The Dynamics of Strategic Change in Hospitals: Managed Care Strategies, Organization Design, and Performance

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Abstract

The organizational changes and performance consequences of California hospitals pursuing managed care strategies between 1986-87 and 1991-92 are examined. The results suggest that hospitals made substantive changes in their strategic orientations. The primary source of change, however, was prior levels of commitment. High commitment to managed care strategies in time 1 produced further commitments in time 2, and support a momentum model of strategic adaptation. The performance consequences of strategic change are a complex function of time, direct, and indirect influences.

In hospital settings, strategic management refers to the activities that position a hospital in its environment and organize internal resources to achieve long term objectives. Strategic change involves significant alterations in this strategic orientation (Tushman and Romanelli, 1985; Kimberly and Zajac, 1985), including changes in strategy per se (Ginn and McDaniel, 1987; Zajac and Shortell, 1989; Goes and Meyer, 1991) and structural and organizational changes necessary to support that strategy or better align the hospital with its environment (Meyer, Brooks and Goes, 1990; Greiner and Bhambri, 1989; Hinings and Greenwood, 1988).

So far, relatively little is known about the internal dynamics of strategic change or the impacts of these changes on short-term performance. As Porter (1991) argued, knowledge concerning strategic change is at a formative stage because most popular definitions of strategic change ignore

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time and process. For example, hospital change research has focused on changes in strategy resulting from Medicare/Medicaid and prospective payment (DRG) legislation (e.g., Goodstein and Boeker, 1991; Ginn and McDaniel, 1987; Peters and Iseng, 1983; Zajac and Shortell, 1989), and on the survival rates of hospitals associated with these regulatory discontinuities (Arnould and DeBrock, 1986; Alexander and Amburgey, 1987). The population ecology perspective generally ignores internal organizational changes suggesting that any variation that might be selected by the environment is essentially random (Aldrich, 1979). Similarly, strategic change research that focuses only on changes in strategy per se typically ignores the organizational design issues associated with those changes (research based on Tushman and Romanelli's concept of strategic orientation is an important exception, e.g., Tushman, Virany, and Romanelli, 1987; Lant, Milliken and Bantra, 1992). As a result, the within-firm dynamics of strategic change are often glossed over and under appreciated (Greiner and Bhambri, 1989).

The purpose of this research is to understand better the within-firm dynamics of hospital strategic change as well as the performance consequences of those changes. Specifically, we develop and test a longitudinal model of hospital strategic change under a managed care environment. We propose that current strategies vis-à-vis managed care will impact organization design and performance variables in the subsequent time period and that current design and performance characteristics will impact managed care strategies in the future. Configurational approaches to strategic change are taken as a theoretical point of departure. A two-period causal model is presented of the dynamic relations among strategy, governance, operations, controls, and performance and is estimated using a sample of California hospitals between 1987-88 and 1991-92.

Strategic Change In A Managed Care Environment

Recent strategic management research has adopted a configurational approach (Meyer, Tsui, and Hinings, 1993; Miller and Friesen, 1984) which addresses complex sets of interrelationships among variables that comprise specific strategic orientations. For example, Miles and Snow's (1978) familiar Prospector and Defender configurations imply an internally consistent set of strategies, structures, and processes. A strategic orientation, then, is a constellation of strategy and organization design components that mutually support one another.

Configurational researchers interested in strategic change assess whether an organization shifts its strategic orientation (e.g., Smith and Grimm, 1987; Zajac and Shortell, 1989; Goes and Meyer, 1991) and examine the impact such a change has on performance. Unfortunately, this focus on strategic orientation often prevents unraveling the reciprocal impact between performance and the individual variables comprising the configuration (Ketchen, Thomas, and Snow, 1993). Thus, what is neglected is the within-firm dynamics that lead an organization from one strategic orientation to another, the order in which these variables change, and the impact of these individual changes on performance.

It is these internal dynamics that are of interest to organizational change researchers, and perhaps more importantly, to managers and administrators. Acknowledging relationships among the variables that make up a strategic orientation and recognizing that any change in orientation is likely to be a function of how these variables change over time results in a longitudinal model such as in Figure 1. It proposes that at any particular point in time, a hospital's strategic orientation can be represented by its strategy, governance relationships vis-a-vis physicians, operations characteristics, and emphasis on control systems. These variables are in line with configurational theories (Tushman and Romanelli, 1985) as well as suggestions made by industry press (Friedman, 1993; Johnsson, 1992; Traska, 1988). Figure 1 also suggests that a hospital's strategic orientation and performance in time 1 affects its strategic orientation and performance in time 2. More specific relationships are proposed below.

