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ORGANIZATIONAL CONFIGURATIONS AND PERFORMANCE: A COMPARISON OF THEORETICAL APPROACHES

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Two major approaches to examining the relationship between organizational configurations and performance are found in the strategic management literature. The first, rooted in the concept of strategic groups, is inductive and focuses on a posteriori examinations of industry-specific configurations and their relative performance. The second, a deductive approach, focuses on theory-based predictions. We compared the two approaches using a single set of organizations. The two approaches generated different configurations to describe the hospital industry. The deductively defined configurations explained performance better than the inductively defined configurations, and the deductive approach allowed prediction of the performance differences among configurations. We draw theoretical and methodological implications for future research.

Organizational configurations can be defined as commonly occurring clusters of attributes of organizational strategies, structures, and processes (Miller, 1987; Miller & Mintzberg, 1983; Mintzberg, 1990). At the heart of the configurational perspective is the assumption that increased understanding of organizational phenomena can be better achieved by identifying distinct, internally consistent sets of firms than by seeking to uncover relationships that hold across all organizations. Although the configurational perspective emphasizes codification—the classification of organizations into typologies and taxonomies—prediction is also possible when appropriate theory guides the process of defining configurations (Tiryakian, 1968).

The multidimensional nature of competitive strategy suggests that the configurational approach is especially relevant to the study of strategic management. Indeed, configurations represented by various strategy typologies (e.g., Miles & Snow, 1978; Porter, 1980) and taxonomies (e.g., Galbraith &

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Schendel, 1983; Miller & Friesen, 1978) have played a major role in the conceptual development of the field. Perhaps more important, configurations have figured in exploration of the determinants of performance, a quest that many observers feel is the cornerstone of the field of strategic management (Summer et al., 1990). Performance-related configurational studies are generally of two types: (1) inductive, often industry-specific inquiries that use configurations generated from empirical procedures as the basis for performance comparisons (e.g., Hatten & Schendel, 1977) or (2) deductive inquiries that first sort organizations into configurations and then test (or generate) theory-based predictions about their relative performance (e.g., Zajac & Shortell, 1989).

The configuration most frequently studied with the inductive approach is represented by a level of aggregation that lies between organizations and industries and is referred to as strategic groups. Proponents of the strategic groups concept maintain that firms within an industry can be classified according to certain key characteristics, such as strategic orientation and action. Strategic groups are considered highly stable because they reflect decisions and behaviors that are long-term, costly, and difficult to change (McGee & Thomas, 1986). Firms are unable to move rapidly or easily from one strategic group to another because of mobility barriers such as switching costs or government policy (Caves & Porter, 1977). Because these barriers impede firms from entering other, perhaps more successful strategic groups, performance differences across groups result (Porter, 1979). Studies have generally been successful in identifying empirically distinct configurations, but empirical tests have yet to clarify the relationship between strategic group membership and performance (Barney & Hoskisson, 1990; McGee & Thomas, 1986). This lack of evidence has cast doubt on the importance of this type of configurational research to the field of strategic management (Thomas & Venkatraman, 1988), particularly given the field's emphasis on understanding and predicting performance (Meyer, 1991).

More recently, a deductive approach to understanding the relationship between configurations and performance has appeared in the strategic management literature (e.g., Boeker, 1991). This type of research uses a particular theoretical perspective for both defining groups and predicting their relative performance. Given its theoretical foundation, the deductive approach may not only improve descriptions of industry structure but also provide explanations for and predictions about the configurations-performance relationship.

The overall research question addressed by this study can be stated as follows: Does the approach used to define configurations affect the relationship between organizational configurations and performance? To answer this question, we used both the inductive and deductive approach to identify configurations from a single-industry sample (hospitals) over a five-year period. The resultant configurations were then related to performance. For the inductive approach, configurations were derived on the basis of a comprehensive set of variables that, individually and collectively, have been used in prior studies to define strategic groups. The deductive approach to configuration was based on a theoretical framework that incorporates common elements of the ecological and strategic choice perspectives (Zammuto, 1988). We used this theoretical framework to predict the relative performance of configurations within the industry segment studied. Performance was measured with five variables representative of previous studies of the configurations-performance linkage.

TWO APPROACHES TO CONFIGURATION

Two major approaches for defining and comparing organizational configurations have arisen in the strategic management literature. The historically dominant approach focuses on empirical classification of organizations in order to define inductively a set of configurations appropriate to a given context. Essentially, the inductive approach concentrates on maximizing internal validity while sacrificing generalizability. The second approach focuses on producing configurations generated deductively from prior theory. Deductively derived configurations apply broadly and are not dependent on particular industry contexts.

The Inductive Approach

The predominant approach in strategic management to defining configurations of organizations and their relationship to performance has its conceptual roots in the industrial organization (IO) paradigm (Bain, 1956; Mason, 1939), according to which an industry's structure determines the behavior of its member firms, whose collective conduct then determines their performance. The major elements of industry structure identified as important to performance, especially in the early industrial organization literature, were entry barriers, the number of firms in an industry, and their size distribution (Bain, 1956, 1968). Because structure determined conduct, or strategy, which in turn determined performance, economists within this paradigm ignored conduct and looked directly to industry structure for explanations of performance (Porter, 1981).

By the early 1970s, theorists had observed that the features of an industry's topography generated configurations, or groups, of organizations that might influence performance within the industry. For example, Hunt (1972) found that, given the economic conditions in the major home appliance industry, profits were unexpectedly low. This finding led him to argue that there were distinct sets of firms in the industry—strategic groups—that differed in terms of strategic and organizational factors. These differences prevented the various strategic groups from acting in concert to exploit the industry's oligopolistic conditions.

Although Hunt focused primarily on describing industry structure, others explored the possibility that differences in behavior across strategic groups might lead to performance differences as well. For example, Newman (1973) provided evidence that not only can strategic groups be identified but also that their performance varies. In contrast, Porter (1973), who used firm size as his grouping criterion, found few significant differences in group performance.

Subsequent research increased the sophistication of both the types of variables and the decision algorithms used to define groups (Hatten, 1974; Hatten & Schendel, 1977; Hatten, Schendel, & Cooper, 1978). The initial studies of strategic groups used one or only a few variables, with size a prominent measure, but these later investigations offered a more comprehensive set of configurational attributes, including manufacturing, marketing, financial, and industry characteristics. As Table 1 shows, most strategic groups studies have adopted and built on these early categories. Employing multiple variables to define groups required the use of statistical methods such as cluster analysis and also enabled the construction of potentially richer descriptions of configurations.

Taken together, the early strategic groups studies set the agenda for much of the configurational research in strategic management by (1) offering configurations (strategic groups) as a possible means of explaining intraindustry performance variation and (2) outlining the types of variables and decision algorithms that could be used to define industry-specific configurations. Within this tradition, there was no reason to expect any particular number of configurations since each industry was seen as unique. Further, given the tenets of the IO paradigm, configurational links to performance were seen for the most part as determined by industry, not organizational, attributes. Thus, mapping industries in terms of their unique configurations and, a posteriori, examining the relative performance of configurations became a legitimate empirical task.

Following these ground-breaking efforts, a host of inductive studies examined the strategic groups–performance relationship. In the aggregate, the findings of these studies can best be described as equivocal. Several studies have provided strong evidence for such a relationship (e.g., Robinson & Pearce, 1988; Tremblay, 1985), but others have found only a small or nonsignificant association (e.g., Cool & Schendel, 1987; Dowling & Ruefli, 1991). Strategic groups have been found to vary in performance in some industries but not in others (e.g., Caves & Pugel, 1980; Oster, 1982) or along some performance measures but not along others (e.g., Lee & Yang, 1990; Lewis & Thomas, 1990). Recent studies have suggested that identifying periods of stability may be a key to finding differentially performing groups, but evidence again has been mixed (e.g., Cool & Schendel, 1987; Fiegenbaum & Thomas, 1990).

