 can even affect the composition of the top management team. This is exemplified
27 by the research of [Kilduff, Angelmar and Mehra \(2000\)](#) who examined the recip-
28 eral relationship between top management team diversity and firm performance.
29 They concluded that the cognitive diversity in the TMTs had a negative effect on
30 firm performance. In turn, however, firm performance had a negative effect on the
31 cognitive diversity in the TMTs. Thus, TMTs with significant cognitive diversity
32 performed worse but when firms performed better, the cognitive diversity was
33 reduced. As a result, concluding that the relationship is unidirectional is likely
34 inaccurate. Therefore, it seems that much research in which firm performance
35 is the dependent variable should include controls for the potential reciprocally
36 interdependent relationship between firm performance and strategy.

37 Both the self-selection problem and the potential for reciprocally interdepen-
38 dent relationships between the independent and dependent variables (especially
39 firm performance as a dependent variable) seem to be potentially significant
40 concerns in strategic management research and both types of problems can

1 exist in the same study. This concern was emphasized in a recent study by
2 [Leiblein, Reuer and Dalsace \(2002\)](#). They examined the influence of a firm's
3 governance choices on technological performance. In modeling the relationships,
4 they argued that, "It is likely that the observed level of technological performance
5 is conditional upon unobserved factors that influence firms' governance choices"
6 (p. 824). More specifically, they argued that the self-selection problem occurred
7 in semiconductor production because firms may decide to outsource or vertically
8 integrate the production of the semiconductor devices based on unobserved
9 characteristics associated with either the firm or the transaction itself. They used
10 the procedure recommended by [Shaver \(1998\)](#) that was backed on the work
11 of Heckman to control for this possibility. While controlling for the potential
12 effects of unobserved variables, they were still able to establish the relationships
13 predicted. [Leiblein et al. \(2002\)](#) concluded that this approach has important
14 implications in research designs that examine the implications of managerial
15 choice (e.g. selection of strategy or specific strategic actions).

16 While the method used by [Leiblein et al. \(2002\)](#) is appropriate for controlling
17 for the possibility of unmeasured mediators, other approaches may be useful
18 in dealing with the potential reciprocal relationships. For example, [Wong and
19 Law \(1999\)](#) examined the effectiveness of structural equations modeling to test
20 reciprocal relationships between constructs using cross-sectional data. They
21 suggest that such an approach can be useful but several factors can affect the
22 adequacy of the non-recursive model such as proper specification of the model,
23 consideration of time effects, accurately modeling the true cross-legged effects
24 and considering the effects of instrumental variables. Assuming appropriate
25 conditions, structural equations modeling may be helpful in sorting out the
26 reciprocal interdependence of variables of interest.

27 The concerns voiced in this section are likely applicable to a wide variety of
28 research questions in strategic management. For example, they may be relevant to
29 research examining the effects of product quality on competitive advantage (e.g.
30 [Kroll et al., 1999](#)), the relationship between a firm's environment and the amount
31 and type of risk undertaken by managers and by the firm (e.g. [Palmer & Wiseman,
32 1999](#)), the relationship between acquisitions and long-term performance (e.g.
33 [Capron, 1999](#)), the relationship between international diversification and firm
34 performance (e.g. [Delios & Beamish, 1999](#)), the relationship between ownership
35 concentration and R&D investment ([Lee & O'Neill, 2003](#)), and the effects
36 firm resources and capabilities on sustaining a competitive advantage (e.g.
37 [Yeoh & Roth, 1999](#)). They may also be relevant to other important questions
38 in strategic management research such as the use of firm networks to develop
39 competitive capabilities ([McEvily & Zaheer, 1999](#)), the relationship between firm
40

1 network relationships and firm value (Holm et al., 1999), and the development of
2 knowledge and its transfer within firms (e.g. Simonin, 1999).

