

MEASURING AND MODELLING CHANGES IN STRATEGY: THEORETICAL FOUNDATIONS AND EMPIRICAL DIRECTIONS

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Confronted by increasingly turbulent and complex environments, general managers have become more interested in understanding the conditions and forces that enable or disable successful changes in organizational strategies. Yet, largely because of their tendency to use fuzzy definitions and inadequate methodologies, empirical studies of changes in strategy have not provided practitioners with a set of well-tested theories. To provide a basis for circumscribing, evaluating, and directing future research, this paper begins by developing a framework for assessing and modelling changes in strategy. After discussing the forces that influence their occurrence and performance outcomes, the paper reviews a representative sample of empirical studies in terms of two major questions: (1) how are changes in strategy conceptualized and modelled? and (2) what methods of observation and analysis are employed? This review concludes with a report of important patterns and concerns followed by suggestions for future research.

Strategic management is fundamentally concerned with environmental changes and organizational adaptation (Ansoff, 1979; Hofer and Schendel, 1978). Accordingly, researchers describe strategy formulation as a discontinuous process (Hedberg and Jonnson, 1977); organizational strategies as patterns of resource allocations that are inherently involved with change (Mintzberg and Waters, 1982); and strategic managers as 'change-seekers' who 'must not only be adaptable to change, but must convince other people in the organization of the inevitability of change' (King and Cleland, 1978: 36).

Theories of strategic management increasingly reflect this focus on organizational change (Galbraith and Kazanjian, 1986; Lorange, Scott Morton and Ghoshal, 1986). Empirical research, however, appears to have become more and more preoccupied with cross-sectional designs that examine the synchronic, rather than the dynamic, aspects of organizational strategy (Galbraith and Schendel, 1983). The difficulties of conducting large-scale, hypothesis-testing longitudinal research, and the relative ease of access to 'static' data bases like PIMS, have exerted an

important influence on this trend. Pendleton, Warren and Chang (1980) point out that measurements of change and formations of longitudinal designs have opened up a 'Pandora's Box' of dispute and controversy among social scientists. With regard to the measurement of strategic change, Snow and Hambrick (1980) raise a controversial question—at what point does an organizational response to environmental change represent a change rather than an adjustment in strategy? For example, if a firm enlarges or consolidates its domain, should this be considered a strategic adjustment rather than strategic change since its underlying orientation in relation to the environment remains the same?

Partly because of such conceptual and methodological issues, research findings on changes in strategy have not evolved into a coherent body of knowledge. Thus, it is not clear that widespread premises, such as the assumption that astute executives alter their firms' strategy to capitalize on environmental opportunities, are supported by empirical evidence. In attempting to provide a shared understanding of the scope and findings of research on changes in strategy, this paper

begins by clarifying what we mean when we refer to such changes. After discussing key influences on, and outcomes of, changes in strategy, it reviews empirical studies in terms of conceptualization, modelling, and research methods. It then reports important patterns and concerns, and concludes by making suggestions for future research. In total, then, the aim of this paper is to provide a basis for circumscribing, evaluating, and directing empirical research on changes in strategy.

CONCEPTUALIZING CHANGES IN STRATEGY

The meaning of strategic change

By definition, 'change' involves becoming different in some particular. However, the 'particular' that must become different for an organizational change to be defined as strategic is a subject of some controversy. The 'particulars' that become different when a strategic change occurs have been described both in terms of the *content* of strategy, i.e. the specifics of what was decided in terms of goals, scope, and/or competitive strategies, and in terms of the *process* of strategy-making, i.e. the enduring norms that reflect an organization's overall approach to managing its relationship with the environment. In contrast to the single-loop learning reflected by changes in *content*, changes in process reflect double-loop learning (Argyris, 1976). Not surprisingly, questions about whether or not such changes as the introduction of Egg McMuffin by McDonald's are strategic evoke heated debate when posed in MBA classes. As observed by Mintzberg (1987), proponents argue that the introduction of Egg McMuffin was a strategic change for the McDonald's fast food chain because it brought McDonald's into a new market, the breakfast one, extending the use of existing facilities. Opponents argue that it was not a strategic change because nothing really changed but a few ingredients: the Egg McMuffin was the same old McDonald's formula in a new package.

In discussing strategic change as a change in strategy content, authors have focused on shifts in both corporate- and business-level strategy. Those focusing on changes in corporate-level strategy define strategic change as a realignment of a firm's selection of product/market domains

and allocations among them (Ansoff, 1965). Those focusing on changes in business-level strategy define strategic changes as alterations in competitive decisions within particular product/market domains (e.g. alterations in price, or quality associated with a product) (Rumelt, 1974).

In discussing strategic change as a change in strategy-making process, researchers have focused on shifts in formal management systems and structures as well as transformations of organizational culture (Ansoff, 1979; Tushman and Romanelli, 1985). According to this view, unless the organization modifies its overall orientation to the environment in a way that substantially alters the strategy-making process, it has made a strategic *adjustment* rather than a strategic *change*. As argued by Snow and Hambrick, 'The distinction between change and adjustment may be subtle, but it is important to theory building. If most or all domain and structural changes are regarded as strategic changes, then theories can only be fragmented and ephemeral. But if these same modifications are viewed as adjustments, researchers can then look for consistencies in how an organization interacts with its environment' (1980: 529).

