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Research Methodologies for Contingency Approaches to Business Strategy¹

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A multisite, multisource research methodology is suggested for students of corporate strategy in order to attain generalizability and statistical significance in reporting findings while not losing the nuances and understanding of each firm's environmental context. A way of incorporating testable hypotheses into sampling designs is suggested and elements of the methodology are illustrated using extant strategy research publications.

Strategy research needs sophisticated research methodologies because it treats a complex topic. "Business strategy" is a difficult-to-measure construct (Hambrick, 1980) that can differ from competitor to competitor within the same industry (Harrigan, 1980).

One approach to understanding business strategy is to investigate the reasons why firms within the same industry form different strategic groups (Newman, 1973; Porter, 1980), beginning competition with differing initial conditions and pursuing differing objectives to achieve different but satisfactory outcomes. Understanding a particular firm's business strategy requires knowledge of its history and corporate strategy, its management team, and its competitive environment. The essence of these relationships can be captured in the statistically significant findings of large sample studies, but they lose (in their error terms) unexplained variances that could offer richer characterizations of business strategies. For this type of research a hybrid methodology is needed.

This paper describes methodologies that are appropriate for investigating the above and other contingency approaches to business strategy (Hofer, 1975). It captures the dynamic aspects of environmental evolution and competitive changes that effective business strategies should anticipate and act on by changing patterns of resource allocation. As a

hybrid of the dichotomous research traditions that have developed in business strategy (case studies and database surveys), these methodologies offer greater analytical rigor by virtue of their intricate sample design as well as their multiplicity of data sources.

Shortcomings of Previous Methodologies

In much existing research, insights gained using "fine-grained" (Hambrick, 1981) methodologies (such as case studies) lack generalizability and statistical rigor, but "coarse-grained" methodologies, such as the profit impact of market strategies (PIMS) studies, lose the nuances and insights concerning individual firms' strategies that a contingency approach seeks to capture. Figure 1 arrays strategy research on a continuum scaled by the fineness of detail that various methodologies permit. The finest texture is attained with cases treating individual firms, an expensive methodology usually based on field studies that may be difficult to replicate. The coarsest texture is found in database research using PIMS, COMPUSTAT®, or the Harvard Multinational Enterprise Project's ECU tapes, among others. These studies are replicable and may be generalizable, but they may not probe the key issues in a rigorous enough fashion, given their broad brush natures.

Fine-Grained Methodologies

Fine-grained treatments of strategy benefit from their attention to important details that help researchers characterize the complexities of strategy formula-

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Figure 1
A Selected Continuum of Research Methodologies

Fine Grained Methodologies Coarse-Grained Methodologies (Captures nuances, detail of context; shows im-(Generalizable, statistical significance; little proved understanding of forces underlying knowledge of interacting forces within each obserphenomenon in each observation; no generalizvation; occasional missing of important contingenability) cies) Berg and Hofer (1966) Hatten (1974) Chandler (1962) Bain (1956) Buzzell, Gale, Mintzberg (1978) Miles and Snow (1978) and Sultan (1975) Bower (1970) Hambrick (1979) Knickerbocker (1973a) Mintzberg, Raisinghani, Harrigan (1980) Miller and Friesen (1977) Caves and Porter (1977) Uyterhoeven, Ackerman, and Théorêt (1976) Harrigan (1983) Rumelt (1974) Knickerbocker (1973b) and Rosenblum (1973) Quinn (1980) Schoeffler, Buzzell, and Heany (1974)

tion. Such studies of competition (Berg & Hofer, 1966; Knickerbocker, 1973a) have been criticized as research vehicles for their lack of generalizability. Yet they have great potential as illuminating vehicles for studying questions of corporate strategy if coupled with *other* data gathering methodologies and integrative analysis.

The major advantages of fine-grained studies can include meticulous attentions to detail, relevance to business practice, and access to multiple viewpoints. Case studies, if they are done well, capture the complexities of corporate strategy, competition, and uncontrollable environmental factors surrounding strategy formulation. Access to these data depends on corporate interest, however. Because managers seek timely information (Mintzberg, 1973), their interest (hence cooperation) is likely to be greater if they perceive a study to be relevant. Field studies permit multiple administrative viewpoints within a firm (or diverse competitors' outlooks within an industry) to be represented. But their value alone as research methodologies is limited (due to shortcomings in hypothesis generation, replicability, and statistical summaries).