The failure to firmly link strategic groups and performance has led some investigators to suggest that perhaps the concept of strategic groups should be abandoned (e.g., Barney & Hoskisson, 1990). However, the previous mixed results regarding the relationship between this form of configuration and performance may be due to a weakness in the inductive approach stemming from its emphasis on identifying statistical homogeneity (Thomas & Venkatraman, 1988). Indeed, the a posteriori nature of the inductive studies

TABLE 1
Constructs and Variables Used to Define Strategic Groups

Construct	Variable	Representative Study
Production or operations		
Capacity	Number of plants	Hatten & Schendel, 1977
	Newness of plants	Hatten & Schendel, 1977
	Average capacity	Hatten, Schendel, & Cooper, 1978
	Quantity of physical output	Tremblay, 1985
	Capital intensity	Hatten & Schendel, 1977
	Cost efficiency	Kim & Lim, 1988
	Concern for low cost	Robinson & Pearce, 1988
	Total costs/total assets	Lawless & Tegarden, 1991
	Inventory levels	Dess & Davis, 1984
	Inventory turnover ratio	Harrigan, 1985
	Age of average inventory	Harrigan, 1985
	Inventory intensity	Fiegenbaum, Sudharshan & Thomas, 1990
Capabilities	Length of production cycle	Hatten, Schendel & Cooper, 1978
	Operating efficiency	Dess & Davis, 1984
	Product quality control	Dess & Davis, 1984
	Procurement of raw materials	Kim & Lim, 1988
	Ability to manufacture specialty products	Dess & Davis, 1984
	Innovation in manufacturing processes	Robinson & Pearce, 1988
	Technological capability	Mascarenhas, 1989
	Technological focus	Mascarenhas & Aaker, 1989
Research and development	Current R&D spending	Cool & Schendel, 1987
	R&D capital stock	Cool & Schendel, 1987
	R&D orientation	DeBondt, Sleuwaegen, & Veugelers, 1988
	R&D intensity	Hergert, 1987
Finance		
Financial structure	Debt	Hatten, Schendel, & Cooper, 1978
	Minimizing use of outside financing	Dess & Davis, 1984
	Current ratio	Fiegenbaum, Sudharshan, & Thomas, 1990
	Quick ratio	Sudharshan, Thomas, & Fiegenbaum, 1991
	Debt-to-equity ratio	Baird, Sudharshan, & Thomas, 1988
	Receivables	Lawless & Finch, 1989
	Receivables intensity	Fiegenbaum, Sudharshan, & Thomas, 1990
	Cost of good sold	Lawless & Finch, 1989
	Financial leverage	Fiegenbaum & Thomas, 1990
Capital investment	Mergers and acquisitions	Hatten, Schendel, & Cooper, 1978

TABLE 1 (continued)

Construct	Variable	Representative Study
	Net investment	Primeaux, 1985
	Security price movements	Ryans & Wittink, 1985
	Types and amounts of investment	Amel & Rhoades, 1988
	Total net assets/sales	Hergert, 1987
	Asset profile	Amel & Rhoades, 1988
	New capital expenditures/assets	Lawless & Tegarden, 1991
Marketing		
Pricing	Price	Hatten & Schendel, 1977
	Products in high-price market segments	Dess & Davis, 1984
	Products in low-price market segments	Robinson & Pearce, 1988
	Competitive pricing	Hawes & Crittenden, 1984
	Marketing expenditure	Hatten, Schendel, & Cooper, 1978
	Advertising intensity	Oster, 1982
	Aggressiveness of promotion	Hawes & Crittenden, 1984
	Display approach	Hawes & Crittenden, 1984
	Advertising	Namiki, 1988
	Innovation in marketing techniques and methods	Robinson & Pearce, 1988
	Brand identification	Namiki, 1988
Scope of activity	Number of brands or products	Hatten & Schendel, 1977
	Market share	Hatten & Hatten, 1985
	Geographic scope or spatial reach	Ramsler, 1982
	Serving special geographic markets	Dess & Davis, 1984
	Breadth of scope	Cool & Schendel, 1987
	Commitment to specific markets	Cool & Schendel, 1987
	Broad range of products	Dess & Davis, 1984
	Developing or refining existing products	Dess & Davis, 1984
	Promotion to specific markets	DeBondt, Sleuwaegen, & Veugelers, 1988
	New product development	Kim & Lim, 1988
	Interdependence of shared markets	Baucus, 1987
	Sales	Fiegenbaum, Sudharshan, & Thomas, 1990
	Differentiation	Ramsler, 1982
	Nature of product group	Lahti, 1983
	Types of customer served	Hawes & Crittenden, 1984
	Customer functions served	Frazier & Howell, 1983
	Emphasis on customer service	Robinson & Pearce, 1988

TABLE 1 (continued)

Construct	Variable	Representative Study
	Product strategy	Cool & Schendel, 1987
	Quality of products and services	Hawes & Crittenden, 1984
	Marketing orientation	Mascarenhas, 1989
Distribution	Distribution	Hatten & Schendel, 1977
	Control of channels of distribution	Dess & Davis, 1984
Organization and management	Size	Porter, 1973
	Degree of vertical integration	Newman, 1978
	Experienced and trained personnel	Dess & Davis, 1984
	Reputation within industry	DeBondt, Sleuwaegen, & Veugelers, 1988
	Employee productivity ratio	Harrigan, 1985
	Homogeneous use of labor and capital	Baucus, 1987
	Institutional function	Fombrun & Zajac, 1987
	SBU sales/corporate sales	Herbert, 1987
	Diversification	Dowling & Ruefli, 1991
	Ownership	McNamee & McHugh, 1989
	Activity	McNamee & McHugh, 1989
	Specialization	McNamee & McHugh, 1989
	Type of enterprise	Kumar, 1990
	Relative importance of functional strategies	Nath, 1988
Industry structure	Firm concentration	Hatten & Schendel, 1977
	Industry advertising intensity	Hatten, Schendel, & Cooper, 1978
	Environmental posture	Fombrun & Zajac, 1987
	Forecasting market growth	Dess & Davis, 1984

suggests that they are not maximally robust tests of the configurations-performance relationship, leading researchers to call for theory-based models (McGee & Thomas, 1986) that would permit predictions of performance differences (Thomas & Venkatraman, 1988). Such an approach to linking configurations and performance has begun to take shape in the strategic management literature.

The Deductive Approach

Scholars taking the second configurational approach portray configurations as jointly produced by organizational and environmental attributes that are critical to competition regardless of industry. The origins of this approach can be traced to Weber's (1947) assertion that there are three general types of authority in society—traditional, rational-legal, and charismatic—and that each has an appropriate administrative structure. Weber predicted that these configurations will arise under certain conditions. Structural contingency theorists brought to the study of organizations the notion that fit between structural characteristics and environment is required. For example, Burns and Stalker (1961) identified two types of organization structure, mechanistic and organic, each of which is expected to be more prominent and effective in a particular type of environment. Woodward (1958), Lawrence and Lorsch (1967), and Galbraith (1973) have taken similar configurational perspectives. Thus, a central theme of structural contingency theory is that the relative success of organizational types (or configurations) is a function of environmental conditions.

Subsequently, attempts to explain links among environmental conditions, organizational configurations, and performance gave rise to two seemingly competing schools of thought: strategic choice and organizational ecology. The strategic choice perspective is founded on the belief that managerial decisions about how an organization will respond to environmental conditions are important determinants of organizational outcomes (Child, 1972). Seen from this perspective, organizations not only adapt to their environments, but also influence them through their actions (Miles & Snow, 1978; Weick, 1979).

Empirical research conducted according to the strategic choice perspective has found that a limited number of organizational configurations are viable. Thus, typologies like Miles and Snow's (1978) and taxonomies like Miller and Friesen's (1978) became common ways of both describing and predicting organizational behavior. Although these early studies implied that different configurations—for example, defenders, prospectors, analyzers, and reactors (Miles & Snow, 1978)—can be equally successful in any given environment, Hambrick (1983) found that defenders (those firms efficiently producing a stable set of products for particular customers) consistently outperformed prospectors (those firms constantly locating and exploiting new opportunities) in growth markets, while prospectors performed better in mature markets. Zajac and Shortell (1989) found that, in the dynamic environment of the hospital industry, defenders performed more poorly than prospectors and analyzers. Thus, at least some empirical strategic choice research has found significant performance differences across theoretically derived configurations.