Although Snow and Hambrick's point is well taken, accepting a definition of strategic change that is more narrow than prevailing definitions of organizational strategy, which include both content and process approaches (Bourgeois, 1980; Chaffee, 1985; Ginsberg, 1984), seems unnecessarily restrictive. Moreover, fundamental shifts, or strategic reorientations, may occur incrementally as changes in strategy content (Quinn, 1978). Since they often result from the ordinary workings of day-to-day processes, such shifts are often not discovered to be fundamental until after they have taken place (Pondy and Huff, 1985). Hence, as Mintzberg (1987) has pointed out, whether an organizational change is defined as strategic or not depends not only *where* you sit', but *when* you sit: what seems tactical today could prove strategic tomorrow'.

Classifying changes in strategy

Since the term 'strategic change' evokes unresolvable controversy regarding the importance of the change that occurred, it may be less confusing and more useful to refer to 'changes in strategy' rather than strategic changes. Usage of this term

directs us to classify changes in terms of the way we define strategy, and allows for the examination of consistencies within and across investigations of different types of change. By explicating and using the various definitions of strategy that can be found in the literature, we can eliminate much of the confusion in the field that stems from contradictory and ill-defined uses of this term (Mintzberg, 1987). Our next task then is to propose a conceptual framework that categorizes fundamental approaches for assessing changes in strategy.

Various definitions of the term 'change in strategy' can be better understood if they are classified along two fundamental dimensions. The first dimension distinguishes between conceptualizing strategy (1) in terms of a *position* that is reflected in the choices of product/market domains or competitive advantages through which firms define their relationship to the environment (Bourgeois, 1980), or (2) in terms of a *perspective* that is reflected in the integrated sets of ideas through which problems are spotted and interpreted and from which streams of decisions flow (Hedberg and Jonsson, 1977). While those who define strategy as a position look outward, seeking to locate the organization in its external environment, those who define strategy as a perspective look inside the organization, seeking to understand the 'collective mind' (often referred to as 'culture', 'ideology', or 'paradigm') that shapes the organization's enduring relationship

with its environment (Mintzberg, 1987).

The second dimension distinguishes between conceptualizing change as (1) changes in degree or *magnitude* (see, e.g., Miller and Friesen, 1983); or (2) changes in state or *pattern* (see, e.g., Galbraith and Schendel, 1983). According to the first definition, change in a nightmare would mean first-order change, such as more or less frightening nightmares; according to the second definition, change in a nightmare would mean second-order change, such as awakening from being asleep (Watzlawick, Weakland, and Fisch, 1974).

As illustrated in Table 1, together, these two dimensions result in four categories of change in strategy. Each category of change in position contains examples of both corporate-level (a) and business-level (b) positions. The two categories of change in perspective encompass both of these levels.

Now that we have clarified how two key dimensions can be used to operationally define changes in strategy, we next turn to the development of a theoretical framework that can help us explain the occurrence and outcomes of different types of changes.

Modelling Changes in Strategy

In modelling and analyzing changes in strategy, empirical research has focused on two fundamen-

Table 1. A framework for conceptualizing changes in strategy

Change in:	Strategy as:	
	Position	Perspective
Magnitude	(a) Change in the number of businesses in which a firm competes, or in the intensity of its business specialization. (b) Change in the intensity of a firm's resource deployments to functional areas.	Change in the intensity of the norms and values that determine, and are reflected in, how and why a firm chooses its business domain, production processes, and administrative systems.
Pattern	(a) Change in the relatedness of the businesses in which a firm competes. (b) Change in the configuration of a firm's resource deployments to functional areas.	Change in the configuration of the norms and values that determine, and are reflected in, how and why a firm chooses its business domain, production processes, and administrative systems.

tal questions: (1) what factors influence the occurrence of various types of change? and (2) what are the performance outcomes of these various types of change? This section discusses concepts that are pertinent to these questions.

Forces influencing the occurrence of change

Like other kinds of organizational changes, shifts in strategy occur when forces creating pressure for change overcome forces that create resistance to change (Bigelow, 1982; Lundberg, 1984). However, changes in strategy primarily reflect the decisions of general managers to respond to changes in environmental threats and opportunities. These decisions may result either from intentional rationality and learning or from mimetic processes (Singh, House and Tucker, 1986).

The question of how often firms tend to undergo changes in strategy is rooted in a central debate in organizational theory regarding the relative influence of inertia forces, environmental feedback or feedforward, and strategic choice on activity patterns over time (Romanelli and Tushman, 1986). The predominance of *inertial* forces in organizations may explain the observation that periods of changes in magnitude tend to be interspersed with periods of discontinuous changes in pattern (Mintzberg and Waters, 1982; Tushman and Romanelli, 1985). Nevertheless, the frequency and duration of different types of changes may vary across different external and internal conditions or environmental changes. As Mintzberg and McHugh (1985) have observed, cycles of incremental and revolutionary changes in strategy appear to be of shorter duration in some organizations and more balanced between change in magnitude and change in configuration, while in others they are of longer duration with an emphasis on changes in magnitude that are interrupted by occasional, brief, and disruptive changes in direction or gestalt.

The relationship between pressures for, and resistance to, changes in strategy is a function of general managers' continual need to minimize two kinds of costs—those of being mismatched with the economic and sociopolitical environment, and those of changing to avoid the mismatch (Miller and Friesen, 1984). Hence, the appropriate nature of change can only be decided with reference to a particular set of internal and

external conditions that determine the outcomes of decision-making processes (Friesen and Miller, 1986). Whether they encourage or block changes in strategy, external and internal forces provide answers to three fundamental questions: (1) Is something wrong with the current strategy? (2) Is there a need for a new strategy? and (3) Does the organization have the resources to implement a change in strategy? From the perspective of organizational adaptation theorists then, the central research question regarding changes in strategy is with identifying and explaining the key external and internal variables and associations which characterize the forces that signal disequilibrium in the firm's behavior, or those that stimulate movement toward more effective and efficient behavior.