3 Finally, endogeneity issues exist naturally in such research questions and the
4 reciprocally interdependent relationship between internal corporate venturing and
5 performance (e.g. Garud & Van de Ven, 1992) and the more complex relationship
6 between product modularity, strategic flexibility and firm performance (Worren
7 et al., 2002). Given that the resource-based view of the firm has become a
8 dominant theoretical paradigm used in strategic management research, empirical
9 studies on the RBV should be examined carefully for endogeneity problems. For
10 example, recent research examines the interrelationship between firm resources,
11 strategy and performance (c.f., Hitt et al., 2001). Hitt et al. (2001) examined
12 the direct and moderating effects of human capital on professional service firm
13 performance. Results showed that human capital exhibits a curvilinear effect and
14 the leveraging of human capital a positive effect on performance. Furthermore,
15 they also found support for a resource-strategy contingency fit in that human
16 capital moderates the relationship between strategy and firm performance.

17
18
19 *Application*
20

21 The final element in our research value chain is application. Separate from de-
22 cisions about samples, measurement, or analysis, are the processes of strategic
23 management research. We offer three suggestions to improvement general process.

24 The first topic is a research stream that we refer to as research kaizen. These
25 studies benchmark different aspects of the research process, and are shown in
26 Table 1. These articles cover a range of topics, from the proper use of cluster
27 analysis or cross-sectional design, to bias in longitudinal models. In the manufact-
28 uring context, kaizen is a continuous process designed to identify and eliminate
29 flaws, inefficiency, and defects. Quantitative reviews of strategic management
30 research can play a similar role in advancing the paradigm. As shown in the table,
31 this stream is relatively small. Consequently, such analyses should be continued.

32 Our second point concerns one of the topics noted in Table 1, the lack of
33 replication analysis among strategic management researchers. As noted elsewhere
34 in the chapter, there are many outstanding issues facing scholars – crude levels
35 of measurement, inconsistencies in the use of variables across studies, and
36 weak statistical power. Given such limitations, replication studies are even more
37 important for validating current knowledge. In Kuhn’s (1996) model, fields
38 advance only through careful review, evaluation, and challenge of prevailing
39 wisdom. However, as noted by Hubbard, Vetter and Little (1998), replication

1 studies in strategic management are rarely published. Additionally, Hubbard and
2 colleagues observed (1998, p. 250) that “the results of those replication studies that
3 do exist often conflict with those of the original, casting doubt on the reliability of
4 published reports.” Singh, Ang and Leong (2003) argue that extensive replication
5 is required for rigorous theory development, especially in young fields such as
6 strategic management. To promote replication in a field, however, will require
7 the leadership of one or more prominent scholarly journals and/or the leadership
8 of a major organization such as the Academy of Management or the Strategic
9 Management Society (Singh et al., 2003). Most current top scholarly journals
10 in the field require that manuscripts provided added value to our knowledge and
11 thus make a new theoretical contribution to be published. Such policies may need
12 to be changed or the interpretation of them be less conservative for replications to
13 become common in the strategic management literature. Of course, replications
14 must meet the same stringent methodological criteria imposed on other types
15 of research.

16 Our final comment on the research process concerns measurement. Previ-
17 ously, we discussed the limited emphasis on construct measurement among
18 strategic management researchers. Here, we consider a related point, the use
19 of validated measures. It is a commonplace occurrence for authors to review a
20 set of measurement choices, select a widely cited indicator, and then encounter
21 reviewers who are critical of the measure, or those who wish to modify the
22 measure. While we acknowledge the desire to optimize measurement schemes,
23 continual change or modification of measures across studies limits our ability
24 to compare and generalize research findings. Both reviewers and editors should
25 place more emphasis on the consistency of measurement schemes. A summary of
26 the methodological challenges examined herein is presented in [Table 2](#).

27 28 29 *Knowledge and Understanding*

30
31 The product of the research using effective methodology is the advancement
32 of knowledge in the field and a better understanding of the constructs and
33 their interrelationships. The research should contribute to our knowledge of the
34 primary question in strategic management: Why do some firms perform better
35 than others?

36 As we add to our existing knowledge base and understanding of the important
37 relationships, we can also better identify the critical gaps in our knowledge that
38 remain. This information becomes feedback on which new research questions
39 can be formulated to drive additional research. In this way, knowledge in the field
40 can mature.

Table 2. Methodological Challenges in Strategic Management Research.