In contrast, in the organizational ecology perspective environment is the primary determinant of firm outcomes (Hannan & Freeman, 1977, 1984). Ecologists depict environments as composed of multiple niches—industries, for example—each of which provides both resources and constraints to a population of organizations. One of the key tenets of this perspective is that within each niche certain organizational forms, or configurations of structure and processes, are selected to be successful, and others fail (Ulrich & Barney, 1984). Organizations cannot easily change their forms because they are subject to strong inertial forces. Consequently, profound differences in performance between forms are expected.

Zammuto (1988) noted that proponents of the two theoretical perspectives underlying much of the strategic management literature—strategic choice and organizational ecology—appeared to have arrived independently at common themes with respect to organizational configurations. Researchers from both perspectives assert that a firm's competitive strategy varies along two main dichotomous dimensions: (1) a method of developing competitive advantage and (2) breadth of operations. In terms of the first dimension, an organization must focus on either capitalizing on new opportunities (attempting to be first to market) or efficiently exploiting those already available (Brittain & Freeman, 1980; Miles & Snow, 1978). With respect to the second dimension, an organization can either maintain a narrow field of operations or take an expansive approach (Brittain & Freeman, 1980; Porter, 1980). Once these fundamental choices have been made, the ability of a firm to make substantial shifts along either dimension is constrained, albeit not precluded, by the difficulty of duplicating the capabilities required to be viable in the new position (Caves & Porter, 1977). Thus, although their distribution may vary across industries, a given industry will have four distinct and internally homogeneous configurations: (1) *entrepreneurs/r-specialists*, who pursue new opportunities in a narrow domain; (2) *prospectors/r-generalists*, who pursue new opportunities across a broad domain; (3) *defenders/K-specialists*, who efficiently exploit existing opportunities in a narrow domain; and (4) *analyzers/K-generalists*, who efficiently exploit existing opportunities across a broad domain (Zammuto, 1988).[1]

Because of the difficulty associated with major strategic change, it is expected that the groups occupying lucrative segments of an industry will experience above-average returns. Thus, performance differences between configurations should be based on (1) firms' commitment to prior strategic choices and (2) differing levels of environmental benevolence across the industry. Empirical evidence that industry conditions moderate the configurations-performance relationship (Boeker, 1991; Lawless & Finch, 1989; Lawless & Tegarden, 1991) suggests that, given specification of the conditions in a particular industry, investigators can make predictions regarding the relative performance of the four configurations.

HYPOTHESES

Theoretical approaches such as the inductive and deductive approaches discussed above can serve three fundamental research purposes (Kerlinger, 1986; Snow & Thomas, in press). First, they provide description by defining key constructs like configurations. Second, they may explain why and to what degree major concepts, such as configurations and performance, are related. Finally, one important test of a theory is whether it can make accurate predictions of organizational outcomes—the relative performance of

[1] The distinction drawn by organizational ecologists between "r" and "K" strategies is based on the biological literature's (e.g., MacArthur & Wilson, 1967) logistic model of the proliferation of organisms within a niche: $dN/dt = rN(K - N)/K$, where r represents the reproductive rate of the population, K is the carrying capacity of a niche, N is the number of organisms in the population, and t is a unit of time. Zammuto (1988) was the first to combine this distinction with those made by Miles and Snow (1978) with respect to root causes of competitive distinction.

configurations, for instance. These three purposes offer a framework for developing hypotheses that compare the inductive and deductive approaches to configuration.

Description of Configurations

The main purpose of description is to answer the question "what" as opposed to "how," "when," and "why" (Bacharach, 1989; Hempel, 1965). Both the inductive and deductive approaches have a straightforward goal of describing what configurations are present in an industry. However, one of the most disappointing aspects of strategic groups research (the flagship of the inductive approach) is its lack of strong evidence for descriptive validity, evidence that groups are in reality internally homogeneous and maximally different from each other (Thomas & Venkatraman, 1988). Reviews of the strategic groups literature have cited a number of causes of this descriptive validity problem, including inadequate model specification (Barney & Hoskisson, 1990), haphazard selection of grouping dimensions (Reger & Huff, 1993), and poor theoretical development (McGee & Thomas, 1986). As some have concluded, although the inductive approach might appear to provide a rich description of the configurations in an industry, such description may be just a statistical artifact (e.g., Hatten & Hatten, 1987).

In contrast, the deductive approach applied in the current study was based on the development of a set of organizational types that are rooted in the key bases of competition, breadth and focus, described by both ecology and choice theorists. Because we anchored configurations in theoretical positions that reflect a priori reasons for the groupings rather than industry-specific factors, we expected that, though the distribution may differ (Miles, Snow, & Sharfman, 1993), the number of configurations would be the same regardless of industry. Thus,

> *Hypothesis 1a: For a given industry, the inductive and deductive approaches will define different sets of configurations.*

More specifically, because it often defines configurations on the basis of statistical homogeneity, the inductive approach's tendency to capitalize opportunistically on random variation in a given time period (Thomas & Venkatraman, 1988) will lead to different numbers of configurations across multiple time periods. Therefore,

> *Hypothesis 1b: The inductive approach will define different numbers of configurations over time in a given industry.*

As described in detail above, the deductive configurational attributes derived from the strategic choice and organizational ecology perspectives suggest that a particular firm will display one of four ways to compete in an industry (Zammuto, 1988). Given the difficulty of firms' engaging in major strategic reorientations (Tushman & Romanelli, 1985) because of mobility barriers (Caves & Porter, 1977) and their inertial tendencies (Hannan & Freeman, 1977),

> *Hypothesis 1c: The deductive approach will consistently define four configurations in a given industry over time. Specifically, one group each of entrepreneurs/r-specialists, prospectors/r-generalists, defenders/K-specialists, and analyzers/K-generalists will be found across multiple time periods.*

Explanation of Differential Performance

We also expected the inductive and deductive approaches to differ in their ability to explain the performance of configurations. Specifically, as Dierickx and Cool (1989) suggested, inductive efforts to understand the configurations-performance relationship have relied on examining firms' expenditures with respect to key grouping dimensions, for example, marketing expenditure (Hatten, Schendel, & Cooper, 1978) or research and development spending (Cool & Schendel, 1987). Such measures may only partially reflect the past activities that create current competitive advantages and superior performance. A causal ambiguity that has limited the ability of inductively derived configurations to explain performance arises (Thomas & Venkatraman, 1988). In contrast, deductive inquiry (e.g., Zajac & Shortell, 1989) has focused predominantly on key past actions, or "strategic stocks" (Dierickx & Cool, 1989: 1506), for defining configurations. Thus, deductively defined configurations have been able to provide explanations for differentially performing configurations since groupings have been established using long-term strategic decisions that indicate resource commitments and interconnectedness of decision purpose (McGee & Thomas, 1986). Therefore,

> *Hypothesis 2: The deductive approach will identify differentially performing configurations better than the inductive approach.*

Prediction of Relative Performance

One key test of a theory is its ability to predict important outcomes (Braithwaite, 1955; Kaplan, 1964). In the present study, our primary predictive concern was the relative performance of configurations. The inductive approach does not offer a basis for such predictions since it offers no a priori expectations concerning how many or what type of configurations will be found in a given industry. In contrast, the deductive approach adopted here contains the assumption that it is difficult to shift from one of four expected configurations to another, suggesting that the group (or groups) that occupy lucrative segments of an industry will enjoy superior performance. An implication is that, given specification of the environmental conditions in a particular industry, predictions can be made regarding the relative performance of the four configurations. Thus, *Hypothesis 3a: The deductive approach will accurately predict the relative performance of configurations.*

Considerable research has been devoted to specifying how environments vary. In an effort to assimilate prior work, Dess and Beard (1984) proposed, and established construct validity for, three environmental dimensions: munificence, dynamism, and complexity. Munificence is resource-carrying capacity, the extent to which environmental resources are available and accessible to firms (Aldrich, 1979; Starbuck, 1976). Dynamism is the amount of turbulence and instability in an environment (Emery & Trist, 1965; Ulrich & Barney, 1984). Specifically, dynamism refers to changes that are difficult to predict in terms of both frequency and direction and thus can increase environmental uncertainty for organizations (Jurkovich, 1974). Complexity is the number and diversity of competitors, suppliers, buyers, and other environmental actors that firm decision makers need to consider in formulating strategy (Bourgeois, 1980; Smart & Vertinsky, 1984). Subsequent to the Dess and Beard (1984) study, these three environmental dimensions have become well established in the literature (cf. Lawless & Finch, 1989) and are used here.