Stability Of Strategic Orientation

Ecological and institutional perspectives support stability in strategic orientations over time while choice perspectives emphasis change (Astley and Van de Ven, 1983; Hrebiniak and Joyce, 1985). Miller and Friesen (1980) offered an alternative concept, momentum, to suggest that organizations tend to continue along trajectories established during rare revolutions. Momentum, unlike stability, suggests that the organization is changing but in a consistent direction. Hypothesis 1 proposes that the variables in Figure 1 will exhibit momentum over time (in the interest of space, one hypothesis is proposed for all of the serial relationships).

H1: Hospitals with particular managed care strategies, governance structures, operational characteristics, and information and control orientations in time 1 are likely to have similar strategies, structures, operations and control in time 2.

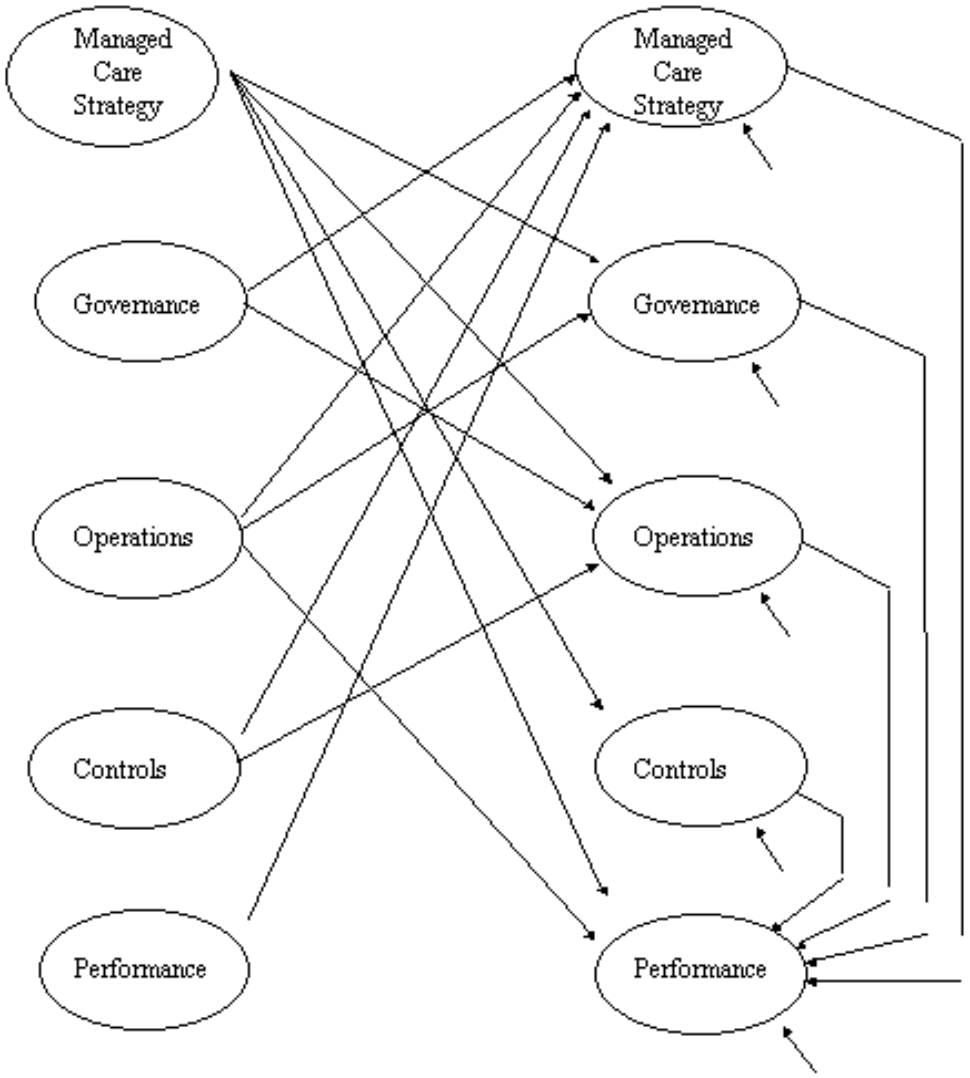
Reciprocal Relationships Among Managed Care Strategy, Organization Design, and Performance

Managed care is a growing form of health care financing and delivery that shifts risk to the provider of care, such as a hospital, by contracting for reimbursement based on a discounted charge or per diem rate. Popular examples of managed care include health maintenance organizations (HMOs) and preferred provider organizations (PPOs). Compared to more traditional fee-for-service, indemnity arrangements, managed care strategies imply changes in three aspects of a hospital's strategic orientation: governance, operations, and control. Managed care strategies are also expected to affect performance. These same variables, in turn, are expected to influence subsequent changes in a firm's managed care strategy.