As illustrated in Figure 1, changes in the firm's external and internal environment may increase both pressures for, and resistance to, change. Changes in the external environment (such as shifts in consumer values or competitive dynamics) and changes in the internal environment (such as shifts in organizational structure or managerial skills) may lead to pressure for change by *providing* feedback that a firm is misaligned with its *economic* environment. This misalignment in turn decreases the *effectiveness* of continuing with the current strategy (Leontiades, 1980) and increases the *efficiency* of engaging in multifaced and radical changes (Friesen and Miller, 1986). For example, the competitive forces unleashed by deregulation and the changing needs of clients have pressured a number of well-known investment banks into going public so as to be able to finance entry into new markets.

Changes in the external and internal environment that reflect shifts in the values and expectations of key organizational stakeholders may also impair an organization's alignment with its *institutional* environment which in turn decreases the *legitimacy* of continuing with the previous strategy and encourages behaviors that are inconsistent with the previous strategy (Abrahamson, 1986). For example, the heightened fear of being 'ambushed' by the Justice Department or the Securities & Exchange Commission because of the insider-trading scandals that have occurred in the industry, and the shift in power from revenue-generating stars to professional managers, have helped investment banks to erode the legitimacy of previous strategies.

Alternatively, certain kinds of changes in the external or internal environment may also have a negative effect on a firm's willingness or ability to change to a new strategy, and may thereby serve to increase resistance to change (Lundberg, 1984). For example, Robert P. Rittereiser, brought into E. F. Hutton in 1985 to lead the firm out of its check-overdraft fiasco, was all set to announce sweeping strategic changes that included drastic reduction of the firm's regional offices, realignment of back-office systems, reduction of commissions, and the elimination of a number of business lines. However, soon after the market crash of 19 October 1987, Rittereiser realized that he would have to consider other options, including alliances that would allow for an injection of friendly capital. Meanwhile, his plans for change had been further undermined by the efforts of the previous CEO, Robert Fomon, who began to arrange the sale of E. F. Hutton soon after his departure by contacting a number of potential bidders and introducing them to the board of directors. Thus by the time Rittereiser went to the board meeting on 10 November with a modified version of his plan for change, the sale of E. F. Hutton to Shearson

Performance outcomes may influence changes by providing feedback that indicates whether or not the current strategy is effective or efficient. Alternatively, they may provide feedback regarding the firm's willingness or capacity to change to a new strategy. By either highlighting the effectiveness of the current strategy or by reflecting a level of slack that has a negative impact on willingness to change, high levels of performance should increase resistance to change. The effect of poor performance, on the other hand, may be either positive or negative, depending on whether it reflects effectiveness of the current strategy or capacity to change to a new strategy. In providing feedback regarding the current strategy, it may create pressure for change; in providing feedback regarding resource scarcity it may create resistance to change. Since performance outcomes may increase resistance to change if they are either exceedingly poor or exceedingly good, it is likely that they will create the greatest pressure for change when they are at intermediate levels (Fombrun and Ginsberg, 1986).

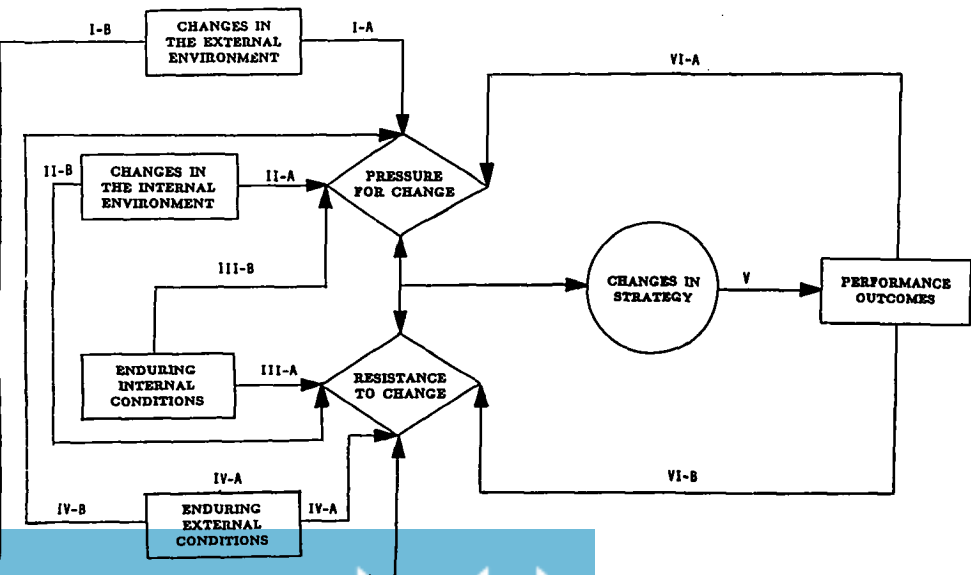


Figure 1. A framework for modelling changes in strategy

By acting to stabilize and reinforce institutional behavior, enduring external conditions (reflected in environmental attributes, industry structure, and stakeholder values) and enduring internal conditions (reflected in the elaborate set of programs, goals and ideologies that have grown up around the organization) create inertial forces that increase resistance to change (Hannan and Freeman, 1984; Meyer and Rowan, 1977). However, external and internal conditions that reflect high levels of uncertainty or munificence may also influence a firm to increase its experimenting behavior and may thereby serve to increase pressure for change (Dutton and Freedman, 1985; Lawrence and Dyer, 1983).