In general, munificence should be positively related to performance across all firms in an industry. However, the strength of this relationship may vary by configuration. For example, a broad and expanding industry presents considerable resources that may benefit generalists more than specialists since the former prefer to operate in a broad domain (Carroll, 1984). Conversely, low munificence may favor specialists, if they can acquire adequate resources to successfully implement their chosen strategy. Thus,

Hypothesis 3b: An environment characterized by low munificence will favor the two specialist groups (entrepreneurs and defenders) over the two generalist groups (prospectors and analyzers).

High environmental dynamism suggests that efficiency-based approaches are less valued than innovative approaches since innovation allows realization of the opportunities presented by the shifting market (Hedberg, Nystrom, & Starbuck, 1976). Therefore, r-strategies may profit in such an environment. Conversely, a stable environment presents few new opportunities and allows firms to focus profitably on efficiency, suggesting groups following K-strategies will prosper. Thus, in a dynamic environment, configurations classified as r-types will have an advantage over those classified as K-types:

Hypothesis 3c: An environment characterized by high dynamism will favor the two r-groups (entrepreneurs and prospectors) over the two K-groups (defenders and analyzers).

As the number and diversity of environmental actors increases, the resultant complexity is not expected to influence the relative performance of different configurations. For example, Carroll (1984) argued that the success of generalism actually creates conditions for the success of specialism. By appealing to a large market segment, generalists avoid appeals to special groups of customers, leaving pockets of demand open for specialists to serve. The result is an increasingly complex environment in which generalists and specialists can coexist and even prosper. This phenomenon was observed by Miles, Snow, and Sharfman (1993), who found that the variety and number of competitors was related to the performance of both generalists and specialists.

In sum, we anticipated that in an environment characterized by low munificence, high dynamism, and high complexity, entrepreneurs/r-specialists will be the best performers, followed by prospectors/r-generalists, defenders/K-specialists, and analyzers/K-generalists.

METHODS

Sample and Data

Organizations in a single industry were chosen as the setting for this research. Several considerations underlay this choice. First, we used a single-industry design because strategic groups is fundamentally an intraindustry concept. Second, it was desirable to examine a setting in which (1) there was a consensus with respect to the nature of the environment, (2) reliable and longitudinal data were available for 15 grouping criteria and performance measures identified in the literature, and (3) previous research had identified the presence of organizational configurations. Given these requirements, we chose the hospital industry.

Before 1983, most hospitals were reimbursed their full costs of patient care from third-party payers. The Medicare Prospective Payment System, established in 1983 and fully implemented by 1986, set predetermined and fixed payment levels for 468 groups of medical conditions. If hospitals provided care below the various price limits, they could keep the difference as profit. This legislation was a major environmental jolt to the hospital industry and triggered a number of aftershocks (Shortell, Morrison, & Friedman, 1990). Major corporations, facing the rapidly rising cost of health care and fearing that hospitals would cross-subsidize costs to their employees, began to look for managed care programs such as health maintenance organizations. The result was a 12 percent drop in national occupancy rates for hospitals and a dramatic downward shift in operating profit margins (Guterman & Dobson, 1986). By 1986, the first year of the present study, the once munificent, stable, and somewhat simple hospital environment had become characterized by heavy competition for resources, dramatic change, and an increasing number and diversity of environmental actors.

In addition to consensus about the hospital environment and reliable and longitudinal data, there was also prior evidence in this industry of the presence of organizational configurations (Goes & Meyer, 1990; Pegels & Sekar, 1989) and differential performance between groups (Shortell et al., 1990; Zajac & Shortell, 1989). Moreover, as is true in such other industries as certain types of textiles (Porac, Thomas, & Baden-Fuller, 1989) and banking (Reger & Huff, 1993), hospital competition is regional. Therefore, it was necessary to select a geographic region within which hospitals competed for similar resources. In this sense, we did not sample the industry, but used the entire population of all 90 hospitals in a large metropolitan area in the northeastern United States. This region contains approximately four million people across a 2,000-square-mile area.

Data were collected for the years 1986–90 (the most recent year available) from all the hospitals in the region with the exception of Veterans' Administration hospitals, military-base hospitals, and university health centers. We obtained data from the Center for Healthcare Industry Performance Studies, a high-quality source of operating and financial information on hospitals, and from the *Guide to the Health Care Field* of the American Hospital Association (AHA). Because of missing data (for example, from facilities not responding to the AHA's requests for information), the number of hospitals studied ranged from 85 in 1986 to 69 in 1990. For any given year, approximately 40 percent of the hospitals in the region were classified as small (having fewer than 200 beds), 50 percent as medium (201–500 beds), and 10 percent as large (more than 500 beds). Further, about 80 percent could be considered general hospitals, 10 percent psychiatric hospitals, and 10 percent rehabilitation institutions. With respect to the control of the hospitals, 96 percent were not government operated and were not-for-profit. The remaining 4 percent consisted of one county hospital and four private, for-profit hospitals.

Inductive Measures

As described above, the majority of configurational studies in strategic management have relied on inductively defined strategic groups to examine a posteriori the configurations-performance relationship. In this study, the inductive approach involved using clustering procedures on a comprehensive set of variables using measures employed in previous studies to derive strategic groups. We surveyed all the inductive studies that have been published, a total of 55. We listed the variables used to define groups and (where appropriate) to measure performance and then classified those variables using 15 construct categories (10 grouping and 5 performance constructs) that emerged from the strategic groups literature. One variable from each construct category that had clear relevance for the hospital environment was identified. This was either a direct measure or proxy that could be archivally retrieved. We presented these variables to an expert panel consisting of two strategic management and two health policy researchers. The constructs and measures receiving the most agreement constituted the final set of inductive measures.

The variables used to define strategic groups represented six theoretical constructs: production or operations, research and development, finance, marketing, organization and management, and industry structure. Production or operations, finance, and marketing were further divided into two, two, and three more specific constructs, respectively, for a total of ten. In order to account for previous work, under the inductive approach we considered one variable from each category except industry structure, which was controlled.

Production or operations. These variables were of two main types. The first type, capacity, refers to the volume of goods or services that firms can produce. In the present study, *total assets* was used to measure this type. The second type, capabilities, refers to the ability of a firm's manufacturing or operations function to meet customers' needs efficiently. For this study, we used *length of stay*, defined as the length of the average patient's stay in a hospital after admission. Generally, the more efficient the hospital is in providing medical care, the shorter the stays.

Research and development. These variables have traditionally reflected efforts to create new products or services (e.g., Cool & Schendel, 1987). There is no direct counterpart of R&D in hospitals, since individual hospitals very rarely create new medical technologies. However, when a new technology is made available, hospitals wishing to adopt it must have highly and recently trained medical professionals to ensure its proper and effective use. Thus, in this study, we used *the amount of direct medical education*, defined as intern and resident salaries plus other direct costs divided by the number of full-time interns and residents, to measure R&D.

Finance. These variables are based on the notion that a firm's financial policies reflect and support its long-term strategic decisions. We examined two categories of financial measures. Financial structure refers to the structure of a firm's assets and liabilities. In this study, we used the *current ratio* (current assets divided by current liabilities), which has been used in several previous studies of strategic groups (e.g., Fiegenbaum, Sudharshan, & Thomas, 1990; Lawless, Bergh, & Wilsted, 1989). Capital investment refers to the amount of funds spent on improving the firm's facilities. In this study, we used a measure of investment in capital goods, *capital cost per discharge*, defined as in-patient interest and depreciation accrued by the hospital divided by total facility discharges.