Managed Care and Governance. Formulating and implementing strategic change implies alterations in the way hospitals are governed (Goodstein and Boeker, 1991). In an effort to reduce costs, managed care requires a strong relationship between hospitals and other health care providers, such as physicians (Johnsson, 1992). A common approach for gaining physician input into decisions regarding hospital services and technology is to involve them on the board of directors or board of trustees of the hospital. This group is involved in making decisions on important capital expenditures, managed care contracts, and other hospital operations (Fennell and Alexander, 1989).

FIGURE 1

The Theoretical Model of Hospital Strategic Change



Note: Structural errors assumed to be uncorrelated. Covariance between exogenous variables assumed but not shown. Serial paths assumed but not shown to improve clarity

Thus, a positive relationship is expected between a firm's managed care strategy at time 1 and physician involvement in a hospital's governance structure in time 2. Similarly, if physicians are involved in forming hospital policy in time 1, we would expect their influence to be felt in subsequent decisions regarding managed care strategy.

H2: There is a reciprocal, positive relationship between managed care strategies and physician involvement in hospital governance.

Managed Care and Operations. An important element of strategic change is how an organization alters its technology or the "work" it performs (Miller and Friesen, 1980; Zajac and Shortell, 1989) and is a major indicator of the firm's strategic orientation (Tushman and Romanelli, 1985; Marlin, Lamont and Hoffman, 1994). Since patient services provided to managed care participants are discounted, hospitals must find ways to deliver them at the lowest cost. The most common tactic has been to shift from inpatient to outpatient services. Since outpatients are not formally admitted to the hospital, such services do not carry the fixed cost burden associated with an inpatient day.

As part of its managed care strategy, a hospital can focus attention on either inpatient or outpatient types of business. Thus, if a hospital chooses to emphasize inpatient services, its operations should be oriented toward them. In a similar way, a hospital's operational mix at time 1 should also influence the type of managed care strategies it pursues, thus a reciprocal relationship is proposed. This hypothesis is consistent with a resource based view of strategy (Mahoney and Panadian, 1992; Barney, 1991).

H3: There is a reciprocal relationship between managed care strategies and the hospital's emphasis on inpatient or outpatient services.

Managed Care and Control Systems. Managed care has pressured hospitals to understand their cost structure and generate more accurate information about service delivery (Traska, 1988). They must be able to determine which services are profitable, which are not, and why. This requires control systems aimed at cost accounting, patient accounting, credit and collections processes, and other fiscal services. A resource based perspective suggests that such control orientations would influence

subsequent managed care strategies. If hospitals possess competence in collecting patient information that allows them to understand the cost of service delivery, they can pursue managed care contracts that best fit their operational characteristics.

H4: There is a reciprocal relationship between managed care strategies and control system orientations.

Managed Care and Performance. Managed care strategies are expected to directly and indirectly affect performance. The direct effect is expected to be negative when performance is measured as efficiency (i.e., cost per patient day). More managed care patients should improve capacity utilization and help to spread fixed costs over a larger customer base. Similarly, the indirect effect of managed care on performance, through adjustments in operations, governance, and controls, is expected to be negative. As the organization better aligns its strategic orientation to fit the new strategy, cost per patient day should decline (Ketchen, Thomas, and Snow, 1993).

H5a: Commitments to managed care in time 1 will have a negative direct effect on hospital efficiency in time 2.

H5b: Commitments to managed care in time 1 will have a negative indirect effect on efficiency in time 2 through changes in managed care, governance, operations and control systems.

Prior performance at a hospital is expected to influence strategy in a subsequent period. Because prior performance has not been a consistent predictor of strategic change (Miller and Friesen, 1980; Fombrun and Ginsberg, 1990; Goodstein and Boeker, 1991; Tushman, Virany and Romanelli, 1987), we propose the traditional negative relationship which was supported by Goes and Meyer (1991) in a similar sample of hospitals.