Forces influencing type of change

Environmental changes influence the type of change as well as the way in which it occurs. For example, by creating misfits among the structural elements of a firm's configuration, certain kinds of changes may decrease the *efficiency* of piecemeal, first-order changes in strategy and may thereby increase pressures for quantum, second-order changes in strategy (Miller and Friesen, 1984). By dismantling institutional norms and power distributions, certain kinds of changes, such as executive succession, may also increase the *legitimacy* of quantum changes in strategy (Ginsberg and Abrahamson, 1986).

External and internal conditions also influence the target and pace of change. For example, if a firm finds itself faced with the task of moving into a stable environment, it makes greater sense to engage in a quantum change in gestalt than a gradual change in magnitude. This is because the costs of moving into and out of an environment become relatively insignificant when the firm is entering an environment in which it will be able to capitalize on this change for a long time (Friesen and Miller, 1986). By the same token, in an environment which is unpredictable, but not to the extent where change is totally precluded, it will make sense to engage in an incremental change in magnitude rather than a quantum change in gestalt. Similarly, if a firm finds itself faced with tight internal coupling that can make change costly and disruptive, it will make sense to engage in a change that involves a dramatic shift in gestalt. By the same token, if the firm has a minimal degree of system coupling, it will make sense to engage in a shift in magnitude that involves a gradual change over

time (Miller and Friesen, 1984).

Although formalized analytical methods may be quite useful for making decisions regarding changes whose consequences are well understood, they are of little use for making decisions regarding large-scale, complex changes (Braybrooke and Lindblom, 1963). Similarly, good *technical* management and competent *political* management may be quite useful for implementing changes in position when such changes are legitimized by the present strategy-making orientation, but they will be of little use for inducing changes in managerial perspectives or frames of reference (Shrivastava and Mitroff, 1984). Changes in the latter are much more difficult to trigger because managers have less direct control over the complex social processes through which symbols, meanings, and values are created (Allaire and Firsirotu, 1985). To reinforce, legitimize, and cognitively reorient the frames of reference organizational participants employ to construct strategic 'recipes' or 'formulae', top managers and other change agents may have to resort to political and symbolic actions, such as hiring a new figurehead or engaging external consultants (Ginsberg and Abrahamson, 1986; Johnson, 1986). An important research concern emerging from this perspective is thus with identifying and explaining the key associations which characterize the relationship between changes in strategy and the variety of change agents that modify organizational members' shared meanings, or serve to legitimize the strategic choices they make (Gray and Ariss, 1985).

Performance outcomes of changes in strategy

Link V in Figure 1 is particularly important for translating descriptive studies of organizational adaptation into normative theories geared to improving organizational performance through changes in strategy. The option to move away from examining performance outcomes at some point is not a viable one for the strategy researcher, since performance improvement is at the heart of strategic management (Venkatraman and Ramanujam, 1986). However, rather than looking for the 'perfect' approach for assessing organizational performance, researchers should clarify the relevant frame of reference that is used, e.g. relative to a competitor, theoretical ideal, stated goal, past performance, or effective traits (Cameron, 1980). Hence, certain perform-

ance outcomes may be inappropriate for evaluating the success of certain types of changes in strategy. Thus, not surprisingly, Chakravarthy (1986) found that conventional referents of performance, which consist primarily of profitability measures, are unsatisfactory discriminants of excellent and non-excellent firms. More useful discriminants, his study indicated, were multi-factor performance measures that focused on transformation as well as outcomes, and included the values of other stakeholders besides stockholders.

In evaluating the success of a change in strategy, the particular performance outcomes that are emphasized are likely to be a function of the theoretical perspective of the researcher. From an economic perspective the effect of such change on profitability or stockholders' wealth would be an important indicator of success; from an institutional perspective the achievement of environmental fit or longterm survival would constitute key indicators; and from an organizational development perspective the extent to which the members of interest groups involved in the organization perceive the change to be fair and just, as expressed in successful implementation, might constitute a key performance indicator (Carnall, 1986).

Summary

To summarize, the basic assumptions of the model shown in Figure 1 are grounded in theories of organizational adaptation. Pressures for changes in strategy may be increased by external and internal changes or conditions (Links I-A, II-A, III-B, and IV-B) and performance outcomes (Link VI-A) which create a recognizable 'misfit' with the present or future environment (Allaire and Firsirotu, 1985; Chakravarthy, 1982). The more strongly external and internal changes or performance outcomes highlight inadequacies of the current strategy and support the need for a new one, the greater will be the pressure for change. Nevertheless, awareness of the need to redress a misfit or gap will not generate changes in strategy if the organization lacks the capacity to do so. Conditions created by external and internal changes (Links I-B and II-B), performance outcomes (Link VI-B), or inertial forces (Links III-A and IV-A) that increase resistance to change must be countered so that the implementation of a change in strategy also

becomes feasible (Dutton and Duncan, 1987).

In contrast to random organizational action theorists who view organizational change as having a strong component that precludes prediction of any relationship between changes in strategy and performance, organizational adaptation theorists seek to predict specific relationships between changes in strategy and performance. The nature of these relationships depends on the extent to which such changes restore or improve the organization's alignment with its economic and socio-political environment.

A REVIEW OF THE EMPIRICAL LITERATURE

Case studies that examine changes in strategy over long periods of time (e.g. Miles, 1982; Mintzberg and Waters, 1982; Mintzberg and McHugh, 1985) provide an important, indeed necessary, contribution to theory development. However, the remainder of this paper will concern itself with the contributions of studies that have employed statistical analysis to estimate and evaluate models of changes in strategy¹. The sample of studies examined were drawn from a survey of articles and references on strategy-related topics that have appeared in management journals and proceedings during the past ten years.