Coarse-Grained Methodologies

Coarse-grained treatments of strategy benefit from their generalizability; the cross-sectional design of the PIMS database, in particular, is suited to exploring the "laws of the marketplace" (Biggadike, 1976; Buzzell et al., 1975; Schoeffler et al., 1974). Their value in strategy research may be limited, however, unless meaningful subsets of the database can be compared with each other to isolate the major hypotheses being tested. The aggregated sample may be too general for a rigorous investigation of strategic phenomenon.

Other advantages of coarse-grained studies can include comparabilty of observations and access to otherwise unavailable data. PIMS, for example, focuses on strategic business units; industries comprised of narrowly diversified competitors can be compared within COMPUSTAT®. Data related to business unit strategies, such as advertising, research. or distribution expenditures (as well as nominal measures of product quality and vertical integration) are available in PIMS, but data such as plant utilization, vertical integration, or strategic expenditures usually are aggregated at the corporate level (or the industry level) when Census of Manufactures tapes supplement other databases. Environmental variables that change unevenly over time in various industries cannot be controlled in cross-sectional studies, not even in PIMS (Anderson & Paine, 1978). Even the time series analysis of competition in PIMS (which is the cornerstone of the pro forma strategy reports generated for its clients) is based on a generalized model of change, given the database's cross-sectional sample design. Thus, only limited distinctions concerning the strategies of competitors in the same industry can be made using these databases. Many interesting idiosyncracies in diverse industries are lost in the error terms of statistical analyses.

Medium-Grained Methodologies

One could straddle the gulf between these extremes by devising a medium-grained methodology wherein the generalizability of cross-grained methodologies is combined with the detail of fine-grained methodologies in large sample studies by using cases (Mintzberg et al., 1976). Similar patterns of strategic behavior could be grouped into archetypes (Hambrick, 1981; Miller & Friesen, 1977) to capture some of the variance created by polling cross-sectional

data. "Q-techniques," such as clustering hierarchical groupings, and factor analysis (Miller, 1978), could be used to gain greater specificity in understanding forces affecting strategy formulation. But, due to the exploratory nature of much medium-grained research, few studies have exploited opportunities to impose greater rigor on their analyses by incorporating testable hypotheses in their sample designs. If samples could be gathered using a design that categorizes target firms according to important explanatory variables, greater control in isolating the effects of these key variables could be imposed.

The Need for Hybrid Methodology

Because the hypotheses tested in a contingency approach to strategy are complex, and because the relationships among industry structure, competitive conduct, and firms' performance are dynamic, researchers who have relied on either single site case studies or large database methodologies are missing important aspects of the construct they studied. Contingency approaches to strategy formulation require hybrid designs, incorporating attributes of both fine- and course-grained research methodologies. Coarsetextured studies alone do not incorporate intraindustry competitive nuances well, and fine-textured, single site studies may not be externally valid, particularly if they rely on a maverick firm's strategy and industry aberrations for their generalizations.

By merging these streams of investigation, however, strategy researchers can benefit from the general laws of science regarding validity and statistical inference. They also can isolate the forces salient to an industry that might permit its competitors to attain different performance levels (or the same performance using different strategies). Validation of findings from one data source with other measures of the same phenomenon is suggested in the type of methodologies proposed below. Moreover the need for robustness in data collection (like fine-grained studies) suggests that multiple data sources, as well as multiple perspectives, are needed to characterize strategy better. The need for replicability and statistically significant findings suggests a large sample (such as in coarse-grained studies). The need to control for key explanatory variables suggests that multifaceted sample designs should be used in strategy research to capture important variances when comparing findings across firms or groups of firms.