H6: Poor performance (high inefficiency) in time 1 will increase commitments to managed care strategies in time 2.

The Relationships Among Organization Design Variables

The organization design variables -- governance, operations, and control -- are also expected to interact among themselves, although not

always in a reciprocal fashion. Physician involvement in governance is expected to influence the hospital's operations mix and vice versa. To the extent that physicians are represented in the strategic decision making of the hospital, operations may come to resemble the wants and needs of this constituency. On the other hand, a hospital's emphasis on either inpatient or outpatient services is likely to imply that certain types of physicians should be involved in strategic decisions to support particular operational orientations.

H7: There is a reciprocal relationship between physician involvement in governance and operational emphasis.

Control systems are expected to influence the operational mix, but operations are not expected to influence controls. In the former relationship, we expect that the more a hospital emphasizes controls in time 1, the better able it will be to align operations to profitable services. We do not expect, however, that any particular mix of operations has any particular need for more or less control. That is, both inpatient or outpatient services require control and the correlation between a constant and a variable is zero.

H8: Emphases on control systems in time 1 will result in changes in operational characteristics in time 2.

Organization Design and Performance

The organization design variables are expected to directly and indirectly influence performance over time. Physician involvement in strategic decisions influences performance indirectly through operations (Hypothesis 7). Decisions that increase (or maintain) the attractiveness of a hospital through changes in its mix of inpatient and outpatient services, if aligned with the managed care strategy, should increase hospital performance.

H9: Physician involvement in governance in time 1 will positively affect performance in time 2 through operations in time 2.

Hypothesis 10 proposes a direct effect between operations and performance. Hospitals that emphasize inpatient or outpatient services in accordance with their managed care strategy are efficiently aligning

operations with strategy. Such a fit is expected to result in higher performance.

H10: Emphasis on inpatient or outpatient services in time 1 will result in performance changes in time 2.

Finally, control systems that produce information on the hospital's services increase knowledge about operations and the areas that need attention to implement better the current strategy. Thus an indirect effect is proposed between control systems emphasis and performance through changes in operations.

H11: Control systems emphasis in time 1 will positively affect performance in time 2 through operations.

Performance (efficiency) is not expected to influence governance, operations, or controls which have tended, in prior research, to represent relatively "sticky" factors in change (Goodstein and Boeker, 1991).

Methods

Sample

The data for this study come from the 1987-88 and 1991-92 Annual Hospital Financial Disclosure Surveys administered by the California Office of Statewide Health Planning and Development (OSHPD). OSHPD has collected this data with only minor changes in format since 1975-76. The Annual survey contains information on hospital structure and control, board member composition and relationships, hospital physicians, service characteristics, utilization statistics, and detailed financial data.

The 1991-92 data represent the most recent OSHPD data available while the 1987-88 data were chosen for the following reasons. First, during this time period, "managed care" was a relatively new but growing phenomenon. Second, two years prior, the survey contained a small revision and it was believed that the 1987-88 data would be less prone to error from the change. Third, the 1987-88 period follows implementation of the prospective payment legislation (i.e., DRGs) by at least three years. This period was sufficient to assume that prospective payment was not likely to be a rival explanation for hospital change. Fourth, and perhaps

most importantly, a period of four years over which to observe change seems a reasonable time frame and is similar to other studies of strategic change. Too long a time frame and the model might under represent change that occurred and then was reversed; too short a time frame might miss changes that were in the process of occurring (Arundale, 1980).

From a total population of 589 hospitals in 1991-92, a sample of general, acute-care hospitals with over 100 beds was chosen. Focusing on larger hospitals controls for scale economies, which according to prior research, begin to decline at around 100 beds (Arnould and DeBrock, 1986). Moreover, large hospitals are more likely to face competitive markets (Arnould and DeBrock, 1986; Goodstein and Boeker, 1991). The sample also excluded state hospitals and captive HMO hospitals that do not compete for managed care contracts. Finally, the choice of data analysis technique described below is quite strict with regard to missing data. To maximize sample size, we chose to focus on the inpatient, as opposed to the outpatient, side of the managed care equation. Holding to the criteria for no missing data reduced the sample size to 123 hospitals.

Based on conversations with user consultants at OSHPD, the data appear to be accurate and reliable. After receiving the surveys, personnel at OSHPD review the data for internal accuracy (i.e., there are several places in the survey where the same numbers, such as patient days, revenues, and costs, are requested) and discrepancies are clarified.