Methodological tradeoffs

Methods employed to investigate the constructs and theories discussed above reflect three fundamental tradeoffs surrounding research on organizational behavior over time (Miller and Friesen, 1982). The first of these involves the scope of the study: although selecting a small number of variables simplifies data gathering, model building, and statistical analysis, it increases the risk of specification error and the development of overly narrow perspectives. Selection of many variables, on the other hand, improves the chance of building more comprehensive and more accurate models and theories, but makes data gathering more difficult and increases the risk of

¹ Readers interested in a more general overview of the literature on change in organizations at the individual, group, organization, and organization-environment interface levels are referred to Goodman (1982) and Legge (1984).

ignoring changes in the gestalts and directions of these variables over time.

The second tradeoff involves the sample that is analyzed: because the selection of many firms in different industries may help to avoid the lack of generality inherent in single-firm and single-industry studies, it may be very expensive and time-consuming to obtain sufficient longitudinal data on each organization that captures shifts in perspective or changes in gestalt and direction. Moreover, as McKelvey (1978: 1438) notes, studying a diverse sample that is difficult to sort into homogenous components 'is akin to a biologist's wanting to make broad statements about heartbeat rates based on a sample of one elephant, one tiger, one rabbit and an alligator.'

The third tradeoff involves the precision reflected in data collection and analysis: by allowing for a broader inclusion of evidence, qualitative assessments can reveal deep insights into changes in perspective, as well as complex and dynamic interaction among organizational and environmental forces. However, they are also subject to errors of researcher bias, as well as reliability and replicability. Quantification of constructs, on the other hand, permits more objective, replicable, and reliable findings, but makes it difficult to examine important factors that are nonquantifiable and to build models that can deal adequately with a large number of interrelated variables.

After reviewing the empirical literature on changes in strategy in terms of key dimensions reflecting these three tradeoffs, the remainder of this section summarizes key patterns and discusses important concerns. In examining 'scope'-related choices the following questions will be addressed: (1) how were changes in strategy *conceptualized* (as classified in Table 1) and (2) how were changes in strategy *modelled*? (as classified in Figure 1)? In examining 'sample'-related choices, the following question will be examined: were firms in the *sample* from a single industry or from several industries? In examining 'precision'-related choices the following questions will be examined: (1) what *data source* was used to assess strategy (primary, i.e. retrospective data collected directly from members of the target organization, or secondary, i.e. historical data collected from sources external to the target organization)? (2) what approach was used to *measure change* (quantitative, e.g. difference in

interval value at two points in time, or qualitative, e.g. the occurrence of an event?) and (3) what type of *analysis* was used (i.e. cross-sectional approaches which do not examine causal relationships over time; panel approaches which examine the effect of variables in a previous period on variables in a current period; or event history approaches which examine the timing and sequence of events)?

Major findings

The influence of environmental changes

As shown in Table 2, findings regarding the influence of external environmental changes appear fragmented and somewhat contradictory. Changes in environmental attributes appeared to associate significantly with changes in the magnitude of strategy perspectives (Miller and Friesen, 1983). Moreover, some studies suggested that organizations tend to change their strategy configurations or directions in response to major environmental shifts brought about by such forces as deregulation or technological discontinuities, and that the impact of such shifts influences changes in strategy in a non-random way (Smith and Grimm, 1987; Tushman and Anderson, 1986). However, other studies found minimal support for the contention that common environmental challenges or conditions precipitated common changes in strategy perspective or position unless they were accompanied by external consultants (Ginsberg, 1986), new executives, or declining performance (Graham and Richards, 1979; Tushman, Virani and Romanelli, 1985).

The influence of performance outcomes

The influence of poor or declining performance also received differential support. Schendel and Patton (1976) found that performance decline tended to spur firms to change strategy position only when it was severe. However, another study found that firms experiencing either very high or very low performance in a previous period were less likely to undergo change in strategy position than firms that experienced intermediate levels of performance (Fombrun and Ginsberg, 1986). Other studies found that poor or declining performance did not precipitate change in gestalt or direction unless it was accompanied by internal

Table 2. A comparison of empirical studies of changes in strategy

	Influence of changes in the external environment (Links I-A and I-B)	Influence of changes in the internal environment (Links II-A and II-B)	Influence of performance outcomes (Links VI-A and VI-B)	Influence of enduring external conditions (Links IV-A and IV-B)	Influence of enduring internal conditions (Links III-A and III-B)	Effects on performance outcomes (Link V)
Change in the magnitude of a position (Quadrant 1)	Jauch <i>et al.</i> (1980)		Schendel and Patton (1976) Fombrun and Ginsberg (1986)	Cook (1975) Fombrun and Ginsberg (1986)	Cook (1975) Fombrun and Ginsberg (1986)	Schendel and Patton (1976) Beattie (1980) Singh <i>et al.</i> (1986)
Change in the magnitude of a perspective (Quadrant 2)	Miller and Friesen (1983) Ginsberg (1986)	Ginsberg (1986)				
Change in the pattern of a position (Quadrant 3)	Graham and Richards (1979) Hambrick and Schecter (1983) Smith and Grimm (1985) Tushman <i>et al.</i> (1985) Tushman and Anderson (1986)	Graham and Richards (1979) Tushman <i>et al.</i> (1985)	Graham and Richards (1979) Harrigan (1981) Oster (1982) Hambrick and Schecter (1983) Tushman <i>et al.</i> (1985)	Harrigan (1981) Oster (1982) Tushman and Anderson (1986)	Harrigan (1981) Oster (1982) Hambrick and Schecter (1983)	Hambrick and Schecter (1983) Smith and Grimm (1987) Tushman and Anderson (1985)
Change in the pattern of a perspective (Quadrant 4)	Miller and Friesen (1980a,b)	Miller and Friesen (1980a,b)				

changes, such as executive succession (Tushman *et al.*, 1985), external changes, such as deregulation (Graham and Richards, 1979), or factors influencing resistance, such as industry characteristics (Harrigan, 1981; Oster, 1982).