Operationalizing Hybrid Methodologies

Hybrid methodologies are characterized by multiple sites, multiple data sources, and intricate sample designs. Among the interesting frontiers of strategy research are studies that would investigate the variances in firms' strategies and performances as each competitor takes the actions it believes best for coping with industry or internal change. A research methodology that facilitates such studies would need a carefully structured sample design—for example, one permitting the investigator to hold key dimensions of industry settings constant while varying others in order to scrutinize how various firms in each of several types of industries handle the problems of change.

Multiple Sites

Research designs that sample multiple sites facilitate the use of statistical tests for such hypothesis testing and generalized findings. Although such strategy research frequently is expensive in time and travel costs, some researchers can use extant field studies as data sources. Such multiple site studies were conducted by Mintzberg et al. (1976), for example, who used 25 student papers to study decisions; by Miller and Friesen (1977), who used 81 published cases to abstract their archetypes; and by Rumelt (1974), who used a sample of 246 Fortune 500 firms' published financial statements as data sources.

Representative sampling can reduce the need to interview entire universes. For example, in-depth interviews with key competitors can provide data describing how other competitors managed similar strategic challenges (Harrigan, 1980, 1983; Quinn, 1980). The findings from Chandler's (1962) study of strategy and structure (which focused on 4 firms) were validated in his discussion of firms within 11 other industries.

Multiple Data Sources

Research questions exploring contingency approaches to strategy formulation require robust data collection designs. These data could include published materials, field interviews and archival materials, Delphi panels, databases, and researchers' inferences, among others (including survey data). Using several data sources and measures of phenomena provides cross-checks on data accuracy and enrichment of the conclusions researchers might present. Juxtaposing

multiple data sources increases the likelihood that convergence will be reached between the subject's perceived environment and competitive position and its actual (or measured) position. Also, using better measures or descriptions of the phenomena studied will enhance the replicability of researchers' findings concerning them.

Published Materials. Because firms' past strategies can be inferred from studies of their histories, comparisons of how various firms in the same industry responded to strategic change could be established by searching news media and trade journal coverage of key events, in addition to each firm's financial statements. Inquiries of how firms within different industries coped with similar problems could establish firms' competitive postures on a common base date and compare their subsequent conduct until a common horizon point. A standardized format such as the one shown in Exhibit 1 could be used to facilitate

Exhibit 1

Standardized Format Used to Present Findings From Study of Industry Dynamics and Business Strategies^a

- I. Initial conditions (at the base period by industry)
 - A. The product and its uses
 - B. The markets that consume the product
 - C. Marketing process
 - D. Production Process
 - (a) Technological variations
 - (b) Entry and exhibit barriers
 - (c) Suppliers
 - E. Vignettes of major competitors or strategic groups (by firm)
- Description of changes in competition (over 10-year observation period)
 - A. Historic overview of industry's prior evolution
 - B. Product additions or deletions (each year by firm)
 - C. Entries and exits (each year by firm)
 - D. Price changes (each year by firm)
- III. Comparison of expected outcomes with observed behavior (Discussion of variances from hypothesized behaviors)

comparisons. Secondary sources also could supplement and verify data gathered in field interviews (Quinn, 1980).

Field Studies. Field interviews and archival searches should be designed to provide richness in understanding a particular firm's business strategy as well as variances among competitors' strategies. Multiple interviews within a single firm can enrich understanding of its business strategy (Quinn, 1980). Field interviews with corporate parents, with suppliers and customers, and with other industry observers are particularly valuable when investigating variances in

competitors' conducts (Hambrick, 1979; Harrigan, 1980).

Delphi Studies. Industry participants can improve the accuracy of data gathering and refine researchers' hypotheses effectively if they are used in quasi-Delphi panels. Interview subjects frequently are willing to give feedback, to criticize theoretical frameworks, to fine-tune tentative conclusions, and to revise estimates if data are not available. By sharing with respondents several rounds of such estimates and correcting field data on the basis of these estimates, convergence with measures collected from other data sources can be approached.

The use of expert panels in strategy research is increasing. Quinn (1980) tested concepts and cleared quotations with his interview subjects but did not utilize them as a Delphi panel. Hambrick (1979) used three different expert panels effectively to classify 29 universities according to the Miles and Snow (1978) typology. His field interview targets were selected from this slate according to their classifications. Harrigan (1980, 1983) obtained feedback on scenario papers, interview transcripts, and industry vignettes from interview subjects as well as information (gathered from a questionnaire) that evaluated competitors on several dimensions. Using Delphi rounds, Harrigan (1981) refined the scales constructed from field interviews.