Variables

The following data were used to measure managed care strategy, governance, operations, controls, and performance.

Managed care strategy. A hospital's commitment to managed care is measured by the number of inpatient days produced by managed care contracts for the 1986-87 and the 1991-92 period. This number was divided by the number of licensed beds to adjust for hospital size.

Governance. The physician's role in governance is represented by the number of physicians on a hospital's board of directors or trustees. A physician was defined as anyone with an "M.D." suffix to his/her name or whose title represented a medical specialty, such as anesthesiologist, cardiologist, surgeon, obstetrician, and so on.

Operations. The annual survey reports the total units of service for nursing and ancillary services and partitions them into inpatient and outpatient occurrences. The operations variable is the average proportion of eighteen services' total units that were accounted for by outpatients. For each service, the outpatient service units were divided by the total service units and averaged across services. The eighteen services included emergency room visits; clinic visits; surgical day care, surgery and recovery, and anesthesiology operating minutes; laboratory workload minutes; and the number of treatments or procedures in inhalation therapy, radiology, physical therapy, occupational therapy, and cardiac catheterization.

Thus, the operations variable measures outpatient intensity of hospital services and not inpatient intensity. However, since outpatient intensity equals one minus inpatient intensity, this was not seen as problematic.

Control systems. This was measured by the total annual direct expenses (salaries and wages, benefits, purchased services, fees, supplies, and so on) for fiscal services, including patient accounting, general accounting, credit and collections, and admissions. The annual expenditures for this account were thought to be an accurate reflection of the emphasis placed on collecting and using relevant patient, physician, and payor information. To adjust for size, this amount was divided by the total operating expenses for the hospital.

Performance. Hospital performance was measured in terms of cost per inpatient day, where cost is represented by total annual direct operating expenditures. This variable was chosen because it reflects the emphasis of managed care on efficiency.

Data Analysis

The relationships and hypotheses suggested by Figure 1 were estimated simultaneously using the structural equation and panel analysis features of the LISREL VII package (Joreskog and Sorbom, 1989). Monge (1990) supported the use of this techniques for models with multiple, continuous dependent and independent variables measured on two or a few points in time.

Model estimation occurred under the following set of assumptions. First, each latent construct is measured by a single indicator with fixed loadings of 1.0. Second, error variances for the managed care, governance, and operations variables were fixed at 10% of the variable's variance to reflect potential errors in the reported data (considered a very small percentage) and to recognize that each indicator is an imperfect representation of the broader construct. For the control systems and performance variables, measurement was assumed to be perfect. This approach has been specifically advocated by Hayduk (1987) and James, Brett, and Mulaik (1982). Third, measurement and structural errors within and between years were expected to be uncorrelated. Finally, because the data for each of the variables, with the exception of outpatient intensity, were heavily skewed, they were transformed using the natural logarithm to normalize the distributions before submitting them to the LISREL program.

The analysis proceeds in two steps. First, the model in Figure 1 is estimated and compared against a "null" model (Bentler and Bonett, 1980). Williams and Podsakoff (1989) suggested that a serial model is an appropriate null model for testing longitudinal data with reciprocal relationships. Thus, the serial model used in this study applies to the same variables in Figure 1 except that only relationships between a variable and itself are included. Second, the hypotheses are tested against the theoretical model. A reciprocal hypothesis is supported if both relationships are significant; it receives mixed support if only one relationship is significant; it is not supported if neither relationship is significant.

Results

Descriptive Statistics

Table 1 presents summary statistics among the variables used in the analysis.

TABLE 1: Descriptive Statistics for Strategic Change Variables

Variable	**1**	**2**	**3**	**4**	**5**
1. Managed Care$_2$	1.000				
2. Governance$_2$	.021	1.000			
3. Operations$_2$	-.003	-.229	1.000		
4. Controls$_2$	-.029	.131	.199	1.000	
5. Cost/Pt. Day$_2$	.220	.024	.350	.245	1.000
6. Managed Care$_1$	.489	-.036	.043	-.214	-.154
7. Governance$_1$	-.088	.602	-.138	.201	-.053
8. Operations$_1$	-.153	-.172	.657	.108	.249
9. Controls$_1$	-.118	.007	.174	.412	.137
10. Cost/Pt. Day$_1$	.146	-.142	.117	-.036	.700
Mean	18.18	2.92	42.74	.05	2813
S.D.	34.08	3.84	12.45	.03	1500