Marketing. Marketing variables have been used to define strategic groups because they reflect firms' product-market choices (Oster, 1982). Marketing variables in this study were divided into three categories. Pricing refers to the amount that a firm charges for its goods or services. Generally, higher prices are associated with more differentiated offerings (Porter, 1980). In this study, the *markup ratio*, computed as gross patient service revenue plus other operating revenue divided by operating expenses, was used since it gauges the costliness of a hospital's services. Scope of activity refers to the firm's range of products, services, and markets. In this study, we used *market share, county*, defined as the hospital's percentage of the total net patient revenue for the county in which it was located. Hatten, Schendel, and Cooper (1978), Hatten and Hatten (1985), and Hergert (1987) have previously used market share to measure this type of variable. Distribution refers to the methods a firm uses to make its goods or services available to customers. In-patient and out-patient care are the two main channels through which customers receive a hospital's services. The relative amounts of services that are distributed through each channel reflect how a hospital has chosen to deliver its services. Thus, the *ratio of in-patient revenue to total patient revenue* was used to measure distribution.

Organization and management. Organizational and managerial variables are not direct measures of firms' competitive strategies, but some are important to the explanation of performance (Beard & Dess, 1981). The most commonly used organizational variable has been size (e.g., Hatten & Schendel, 1977; Lewis & Thomas, 1990; Porter, 1973). Accordingly, we used a common measure of size, *number of beds.*

Deductive Measures

The deductive approach, which focuses on a theory-based, a priori examination of the configurations-performance link, involved measuring two aspects of competitive strategy as clustering dimensions: source of competitive advantage (seeking new opportunities versus increasing efficiency) and breadth of operations.

Source of competitive advantage. Hospital services can be categorized as routine (radiology, pharmacy) or nonroutine (neonatal and burn care units). Hospitals seeking to exploit new service opportunities have a relatively large percentage of their patients in nonroutine service units (Shortell et al., 1990). Conversely, hospitals that focus on efficiency tend to pay less attention to the opportunities presented by cutting-edge medical services and instead concentrate on operating routine services as cost-effectively as possible (Meyer, 1982). Thus, in this study, we measured the source of competitive advantage by the *percentage of routine patient days,* calculated as total routine days divided by the total number of in-patient days. Hospitals with a low percentage of routine service days were seen as emphasizing innovation (an r-strategy), and those with a high percentage of routine service days were seen as focusing on efficiency (a K-strategy).

Breadth of operations. We used the *Guide to the Health Care Field* to identify the services each hospital offered in each year of the study (1986–90). Each year, the AHA provides hospitals with a list of services, and each hospital indicates the services that it provided in that particular year. For the period covered in this study, the number of offerings on the AHA list ranged from 54 in 1986 to 77 in 1990. The total *number of services* offered from that list by each hospital in each year was used to indicate the breadth of operations. We saw hospitals that had a narrow breadth of service offerings as following more of a specialist strategy and saw those offering a broader range as following a generalist strategy.

Performance Constructs and Measures

As Table 2 shows, previous studies of the configurations-performance relationship have used performance measures related to sales, equity and

TABLE 2
Constructs and Variables Used to Measure the Performance of Strategic Groups

Construct	Variable	Representative Study
Sales	Sales growth	Dess & Davis, 1984
	Average order size	Frazier & Howell, 1983
	Sales per salesperson	Frazier & Howell, 1983
	Sales per employee	Frazier & Howell, 1983
	Composition of sales	Frazier & Howell, 1983
	Inflation-adjusted return on sales	Cool & Schendel, 1987
	After-tax return on total sales	Robinson & Pearce, 1988
	Ratio of sales to total assets	Lawless & Finch, 1989
	Return on sales	Lewis & Thomas, 1990
	Sales per $100 market value of stock	Lawless & Finch, 1989
	Incidence of new product failures	DeBondt, Sleuwaegen, & Veugelers, 1988
	Sales	Boeker, 1991
	Combined ratio	Fiegenbaum & Thomas, 1990
	Risk of combined ratio	Fiegenbaum & Thomas, 1990
	Risk adjusted for combined ratio	Fiegenbaum & Thomas, 1990
Equity and investment	Return on equity	Porter, 1973
	Return on net worth	Frazier & Howell, 1983
	Return on investment	Lawless & Finch, 1989
	Earnings per share	Lawless & Finch, 1989
	Cash flow per share	Lawless & Finch, 1989
	Dividend yields	Lawless & Finch, 1989
	Return on capital employed	Lewis & Thomas, 1990
	Weighted index of growth in price/earnings ratio	Lewis & Thomas, 1990
Assets	Return on assets	Dess & Davis, 1984
	Total asset turnover	Frazier & Howell, 1983
	Operating income on assets	Hatten & Hatten, 1985
Margin and profit	Price-cost margin	Newman, 1973
	Net profit before taxes	Frazier & Howell, 1983
	Industry profit share	Hatten & Hatten, 1985
	Relative profit share	Hatten & Hatten, 1985
	Revenue per unit	Tremblay, 1985
	Profitability	Nath, 1988
	Pretax income per $100 market value of stock	Lawless & Finch, 1989
	Net income per $100 market value of stock	Lawless & Finch, 1989
	Average profit margin	Kumar, 1990
Market share	Market share	Nath, 1988
	Weighted market share	Fiegenbaum & Thomas, 1990
	Weighted segment share	Cool & Schendel, 1987
	Risk of market share	Fiegenbaum & Thomas, 1990
	Risk of weighted market share	Fiegenbaum & Thomas, 1990
	Risk adjusted for market share	Fiegenbaum & Thomas, 1990
	Risk adjusted for weighted market share	Fiegenbaum & Thomas, 1990
Overall	Respondent rating of overall success	Hawes & Crittenden, 1984
	Attractiveness for affiliation	Pegels & Sekar, 1989
	Occupancy rate of hospital	Nath, 1988

investment, assets, margin and profit, market share, and overall performance. For consistency with prior work, we examined one measure of each construct, except for market share, which was used as a clustering dimension. For a sales measure, *net patient revenue per bed* was used. *Return on equity,* which has been employed in several studies (e.g., Hatten & Schendel, 1977; Lawless & Tegarden, 1991), represented equity and investment. Similarly, *return on assets* was used to represent asset-related measures. For margin and profit, we used *profit-per-discharge,* defined as net inpatient revenue minus in-patient cost divided by total facility discharges. Finally, following Nath (1988), we assessed overall performance by examining average *occupancy,* which reflects the extent to which a hospital presents an attractive bundle of characteristics to admitting physicians and potential patients.

Statistical Analyses

Clustering procedures. The following procedures were performed for both approaches in each of the five years examined (cf. Goes, 1989; Goes & Meyer, 1990). After standardizing the variables, we obtained a suggested grouping structure through cluster analysis using the complete linkage method. Many clustering techniques are available, each with its own strengths and limitations (Punj & Stewart, 1983). Complete linkage is a rigorous technique in that it requires potential members of a cluster to bear similarity to all members of the cluster (Aldenderfer & Blashfield, 1984). A key unresolved issue in cluster analysis is the choice of a stopping rule, a criterion for determining how many clusters exist (Aldenderfer & Blashfield, 1984; Everitt, 1979). Some configurational researchers have used numerical rules of thumb, such as not adding clusters once a certain level of variance in data structure is explained (e.g., Fiegenbaum & Thomas, 1990; Lewis & Thomas, 1990). Like Miles, Snow, and Sharfman (1993), we used the most commonly employed technique to define the number of clusters (Aldenderfer & Blashfield, 1984), visual inspection of tree-plots.[2]

We sought confirmation of the number of configurations by randomly splitting the population of hospitals for each year into two subgroups (Hair, Anderson, Tatham, & Black, 1992), which we then cluster-analyzed using complete linkage. The purpose of the splitting procedure was to check whether the clustering algorithms were capitalizing on random variation. Next, confirmation of configuration membership was sought using an iterative partitioning method, *k*-means,[3] that has proved useful in prior configurational research (Dess & Davis, 1984; Fiegenbaum & Thomas, 1990; Goes,

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[2] Tree-plots, also called dendograms or phenograms, are visual depictions of the sequence of convergence among clusters as the level of similarity within clusters decreases (Aldenderfer & Blashfield, 1984).

[3] The *k*-means algorithm, also called nearest centroid sorting, assigns the cluster membership of each observation to the cluster with the nearest centroid (Aldenderfer & Blashfield, 1984).

1989). Specifically, the FASTCLUS procedure of SAS was used (SAS Institute, 1985). Because iterative partitioning makes multiple passes through a data set, it is able to compensate for poor initial cluster assignments, one of the major drawbacks of many other clustering procedures (Aldenderfer & Blashfield, 1984).