Investigators' Inferences. As Snow and Hambrick (1980) suggest, researchers can infer how competitive an industry has been by recording the timing and nature of changes in firms' strategic postures as well as by seeking firms' self-assessments. The relative importance of a business unit to the parent corporation could be inferred from cash flow patterns, crosschecking the researcher's impressions with industry asssociations, or asking other interested industry representatives. Observable events may be helpful, such as major entries into and exits from an industry, openings and closings of plants, and other important competitive patterns (new product introductions, acquisitions or mergers to integrate vertically, contractual arrangements with suppliers and distributors, or competitive signals, among others). These could suggest factors that may have led a firm to follow its particular strategy and could offer insights concerning variances observed in firms' strategies and conduct.

Chandler (1962) used his perspective as historian to synthesize a theory of strategy and structure.

^aAdapted from Harrigan (1980).

Mintzberg (1978) derived useful patterns of strategy formulation by interpreting events surrounding the Viet Nam war or Volkswagenwerk. Rumelt (1974) relied heavily on inference in categorizing the organizational structures of the firms he studied.

In summary, strategy research needs many sources of information to reconstruct firms' business strategies and comprehend their strategy choices. Hypothesis generation and testing benefit from tightly defined research designs and numerous perspectives regarding the variables under study.

Intricate Sample Designs

If research samples are selected to coincide with sites that possess observable traits that are key factors in the hypotheses to be tested, researchers can ensure that desired phenomena are being scrutinized and that trail markings are left to guide subsequent researchers wishing to replicate or vary a portion of the pioneer study's inquiry. Moreover, if key variables hypothesized to affect strategic choices are used as criterion variables for segmenting the research sample, researchers ensure that they can control for these variables when analyzing the effects of other factors.

Exhibit 2 lists observable criteria for studies involving firms from several industries. The classification variables could be those from column A, variables that affect conditions of competitive rivalry (among others), or from column B, PIMS variables used to distinguish competitors' strategies. A major difficulty in building carefully structured sample designs is that many factors affecting strategy that could be interesting classification variables are difficult to opera-

tionalize. Criterion variables used in sample designs should be observable (and measurable) to facilitate statistical analyses and generalizability. The key structural variables used for sampling could be structural ones, such as observable differences in industry contexts, for example, but they also should be the *central ones* that affect firms' abilities to respond to competitive challenges.

Although researchers have used cross-sectional samples to investigate questions regarding strategy, few have incorporated their hypotheses into sample designs. For example, although Miller and Friesen (1977) studied several industries, they used a convenience sample that was not stratified in a meaningful fashion to isolate key variables. Quinn (1980) sought firms in differing types of industries, but their identities were not central to any hypotheses he was testing. Hambrick (1979) chose interview targets according to the Miles and Snow (1978) typology, but his hypotheses were not worked into the logic by which his 29 sample schools were chosen.

Exhibit 3 illustrates how Harrigan (1980, 1983) used industry potential variables to stratify industries for field interviews. Subsequent statistical analysis enabled Harrigan (1981) to report the effects to these other key variables on firms' strategic decisions. No other attempt is known that employs the carefully structured sample design (and other elements of the hybrid methodology) in a single strategy study.

Other Uses of Hybrid Methodologies

Although early attempts to use hybrid types of research methodologies were somewhat exploratory,

Exhibit 2 Criterion Variables Useful in Segmenting Research Sample Designs

Industry
Factors Affecting Competitive
Rivalry
4

Relative height of entry (or exit) barrier

Relative extent to which products could be physically (or perceptually) differentiated

Relative densities of competitors and asymmetries among strategic groups of firms

Rates of innovation in product traits or production processes

Degrees of buyer-seller integration or interdependence

Differing degrees of labor- or capital-intensity

Other structural traits of industries

PIMS
Variables Distinguishing
Competitors' Strategies

Width of product line and brand identification

Timing of entry into the industry and initial strategic posture Market share

Importance of business unit to parent corporation (as compared with the relative importance of their respective business units to competitor parent firms)