The influence of enduring conditions

A number of studies found that external conditions, such as industry barriers and market conditions, and internal conditions (as reflected in competitive posture and size) were important in constraining changes in magnitude, gestalt, and direction. These tended to focus on changes in strategy position, such as turnaround strategies

(Hambrick and Schecter, 1983), divestiture (Harrigan, 1981), and strategic group entry (Oster, 1982), rather than strategy perspective. A study by Cook (1975) found managerial perspectives and behavior to be more important than organizational structure in differentiating strategic change tendencies. In general, few studies compared the relative effects or interrelationships of external and internal forces or changes creating pressure and conditions creating resistance to change.

Types of strategy change

Although Cook (1975) found that organizational characteristics and environmental conditions dif-

differentiated modes of strategy change, his study is limited by its narrow sampling and operationalization of these modes. Using a taxonomic approach, Miller and Friesen (1980a) found fundamental transition patterns or archetypes that cropped up with impressive frequency in an extremely diverse set of firms. Nevertheless, because their research examines an extremely diverse sample of firms, and does not control for periodicity, it offers little insight into the relative influences of contextual origins, environmental changes, and managerial choice on the occurrence of different patterns.

Miller and Friesen (1980b) also examined the frequency of changes in strategy positions and perspectives over multiple periods and samples. Their results supported the observations of Mintzberg and Waters (1982) and Tushman and Romanelli (1985) that revolutionary changes in strategy perspective occur infrequently. Nevertheless, as they note, their focus is on significant general tendencies, not conditions that hold for all historical sequences, contexts, and types of change in strategy.

Effects on performance

Less than half the reviewed studies examined the performance outcomes of changes in strategy. These defined success either in terms of turnaround (Hambrick and Schecter, 1983; Schendel and Patton, 1976), operating performance (Oster, 1982; Miller and Friesen, 1983; Smith and Grimm, 1987), risk, (Beattie, 1980), growth (Tushman and Anderson, 1986), or survival (Singh, House and Tucker, 1986).

The empirical literature does not appear to support any generalizable conclusions regarding the effects of changes in strategy on performance. Although theorists have argued that environmental conditions should moderate the performance outcomes of different types of changes (see, e.g., Friesen and Miller, 1986), results of reviewed studies do not seem to consistently support strategy-environment interaction as important. Miller and Friesen (1983) found only partial support for the influence of strategy-environmental change interactions in influencing operating performance. Moreover, Jauch *et al.* (1980) found no support for strategy content-environmental change interactions in influencing financial and managerial measures of performance.

The study conducted by Singh *et al.* (1986) suggests that the impact of changes in strategy on organizational survival may be a function of the type of change and the nature of internal conditions during the change. Their findings that core changes had no impact, or a negative impact, on organizational survival, while peripheral changes had a positive impact on organizational survival suggest that frequent changes in perspective, in contrast to frequent changes in position may have a negative impact on organizational survival. Their findings that the impact of organizational changes depends on the stage of the organizational life cycle at the time of the change suggest that changes in strategy are more likely to influence organizational survival, whether positively or negatively, when they are made earlier in the organizational life cycle.

The fit between the pace of change and external or internal conditions may be critical for the prediction of success (Friesen and Miller, 1986). Yet none of the studies examined the effect of pace on performance outcomes. For example, a quantum change in strategy should be more profitable than an incremental one for a firm that is moving into a stable environment. This is because the costs of moving into and out of an environment become relatively insignificant when the firm is entering an environment in which it will be able to capitalize on this change for a long time (Friesen and Miller, 1986). By the same token, an incremental change in strategy should be more successful than a revolutionary one for a firm that is entering an environment which is unpredictable, but not to the extent where change is totally precluded. Similarly, a dramatic change in strategy should be more profitable than gradual change for a firm that is faced with tight internal coupling. By the same token, a change in strategy that involves a gradual shift over time should be more profitable than a revolutionary change for a firm that has a minimal degree of system coupling (Miller and Friesen, 1984).

Patterns and concerns

The fragmented nature of the empirical findings discussed above reflects a number of key shortcomings regarding the ways in which changes in strategy have been modelled. The studies reviewed generally fail to: (1) specify the complex nature of the effects of antecedent variables on

change (e.g. linear vs curvilinear; mediating vs moderating; (2) specify performance outcomes; (3) control for the effects of different types of forces (e.g. inertial vs inductive; external vs internal; (4) control for the time ordering of factors influencing change; (5) control for the type of change (e.g. magnitude vs pattern; position vs perspective); and (6) control for the pace of change (incremental vs quantum).