Using the resultant groupings, we conducted multivariate analyses of variance (MANOVAs) in which the performance measures were dependent variables. Where the MANOVA results were significant, Bonferroni tests (Miller, 1981) were performed to find significant pairwise differences. The MANOVA tests provided an additional test of the validity of the clustering solutions (Aldenderfer & Blashfield, 1984).

RESULTS

Descriptive Statistics

Tables 3–7 present the means, standard deviations, and Pearson zero-order correlations among (1) the inductive approach clustering variables, (2) the deductive approach clustering variables, and (3) the performance variables for each year of the study. If two variables of the inductive clustering criteria were highly correlated, including both in the clustering procedure could represent double inclusion of one underlying factor. One such problem was discovered: the correlation between number of beds and total assets was greater than .85 in each year. A similar situation arose with respect to two of the performance measures, return on assets and profit per discharge, whose correlation steadily increased from .61 in 1986 to .83 in 1990. Therefore, we chose to exclude total assets and profit per discharge from subsequent analyses.

We also compared the groupings from the inductive and deductive approaches with the type and ownership of the organizations in each configuration. We did not find a pattern to indicate that these dimensions were masking the criteria used to derive the configurations for either approach.

Hypothesis Testing

Table 8 shows the results of the clustering procedures for both the inductive and deductive approaches. Over the five-year period of study, the inductive approach yielded a minimum of three configurations and a maximum of five. In each year, one of the split data sets duplicated the results obtained using the full data set and the other, though equally inconsistent in the number of groups over the five-year period of study, did not fully duplicate the full set year by year. The deductive approach yielded a more consistent pattern over the same period: four configurations were found in each year of the study for all full and split sample solutions. For both approaches, the two clustering procedures (complete linkage and *k*-means iterative partitioning) generally agreed on the membership of configurations. Where disagreements existed, we used the iterative partitioning assignment because of its unique ability to overcome poor initial assignments.

TABLE 3
Descriptive Statistics, 1986[a]

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
Inductive approach clustering variables															
1. Number of beds	273.24	179.23													
2. Length of stay	13.57	27.74	−.10												
3. Direct medical education per full-time employee	19.45	27.03	.26	−.13											
4. Current ratio	2.39	1.38	−.05	.01	−.17										
5. Capital cost per discharge	415.12	382.18	.00	.05	−.06	.18									
6. Markup ratio	1.52	0.28	.10	−.14	.15	−.02	.20								
7. Market share, county	9.37	13.05	.37	−.11	.12	.16	−.12	−.31							
8. In-patient revenue/total patient revenue	84.66	9.40	.11	.34	−.03	.01	.31	.27	.02						
Deductive approach clustering variables															
9. Percentage of routine patient days	90.07	6.47	−.54	.30	−.21	.09	.23	−.03	−.26	.20					
10. Number of services	26.35	9.89	.71	−.28	.33	−.13	−.13	.14	.27	−.12	−.78				
Performance															
11. Net patient revenue per bed	166.25	59.98	.21	−.25	.18	−.07	.16	.27	.04	−.13	−.32	−.31			
12. Return on equity	14.28	23.83	−.20	−.04	−.11	.01	.15	−.01	−.06	.03	.22	−.23	.08		
13. Return on assets	5.24	7.73	−.07	−.06	−.08	.24	.13	.23	.07	.08	.01	−.09	.42	.33	
14. Occupancy	71.88	11.35	.14	.20	.04	.13	.30	.37	−.06	.58	.16	−.08	−.14	−.18	.21

[a] $N = 85$. All correlations greater than .20 are significant at $p < .05$; all correlations greater than .26 are significant at $p < .01$; all correlations greater than .34 are significant at $p < .001$.

TABLE 4
Descriptive Statistics, 1987[a]

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
Inductive approach clustering variables															
1. Number of beds	260.35	158.26													
2. Length of stay	10.61	9.33	−.24												
3. Direct medical education per full-time employee	18.42	23.89	.37	−.16											
4. Current ratio	2.36	1.22	−.03	.08	−.12										
5. Capital cost per discharge	468.71	404.85	−.02	.49	−.03	.16									
6. Markup ratio	1.52	0.29	−.03	.15	.15	.09	.17								
7. Market share, county	9.99	13.35	.42	−.22	.12	.03	−.11	−.33							
8. In-patient revenue/total patient revenue	83.76	9.72	.17	.53	.04	−.07	.31	.25	.00						
Deductive approach clustering variables															
9. Percentage of routine patient days	89.51	7.02	−.53	.56	−.29	.18	.23	.10	−.26	.16					
10. Number of services	24.25	9.82	.67	−.49	.47	−.01	−.09	.06	.31	−.09	−.72				
Performance															
11. Net patient revenue per bed	176.15	60.04	.13	−.25	.28	.05	.18	.13	.03	−.20	−.26	.38			
12. Return on equity	−1.98	60.62	.09	−.30	.10	.10	−.07	.16	.00	−.26	−.08	.18	−.04		
13. Return on assets	0.80	16.02	.07	.15	.03	.24	.07	.42	−.04	−.11	.03	.11	.00	.31	
14. Occupancy	72.22	11.62	.15	.49	.01	.00	.33	.31	−.07	.69	.16	−.13	−.16	−.19	.02

[a] $N = 80$. All correlations greater than .20 are significant at $p < .05$; all correlations greater than .27 are significant at $p < .01$; all correlations greater than .36 are significant at $p < .001$.

TABLE 5
Descriptive Statistics, 1988[a]

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
Inductive approach clustering variables															
1. Number of beds	255.20	160.87													
2. Length of stay	10.41	8.75	−.25												
3. Direct medical education per full-time employee	20.28	27.59	.34	−.19											
4. Current ratio	2.16	1.07	.03	.17	−.12										
5. Capital cost per discharge	487.42	403.25	−.07	.52	−.05	.12									
6. Markup ratio	1.58	0.32	−.03	.15	−.11	.31	.15								
7. Market share, county	8.72	8.64	.58	−.29	.10	.07	−.10	−.05							
8. In-patient revenue/total patient revenue	83.26	9.74	.12	.53	.01	−.06	.23	.15	−.09						
Deductive approach clustering variables															
9. Percentage of routine patient days	89.50	6.73	−.57	.58	−.34	.06	.25	.04	−.38	.16					
10. Number of services	24.38	10.26	.68	−.53	.44	.01	−.16	.07	.49	−.13	−.68				
Performance															
11. Net patient revenue per bed	189.35	73.58	.14	−.22	.27	.15	.18	.29	.26	−.27	−.21	.32			
12. Return on equity	30.56	225.00	−.23	.03	−.26	−.07	.08	.41	−.24	−.01	.12	−.12	.01		
13. Return on assets	−3.26	29.85	−.09	.13	−.23	.35	.16	.58	.03	−.14	.14	−.06	.29	.37	
14. Occupancy	73.23	11.11	.19	.52	.07	.17	.32	.14	.02	.53	.16	−.10	−.03	−.13	−.03

[a] N = 80. All correlations greater than .21 are significant at $p < .05$; all correlations greater than .26 are significant at $p < .01$; all correlations greater than .35 are significant at $p < .001$.

TABLE 6
Descriptive Statistics, 1989[a]

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
Inductive approach clustering variables															
1. Number of beds	268.50	176.84													
2. Length of stay	10.74	9.70	−.22												
3. Direct medical education per full-time employee	19.01	25.43	.23	−.20											
4. Current ratio	2.27	1.50	−.05	.32	−.11										
5. Capital cost per discharge	568.96	446.60	−.03	.58	−.10	.21									
6. Markup ratio	1.65	0.32	.03	−.14	.06	.19	.01								
7. Market share, county	9.75	13.40	.39	−.20	.07	.00	−.19	−.27							
8. In-patient revenue/total patient revenue	82.50	9.45	.14	.61	.04	.17	.38	.07	−.02						
Deductive approach clustering variables															
9. Percentage of routine patient days	89.26	6.98	−.55	.61	−.18	.25	.32	−.12	−.24	.23					
10. Number of services	24.50	11.18	.68	−.52	.16	−.18	−.17	.17	.23	−.15	−.72				
Performance															
11. Net patient revenue per bed	206.20	74.79	.21	−.32	.35	.03	.11	.19	.01	−.29	−.27	.33			
12. Return on equity	5.46	36.61	−.26	.06	−.29	.01	.09	.03	−.08	−.07	.12	−.04	.04		
13. Return on assets	−0.22	8.45	.08	.28	−.15	.30	.07	.05	.20	.12	.04	−.07	.00	.05	
14. Occupancy	72.37	10.57	.25	.45	.15	.26	.46	.12	.00	.60	.09	−.03	.21	−.05	.18

[a] $N = 82$. All correlations greater than .20 are significant at $p < .05$; all correlations greater than .27 are significant at $p < .01$; all correlations greater than .36 are significant at $p < .001$.