Extent of competition between parent firms in other industries Relative technological innovativeness

Extent of vertical integration

Relative price and cost position

Extent of shared facilities (including plant capacities, marketing channels, promotional programs, and R&D expenditures)

Exhibit 3 Industry Potential Variables Used to Stratify Field Sample Industries

~ · ·	Variables ^a	
riterion	Variables"	

Criterion Variables^b

Criterion variables		Criter	Criterion variables		
Differentiable products	vs. commodity-like products	Volatile competitive environment	vs.	stable competitive environment	
Relatively high exit barriers	vs. relatively low exit barriers	Relatively unsophisticated buyers	vs.	highly sophisticated buyers	
High need for buyer-seller integration	vs. low need for buyer-seller integration	High demand uncertainty	vs.	low demand uncertainty	
Few strategic groups	vs. many strategic groups	High integration economies	vs.	low integration economies	
Examples:		Examples:			
Industry	Variables	Industry		Variables	
Acetylene:	commodity-like high exit barriers many strategic groups high need for buyer-seller integration	Personal microcomputers:		volatile competitive environment relatively unsophisticated buyers low demand uncertainty low integration economies	
Receiving tubes:	commodity-like low exit barriers few strategic groups high need for buyer-seller integration	Petroleum refining:		volatile competitive environment highly sophisticated buyers low demand uncertainty high integration economies	
Percolator coffee makers:	differentiable low exit barriers many strategic groups low need for buyer-seller integration	Ethical pharmaceuticals:		stable competitive envionment highly sophisticated buyers low demand uncertainty high integration economies	

^aAdapted from Harrigan (1980)

the benefits of generalizability and replicability suggest that future uses of them could include development of additional predictive as well as explanatory models for strategy research. For students of corporate strategy, the cross-sectional, time series nature of the multiple sites and the opportunity to use intricate sample designs suggest that new vistas of intellectual inquiry can be opened by implementing these types of methodologies. Hybrid types can be used to verify academic hypotheses concerning the appropriateness of various strategic responses to industry-wide challenges. These types of research methodologies, which use interviews with several firms within different industries that have faced the same type of environmental challenges, for example, should be of interest to corporate strategists. The monitoring of competitive histories is an additional tool, which belongs beside scenario analysis, in the corporate arsenal of planning tools. Moreover, a robust, hybrid methodology such as the one proposed above could be used to test propositions concerning strategy formulation using research streams other than the structure-conduct-performance paradigm of industrial organization economics, for which the

methodology seems well-suited (Hunt, 1972; Newman, 1973; Scherer, 1978).

Research methodologies that focus on company histories (rather than a limited time horizon) provide greater insights concerning the antecedents of the strategies currently observed. Methodologies that also look at groups of competitors from several different industry contexts offer interesting possibilities for testing propositions using other perspectives concerning strategy research.

These research methodologies appear to be appropriate for investigating propositions using the population ecology perspective, for example (Aldrich, 1979; Hannan & Freeman, 1977). The emphasis on a "fit" of strategies and conduct with environmental contexts (using observable criteria to define sample groups of firms) seems in agreement with the focus of this perspective. Other aspects of these multidimensional types of methodologies enable researchers to reexamine some interesting debates concerning strategy formulation.

The longer time perspective embedded in pursuing the longitudinal review of strategy formulation might add some useful insights to the controversy on

^bAdapted from Harrigan (1983)

whether strategy is formulated "ex post" or "ex ante" (Mintzberg, 1978; Quinn, 1980). The emphasis on groups of competitors compared across several industries (for replicability of findings) might shed some light on whether strategy is the result of opportunism or the result of a rational process of planning and molding the environment to suit the firm's purpose.

In summary, the type of research methodologies proposed here offers a richer approach to testing propositions concerning the content of strategy, as well as the process by which strategy is formulated. Use of these hybrid approaches to data gathering and intricate sample design should yield benefits that the fine-grained (as well as coarse-grained) methodologies heretofore have been unable to offer.

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