Methodological Challenges	
Contingency theory	Ignorance of form moderation; Matching, gestalt, and profile deviation have seldom been used; Insufficiency of simple linear models.
Strategic change	Lack of consistent measurement of strategic change; Lack of construct reliability and validity; Serious endogeneity problems.
Sampling	Only a small number of studies used a random sample; Lack of sample representativeness; Inadequate sample sizes for particular statistical tools; Inadequate sample sizes for multilevel analysis.
U.S. centric focus	Barriers to international samples; Difficulties in reaching industry and firm level data in other countries; Necessary examination of international sample's representativeness and data's reliability; Attention needs to be paid to country idiosyncrasies; Rationales for selecting certain countries need to be reported.
Statistical power	Type II error was frequently ignored by authors and reviewers; Insufficient statistical power; Low statistical power caused by measurement errors; Low statistical power caused by insufficient sample sizes; Small effect sizes.
Measurement	Proxies were assumedly selected without concern for their reliability and validity; Single indicators were used for constructs quite commonly; Cross validation between archival and survey data was rare.
Endogeneity	Self selection problems; Non-recursive relations between I. V. and D. V.
Application	More research kaizen is necessary; Lack of replication analysis; Lack of consistency of measurement schemes.

CONCLUSIONS

Research in strategic management has developed and reached a certain level of maturity in a relatively short period of time in comparison with its older and more established sister subdisciplines in management (e.g. organizational behavior) and the other disciplines in business. Yet, the next step in the progression is a large and important one. The research cited herein suggests that scholars in strategic

1 management have not been sensitive (rather they have been largely insensitive)
2 to critical methodological concerns that threaten the validity of the research
3 results obtained. A recent editorial by [Feldman \(2003\)](#) suggests the importance
4 of attention to the methodology both in the design of the research and in the
5 reporting of it in order to have manuscripts published in top scholarly journals.
6 Without more sensitivity to the methodological challenges identified herein (e.g.
7 construct validity, statistical power, potential endogeneity), we fear that progress
8 in the field of strategic management could stagnate. Therefore, the challenges
9 that we have identified must be overcome and the standards set high. Likely, such
10 a development places much responsibility on the gatekeepers, the editors and
11 editorial review board members. Frankly, the next step could be painful. Acceptance
12 rates at the top scholarly journals are low and the competition for journal
13 space is increasing. Furthermore, tenure and promotion decisions and thus careers
14 and lives are affected by the decisions to accept and reject work for publication
15 in journals.

16 Therefore, we fervently hope that the identification of these challenges will
17 encourage new and senior researchers in the strategic management field to pay
18 more attention to the research design and methodological concerns in the conduct
19 of their research. Simultaneously, the field must also continue to emphasize theory
20 development and testing. To do so, suggests that more and better qualitative
21 research is needed. Such research should be accepted and, indeed, encouraged.
22 Much of the theory currently used in strategic management empirical research
23 has been borrowed from sister disciplines, especially economics. We restate the
24 challenge made by [Bettis \(1991\)](#) to begin doing first-class strategic management
25 research. This requires more and better theory developed specifically for the
26 field of strategic management as well as the use of more sophisticated and
27 appropriate methodology. We still need more use of multiple methods within
28 single research projects along with dynamic models and data ([Hambrick, 1990](#)).
29 The advancement of the field and its acceptance and legitimacy in the business
30 disciplines and social science fields are at stake.

31 We envision a field where new theory is developed and tested with appropriate
32 sophisticated methodology. We envision a field where multiple replications
33 studies are published to better establish the efficacy of the prior findings thereby
34 allowing not only more generalization but also more effective prescriptions for
35 managers. The development of research in the field to realize this future will
36 require changes in top journals, their standards, the research practices taught in
37 Ph.D. programs and in the profession itself. If the journals do not change, perhaps
38 others are likely to evolve that become the standard bearers of the field. This future
39 when realized should have the field of strategic management as equal partner
40 with its other sister social science disciplines such as economics, sociology and

1 psychology, and certainly at least equal if not more respected than its sister
2 disciplines in business.

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