TABLE 7
Descriptive Statistics, 1990[a]

Variables	Means	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
Inductive approach clustering variables															
1. Number of beds	253.43	164.30													
2. Length of stay	9.90	7.84	−.22												
3. Direct medical education per full-time employee	20.02	26.61	.23	−.15											
4. Current ratio	2.37	1.55	.07	.17	.01										
5. Capital cost per discharge	613.36	515.48	.08	.61	−.06	.01									
6. Markup ratio	1.86	0.30	.40	−.23	−.05	.03	−.01								
7. Market share, county	7.18	7.37	.44	−.30	−.08	.10	−.13	.22							
8. In-patient revenue/total patient revenue	80.67	10.31	.22	.59	.13	.07	.44	.13	−.15						
Deductive approach clustering variables															
9. Percentage of routine patient days	89.17	6.96	−.58	.60	−.10	.15	.22	−.36	−.35	.13					
10. Number of services	33.30	14.37	.80	−.53	.23	−.02	−.11	.36	.45	−.06	.75				
Performance															
11. Net patient revenue per bed	226.99	80.36	.35	−.33	.17	.06	.06	.20	.14	−.35	−.35	.44			
12. Return on equity	4.12	57.91	−.05	−.09	−.25	−.13	.01	.12	.04	−.19	−.13	.05	.16		
13. Return on assets	−0.39	14.62	.07	.01	−.36	.11	.01	.16	.23	−.12	−.05	.01	.31	.13	
14. Occupancy	72.59	10.60	.24	.42	.29	−.01	.43	.00	.01	.63	.11	.04	.06	−.14	−.09

[a] $N = 69$. All correlations greater than .23 are significant at $p < .05$; all correlations greater than .30 are significant at $p < .01$; all correlations greater than .36 are significant at $p < .001$.

TABLE 8
Type and Membership of Configurations

	Inductive Approach		Deductive Approach	
Year	Configuration	Frequency	Configuration	Frequency
1986	1	1	Entrepreneurs/r-specialists	20
	2	81	Prospectors/r-generalists	3
	3	2	Defenders/K-specialists	17
	4	1	Analyzers/K-generalists	45
1987	1	26	Entrepreneurs/r-specialists	18
	2	7	Prospectors/r-generalists	3
	3	7	Defenders/K-specialists	21
	4	40	Analyzers/K-generalists	38
1988	1	9	Entrepreneurs/r-specialists	17
	2	1	Prospectors/r-generalists	16
	3	70	Defenders/K-specialists	23
			Analyzers/K-generalists	24
1989	1	24	Entrepreneurs/r-specialists	16
	2	3	Prospectors/r-generalists	13
	3	3	Defenders/K-specialists	28
	4	46	Analyzers/K-generalists	25
	5	6		
1990	1	2	Entrepreneurs/r-specialists	16
	2	7	Prospectors/r-generalists	8
	3	46	Defenders/K-specialists	22
	4	14	Analyzers/K-generalists	23

The results supported Hypothesis 1a, which predicts that the two approaches will produce different groupings. In addition, support emerged for Hypothesis 1b, which indicates that the inductive approach will produce inconsistent numbers of configurations over time. Lastly, findings also supported the contention of Hypothesis 1c that four configurations—entrepreneurs/r-specialists, prospectors/r-generalists, defenders/K-specialists, and analyzers/K-generalists—will be consistently found by the deductive approach across the five-year period.

Table 9 presents the MANOVA results for each approach and year. These results show that the deductive approach was able to discriminate consistently between configurations that vary in performance: Wilks's lambda (all $\leq .748$) was significant (all $F > 1.87$, $p < .05$) for all five years. In contrast, the inductive approach was much less consistent. In three years, 1987, 1989, and 1990, the inductive approach found groups that varied significantly in performance, but in two years (1986 and 1988) it failed to find such differences. Thus, the MANOVA results supported Hypothesis 2: the deductive approach was superior in distinguishing differentially performing configurations.

Table 10 shows the significant pairwise performance differences between deductive configurational types obtained through Bonferroni tests. This set of pairwise differences offered moderate support for Hypothesis 3a, which predicts that this approach will permit prediction of the configura-

TABLE 9
MANOVA Results for Configurations and Performance

Year and Approach	Wilks's Lambda	*F*	*df*
1986			
Inductive	.849	1.102	12,207
Deductive	.654	3.004**	12,207
1987			
Inductive	.499	4.838***	12,193
Deductive	.748	1.869*	12,193
1988			
Inductive	.852	1.542	8,148
Deductive	.576	3.747***	12,193
1989			
Inductive	.444	4.308***	16,227
Deductive	.500	4.964***	12,199
1990			
Inductive	.544	3.538***	12,164
Deductive	.554	3.425***	12,164

* $p < .05$
** $p < .01$
*** $p < .001$

tions-performance relationship. The evidence related to Hypothesis 3b was mixed: specialists (entrepreneurs and defenders) significantly outperformed generalists (prospectors and analyzers) in five pairwise comparisons, and the opposite was true in six cases. Strong support was found for Hypothesis 3c: the r-groups significantly outperformed the K-groups in 15 pairwise comparisons, and the reverse did not occur. Thus, there was modest support for the expectation that r-specialists would have the best performance in the hospital industry and K-generalists would have the worst. The r-specialists performed better than other configurational types along one of the performance dimensions seven times, exhibiting better performance than occurred with the two K-strategies, outperforming the K-generalists five times and the K-specialists twice. The evidence that the K-generalists were the poorest performers was more pronounced: they were outperformed along a performance dimension ten times and were never significantly better than any other group. Thus, taken together, the Bonferroni tests provided support for the ability of the deductive approach to predict performance differences between configurations. Interestingly, the number of significant performance differences between deductively defined configurations increased over time: only 2 significant contrasts were found in the first two years of the study, but 12 were found in the last two years.

In sum, the findings indicated that (1) the deductive approach consistently identified four types of configurations for each of the five years of the study and the inductive approach was inconsistent, identifying between three and five groupings over the same period, (2) the deductive approach

TABLE 10
Pairwise Performance Differences Between Deductive Configurational Types[a]

Year	Performance Measures	Significant Contrasts
1986	Return on equity	Entrepreneurs/r-specialists > analyzers/K-generalists
1987	Occupancy	Entrepreneurs/r-specialists > analyzers/K-generalists
1988	Net patient revenue per bed	Prospectors/r-generalists > defenders/K-specialists
	Occupancy	Entrepreneurs/r-specialists > defenders/K-specialists
		Entrepreneurs/r-specialists > analyzers/K-generalists
		Prospectors/r-generalists > analyzers/K-generalists
1989	Net patient revenue per bed	Prospectors/r-generalists > analyzers/K-generalists
		Prospectors/r-generalists > entrepreneurs/r-specialists
		Prospectors/r-generalists > entrepreneurs/r-specialists
	Occupancy	Entrepreneurs/r-specialists > defenders/K-specialists
		Entrepreneurs/r-specialists > analyzers/K-generalists
		Prospectors/r-generalists > defenders/K-specialists
		Prospectors/r-generalists > analyzers/K-generalists
1990	Net patient revenue per bed	Prospectors/r-generalists > defenders/K-specialists
		Prospectors/r-generalists > analyzers/K-generalists
		Prospectors/r-generalists > entrepreneurs/r-specialists
	Occupancy	Prospectors/r-generalists > analyzers/K-generalists
		Entrepreneurs/r-specialists > analyzers/K-generalists

[a] All the pairwise performance differences shown are significant at $p < .05$.

was better than the inductive approach in identifying differentially performing configurations, and (3) the deductive approach permitted moderately accurate predictions of the relative performance of the configurations.