Related to these modelling limitations are important patterns regarding sampling and analysis. Although Harrigan (1981) and Oster (1982) found that the effect of various forces on changes in strategy depended on industry context, studies generally neglect to control for results due to sample heterogeneity. Furthermore, researchers generally employed quantitative measures of change in magnitude even though such measures tend to be based on observations of many organizations during relatively few periods, and are often inappropriate for capturing discontinuous changes that involve shifts in direction and gestalt. Finally, although studies generally gathered secondary historical, rather than primary, retrospective data, they tended to overwhelmingly employ cross-sectional analyses that are inadequate for examining causal relationships over time. In part this reflects the predominant concern of strategy researchers with developing variance, rather than process, theories. As described by Mohr (1982) the variance theory approach seeks to explain the variance in the dependent variable by treating independent variables as both necessary and sufficient, and their time ordering as immaterial; and the process approach treats independent variables as necessary conditions that are states rather than variables, and emphasizes the time ordering of the antecedents of the dependent variable, which is treated as a 'final cause'.

SUGGESTIONS FOR FUTURE RESEARCH

Two major reasons appear to account for the patterns discerned in the above review: (1) strategy researchers have tended to back away from the difficulties involved in using statistical methods to analyze complex causal models involving change; and (2) they have tended to be overly concerned with generalizability. The

remainder of this section suggests directions that may help researchers deal with these difficulties and concerns.

Analyzing complex relationships involving change

The difficulties involved in conducting research on changes in strategy are centered around four key concerns: (1) how to model the complex interaction of forces influencing changes in strategy in a way that simplifies data gathering and statistical analysis without necessarily increasing the risk of specification error; (2) what to consider in evaluating the success or failure of changes in strategy; (3) how to collect data that allow for the quantification of dynamic variables and are relatively inexpensive; and (4) how to statistically analyze causal relationships over time, despite the concern that common inferential assumptions regarding linearity, normality, and causal lags may be false.

Modelling change

It is clearly impractical to test for all possible combinations of factors influencing change. However, at a minimum, researchers should include constructs that adequately represent both inertial and inductive forces. As observed by Downs and Mohr (1976), the inability of innovation research to come cumulatively closer over time to some agreed-upon explanations is in part due to its skewed emphasis on variables reflecting inductive forces, at the expense of neglecting inertial forces. The typologies of changes in strategy and factors influencing these changes that were discussed earlier may be used to guide the development of parsimonious, yet theoretically meaningful, models.

The use of models developed to capture the complex nature of change may also provide a useful way to avoid serious specification errors. For example, a catastrophe theory model, which contains a number of qualitative properties, such as bimodality and hysteresis, may be quite helpful in capturing the divergent effects (catastrophic as well as continuous) of independent variables on changes in strategy.² 'Cusp catastrophe'

² Readers interested in a detailed exposition of its properties or in reviewing an example of its application to changes in strategy are referred to Jiobu and Lundgren (1978) and Oliva and MacMillan (1985) respectively.

models, which are tested inductively by attempting to fit empirical data to the model, are particularly useful for analyzing the influence of the relationship between pressure and resistance for change on the incidence and rapidity of organizational change (Bigelow, 1982).

Examining performance outcomes

Although organizational changes are often difficult to evaluate, researchers investigating changes in strategy should pay more careful attention to relevant performance outcomes. Greater attention to indicators of success is particularly warranted because of the central role of changes in strategy in organizational adaptation. Singh *et al.* (1986) aptly observe that there is a strong need for studies that research the contextual factors which may have an impact on the adaptive or disruptive consequences of organizational change. For example, under what environmental conditions are certain types of changes in strategy adaptive, and when are they disruptive? Do changes in strategy in younger organizations have a different impact than change in older organizations?

Since the evaluation of organizational change depends on the evaluator's frame of reference (Carnall, 1986; Legge, 1984), researchers need to carefully develop constructs for evaluating changes in strategy. Some important questions that should be addressed include the following: How long after the change has occurred should evaluation of success take place (i.e. is the measurement interval long enough to detect underlying relationships obscured by short-term variation due to error, yet short enough to preclude fundamental changes in the causal system imposed from without)? What should be the appropriate focus of improvement or correction (e.g. profitability, growth, stakeholder satisfaction, etc.)? How does this vary for different types of changes or contexts?

Collecting data

The use of published histories is particularly important for developing large sample, multivariate quantitative research designs for researching changes in strategy. As argued by Miller and Friesen (1982), studies which are considered longitudinal by virtue of the fact that they look

at a series of static snapshots need to incorporate anecdotal histories which allow the researcher to capture more of a moving picture of the process of change that is occurring over time.

Content analysis of organizational documents, letters to shareholders, and corporate speeches, as well as published histories, provides an important way to quantify historical data. Hence, content analysis, which involves coding words, phrases, and sentences in terms of particular constructs, appears to hold much promise for researchers interested in going beyond anthropological types of field studies or questionnaire designs in the investigation of changes in strategy (Bowman, 1985). This methodology may be particularly useful to researchers interested in examining how changing norms and values (see, e.g., Dirsmith and Covaleski, 1983), or language and symbols (see, e.g., Huff 1985) are reflected in changes in strategy.

Although the use of published histories is a relatively inexpensive way of collecting objective information on dynamic relationships, such publicly available data are generally limited in terms of variables and populations of interest. As a result, researchers often have no alternative but to gather retrospective, survey data. Despite the evidence that retrospective or recall data can provide descriptions which are not substantially less accurate than those obtained for current data when certain precautions are taken (Moss and Goldstein, 1979; Huber and Power, 1985), there is also evidence testifying to the potential for bias (see, e.g., Schwenk, 1985). Hence, in addition to taking certain precautions (such as not asking respondents to describe events that have a strong emotional component regarding themselves) (Moss and Goldstein, 1979; Huber and Power, 1985), researchers utilizing retrospective data should try to monitor and adjust for those factors they believe might cause distortion. For example, a researcher who suspects that age and position of the respondent may distort recollection in a certain direction should look for supporting patterns in the data and then make commensurate adjustments.