DISCUSSION

Despite the large volume of relevant empirical research in the strategic management literature, the debate over the relationship between organizational configurations and performance remains unresolved. The present study provides new insights to this debate by showing, first, that the approach used to define configurations affects the number, type, and consistency of configurations over time. In addition, this study establishes the utility of a specific deductive approach for deriving configurations and for explaining and predicting their performance. Several theoretical and methodological implications flow from these overall findings.

Implications for Configurational Theory Development

The present study offers specific guidance for research that seeks to explain and predict the relative performance of configurational types. We expected that, in this particular environment, r-specialists would be the best performers and K-generalists would be the worst. However, the r-generalists performed as well as the r-specialists, and both of these groups clearly outperformed the K-groups. One possible explanation for these mixed results is that dynamism was the dominant feature of the environment. The rapid pace of change in the hospital industry in the late 1980s may have not only placed a premium on innovation (as predicted by Hypothesis 3c) but also made it difficult for specialists to isolate and maintain control over the resources needed to gain advantages over generalists by focusing on a narrow set of offerings. Indeed, the results support Carroll's (1984) assertion that generalists and specialists can develop a symbiotic relationship in this type of environment. However, we found that only those generalists and specialists that focused on innovation (entrepreneurs and prospectors) were successful, suggesting a finer-grained relationship than that described by previous theory. Further research is needed to identify the conditions under which this type of relationship may take on additional forms, such as K-generalists and K-specialists successfully coexisting.

The present findings also support the assertion of Reger and Huff (1993) that a configuration is perhaps better not conceptualized as monolithic but rather as consisting of (1) core firms that share and define the configuration's position and (2) secondary, or peripheral, firms linked to the core along some key dimensions but making their own unique decisions. This distinction may explain why post hoc inspection of the data revealed that there were some shifts in deductive configuration membership but not in the number of configurations. Specifically, peripheral organizations may have the ability to shift their configuration membership as the process of environmental change and industry reactions provide insight about successful and unsuccessful strategies. Future research should address such issues as the stability of configuration membership over time, the long-term viability of firms on the periphery of a configuration, industry conditions that promote or impede the existence of peripheral organizations, the environmental conditions or industry events that prompt an organization's move to another configuration's periphery or to its core, and lastly, the critical differences between organizations that shift configuration and those that do not.

Evidence was also found that as the hospital industry increased in complexity over the 1980s, possessing an appropriate strategy resulted in increasingly stronger performance. Those organizations that were following an innovative, or r-type, strategy, and those that were able to change to such an approach, were successful. The clearest example of the latter was the movement of K-generalists who had performed poorly in 1986–87 to an r-generalist approach in subsequent years. These organizations appear to have been peripheral members of a poorly performing configuration who changed strategy and became members of a more lucrative configuration. In contrast, the organizations that were core members of K-groups during the period of the study were unable to reverse their fortunes. Theoretically, this finding represents a unique blend of determinism and choice that recognizes both the power of the environment for dictating organizational form (Hannan & Freeman, 1984) and the importance of a strategic position that permits choice alternatives (Hrebiniak & Joyce, 1985). Specifically, choice may be applicable to peripheral organizations, but ecological arguments are more appropriate for core organizations. Perhaps applying this loose and tight configuration membership distinction (Reger & Huff, 1993) will help resolve the long-running choice-versus-ecology debate.

Implications for Conducting Configurational Research

A number of methodological implications for the use of a configurational perspective also arise from this study. Configurational approaches appear at least as promising as universalistic approaches for advancing knowledge of organizational phenomena (Miller & Mintzberg, 1983). However, our results with respect to the inductive approach support previous assertions that some approaches may provide configurations that are merely statistical artifacts (e.g., Barney & Hoskisson, 1990; Thomas & Venkatraman, 1988). Thus, the strong emphasis on inductive empiricism in prior work, such as that found in the strategic groups literature, appears to have constrained the ability of configurational approaches to inform organizational inquiry in general, and strategic management research in particular, especially in explicating clear and well-grounded links with important outcome variables. However, the results of the present study suggest that direct comparisons of alternative means of defining configurations, including inductive approaches, will contribute to the development of valid and precise frameworks for describing organizations and explaining their performance differences.

In this vein, the wide array of typologies and taxonomies that abound in the strategic management literature should be empirically examined with respect to their concurrent dimensions with an overall goal of reducing the theoretical complexities that configurational research inevitably generates. Encouragingly, research of this sort has already begun (e.g., Miller, 1992; Segev, 1989). It is essential that researchers develop valid, parsimonious, theory-based configurations at the industry, organization, and even top management levels of analysis (Snow & Miles, 1983) before making attempts to relate configurations to outcome variables such as performance. By integrating multiple theoretical perspectives and by comparing different approaches to defining configurations and their relative performance, the present study took an additional step in this direction.

Further, research designs that consider cognitive approaches to deriving configurations—approaches that rely on practitioners' perceptions and understanding of competitive environments—are needed to fully explain industry and organizational dynamics. This study's sole reliance on secondary data sources did not permit an in-depth understanding of managers' goals, motivations, or intentions. Cognitive studies of strategic groups (e.g., Porac et al., 1989; Reger, 1990; Reger & Huff, 1993) have found that managers tend to group firms in their industry differently than researchers. Thus, the configurations that were generated in the present study might provide only a partial depiction of the industry and performance variation among organizations within it. In future research, different combinations of the inductive, deductive, and cognitive approaches may offer needed complementarity in explaining industry and firm coevolution. For example, the configurations defined through deduction might offer a heuristic framework in the form of certain assumptions and constraints to guide further inductive inquiry. In turn, inductive research (including cognitive approaches) might uncover or highlight critical configurational dimensions. Thus, cycling through the approaches might enhance understanding in ways not possible through the use of a single configurational approach.

In designing any configurational inquiry, researchers must be careful to construct groupings that reflect the critical attributes of the system or systems under examination. For example, one implication of the rapid spread of the network form of organization (Miles & Snow, 1986; Powell, 1990) is that traditional criteria for defining configurations may be inadequate. That is, as firms form strategic alliances in order to compete, especially in the health care industry (cf. Longest, 1990), one criterion for defining configurations may be network or alliance membership. Building theoretical frameworks that incorporate such interorganizational links may be required in a growing number of industries. Similar fine-grained approaches may offer insight into corporate strategies as well. Although there is a rich tradition of configurational research at the corporate level (e.g., Keats & Hitt, 1988; Rumelt, 1974), more precise analysis, such as that used in the present study, may help to clarify the equivocal findings with respect to the relationship between diversification and performance.

Finally, it is clear from this study and others that longitudinal designs are essential for using the configurational perspective to explain and predict performance. For example, had we used a cross-sectional design in the present study and selected 1987 as the focal year, the results would have shown that the inductive approach was superior to the deductive approach for identifying differentially performing configurations. In this vein, future studies might profitably explore different lag times between the derivation of configurations and the measurement of performance. Indeed, factors such as the extent of an industry's fragmentation, the nature of the industry's product-service offering (Normann & Ramirez, 1989), and the influence of international competition (Mitchell, Shaver, & Yeung, 1992) might dictate that the nature and extent of performance differences across configurations do not become apparent until well after an industry's structure has been established or major environmental jolts have been felt. As more is learned about the specific strategies that succeed in particular environments, the development and testing of sophisticated theoretical models to predict appropriate lags could help to further clarify the relationship between organizational configurations and performance.

CONCLUSION

Empirical efforts to link organizational configurations and performance arose in the early 1970s through the work of strategic groups researchers. In the 1980s, they and other researchers pursued the implications of configurations in earnest as they tried to understand the relationship between competitive strategy and performance. However, in the aggregate results have been equivocal. Findings from the present study suggest that, in the future, researchers can perhaps best explain the performance implications of organizational configurations by employing deductive approaches to defining configurations and predicting performance. Such efforts promise not only to help determine the relative importance of configurations to the field of strategic management but also to enhance knowledge of the strategy-performance link that is central to the field.

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