The collection of primary data from multiple informants who are then cast as distinct methods in a structural equation methodological framework has been suggested as a fundamental approach for examining the reliability of single-informant data (Bagozzi and Phillips, 1982;

Markus, 1984). Because of its explicit representation and testing of both measurement and latent construct linkages, the use of structural equation modelling, together with its widely used algorithm LISREL, enhances the integration of theory construction and theory testing (Hughes, Price and Marrs, 1986). Nevertheless, because of the complex nature of change in strategy, the use of LISREL to analyze multiple-informant data should be performed with caution, since it is not yet clear whether a lack of consistency between informants reflects poor interjudge reliability or the inherent complexity of these concepts perceived differently by various managers (Venkatraman and Grant, 1986). This caveat is particularly important in light of the difficulties involved in collecting sufficiently large samples of multiple informants per organization.

Finally, because of the inherent limitations of both published histories and retrospective surveys, as well as difficulties involved in collecting and interpreting multiple-informant data, researchers are urged to check the accuracy of their information by comparing the information derived from content-analyzed published accounts with information derived from questionnaires regarding changes that took place during the same period in the same organizations (see, e.g., Miller and Friesen, 1980a, b).

Statistical techniques

Choices regarding time spans, number of sampling points, and statistical technique are a function of research scope and objectives and the rates of change being studied (Kimberly, 1976; Miller and Friesen, 1982). However, researchers using statistical analysis to examine panel data should be aware of important concerns such as ensuring that the appropriate causal lag period is examined.³ Q-factor analysis, which clusters firms across variables, is an important method for dealing with the problem of discovering and interpreting nonlinearities that occur as the result of changes in relationships among many variables over time (Miller and Friesen, 1982). By clustering organizations along change scores of many variables, this method allows the researcher to

detect structure in nonlinear data and to build a taxonomy of patterns of change. For a more detailed description of this technique and its application, see Miller and Friesen (1980a, 1982).

Finally, researchers interested in examining the timing and sequence of change should consider the use of event history regression techniques. Unlike the statistical techniques mentioned thus far, event history regression techniques are not confined to the analysis of relatively brief periods. These techniques have been expressly designed to address two important problems involved in studying the causes of events: (1) the 'censoring' of values of the dependent variable that are unknown for persons or collectivities that did not change during a given period; and (2) the exclusion of explanatory variables that may change in value over the observation period (Allison, 1984)⁴

How to avoid overgeneralizing

A number of suggestions have been made to strategy researchers regarding the issue of overgeneralizing. Some of these pertain to the analysis of multiple-industry samples while others pertain to the sampling choices themselves. The researcher using a multiple-industry sample should consider supplementing the analysis with a random sample of organizations that are chosen as targets for field research (see, e.g., Miller and Friesen, 1982). Another way to control for various unspecified industry effects in statistical analysis of multiple-industry samples is to introduce dummy variables representing industry effects.

In choosing a sample design, researchers should consider employing carefully structured sample designs in which industries are stratified to ensure that sampling coincides with key factors in the hypothesized relationships (Harrigan, 1983). Quasi-experimental designs that collect data on population cohorts are particularly useful for controlling for the alternative hypothesized influences of contextual origins, environmental feedback, and strategic choice (Romanelli and Tushman, 1986). These cohort samples are identified 'on the basis of product class, which bounds the general set of resources that are critical to

³ For a detailed treatment of such issues the interested reader is referred to Kimberly (1976), Pendleton *et al.* (1980) and Markus (1984).

⁴ The reader interested in further detail should consult Allison (1984) or Tuma and Hannan (1984).

competition, and . . . on the basis of period of birth or entry, which attempts to insure that contextual conditions at the outset of the organization are constant' (p. 613).

A final suggestion regarding sampling pertains to the mission of strategic management as a field of study. Bower has argued that 'the charter of business policy is to focus on the life and death issues of central interest to the top managements of the firms' (1982: 632). To realize this mission, researchers interested in investigating changes in strategy should attempt to do so within a context that addresses contemporary issues of major concern. Firms in industries which have experienced transition as the result of technological or regulatory changes, e.g. telecommunications, banking, airlines, and many others, provide important as well as timely contexts for such research.

CONCLUSIONS

Although there appears to be widespread agreement among strategic management researchers and practitioners that strategy needs to be conceptualized and modelled dynamically, most strategy research, like much of social science research, 'is characterized by synchronic data and diachronic interpretations of those data' (Kimberly, 1976: 322). Contradictory and ill-defined uses of terms such as strategic change have contributed to the fragmented nature of research examining dynamic models of strategy. To create a basis for integration with a view to developing greater insight into specific needs for improvement, this paper began by proposing a framework for conceptualizing and modelling changes in strategy, and then proceeded to review key findings and characteristics of the empirical literature.

The pervasiveness of cross-sectional analyses in strategy research and the dilemmas involved in trading-off model scope, sample scope, and measurement precision may indeed reflect formidable hurdles. Nevertheless, if we are to have a more cumulative and meaningful body of findings upon which practitioners as well as academics can draw, future research on the antecedents and outcomes of changes in strategy must be more strongly grounded in research designs that carefully measure, model, and analyze the complex

and dynamic nature of such changes. Thus, while recognizing the inevitability of the research tradeoffs and difficulties involved in investigating changes in strategy, this paper challenges researchers to broaden and refine their approaches to construct development, model building, data collection, and analysis.

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