Variable	**6**	**7**	**8**	**9**	**10**
1. Managed Care$_2$					
2. Governance$_2$					
3. Operations$_2$					
4. Controls$_2$					
5. Cost/Pt. Day$_2$					
6. Managed Care$_1$	1.000				
7. Governance$_1$	-.100	1.000			
8. Operations$_1$	-.017	.022	1.000		
9. Controls$_1$	-.118	.120	.316	1.000	
10. Cost/Pt. Day$_1$	.005	-.139	.087	.089	1.000
Mean	25.56	2.59	41.72	.05	2426
S.D.	22.47	3.22	10.11	.02	5524.8

Model Assessment

Table 2 presents the relevant fit statistics for two different models: the serial (or null) model and the theoretical model as pictured in Figure 1.

The theoretical model fits the data well (X^2=21.56; df=14; p=.088). The X^2/d.f. ratio of 1.54 is less than the guidelines suggested by Wheaton, et al. (1977) for panel models as well as the more conservative ones suggested by Carmines and McIver (1981). The decrease in Chi-square between the serial and the theoretical models (X^2_{diff} = 87.96 = (109.52-21.56); df = 16 = (30-14); $p < .01$) is more than would be expected by chance. The remaining indicators of fit, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), and the root mean square residual (RMSR), all exceed accepted standards. The AGFI, which is slightly smaller than the GFI, indicates some inefficiency in the model. This may be the result of estimating more parameters than really necessary. Despite these positive indicators, the standardized residuals indicate that some covariances are not reproduced well. Five standardized residuals are greater than $\pm$2.00.

Table 2
Comparison of Alternative Models of Strategic Change

Model	Chi-Square	df	p	GFI	AGFI	RMSR
Serial	109.52	30	.000	.868	.757	.477
Theoretical	21.56	14	.088	.966	.867	.146

The theoretical model explains 34% of managed care strategy variance; 49% of governance variance; 57% of operations variance; 20% of control systems variance; and 72% of cost per patient day variance. Compared to the serial model, these amounts of explained variance represent increases of 4%, 4%, 4%, 3%, and 8% respectively.

The results suggest that the proposed theoretical model is a good representation of strategic change in hospitals and does a better job of modeling the relationships than a serial model. This supports the notion that organization change is more than just momentum over time. As suggested by the standardized residuals, there is room for improvement, however. Thus, it seems reasonable to accept the model, with some caution, as a starting place for hypothesis testing.

Summary of Findings

The unstandardized parameter estimates for the theoretical model are shown in Table 3, including the total, direct, and indirect effects. Table 4 summarizes the results of hypothesis testing.

Hypothesis 1 proposed that all variables would demonstrate momentum over time. Momentum is indicated when the standardized serial parameter estimate is significantly different from both 0.0 and 1.0 (Wheaton et al., 1977). In this panel, Hypothesis 1 is strongly supported. All variables showed a strong tendency to increase over time. For example, hospitals with a relatively strong commitment to managed care strategies tended to increase their commitment.

The next set of hypotheses (2-6) predicted reciprocal relationships between managed care and governance, operations, controls, and performance. As can be seen from Table 4, hypotheses 2 and 3 did not receive support, but hypotheses 4 received mixed support. Managed care strategies did cause changes in controls, but controls did not cause changes in managed care.

TABLE 3: Total, Direct and Indirect Effects for Cost per Patient Day

Dependent Variable	Independent Variable[1]	Total Effect[2]	Direct Effect[2]	Indirect Effect[2]
	Managed			
$Outcome_2$	$Care_2$(5)	-.058*	-.121*	.063*
	$Governance_2$(9)	.035	NA	.035
	$Operations_2$(10)	.008*	.002	.006*
	$Controls_2$(11)	.044	NA	.044
	$Outcome_2$(1)	.580*	.536*	.044
	Managed $Care_1$	.134*	.134*	NA
	$Governance_1$	.093*	.093*	NA
	$Operations_1$	.010*	.010*	NA
	$Controls_1$	.158*	.158*	NA
	Managed $Care_1$			
$Controls_2$	(4)	-.057*	-.057*	NA
	$Governance_1$	NA	NA	NA
	$Operations_1$	NA	NA	NA
	$Controls_1$ (1)	.457*	.457*	NA
	$Outcome_1$	NA	NA	NA
	Managed			
$Operations_2$	$Care_1$(3)	.469	.469	NA
	$Governance_1$ (7)	-3.022*	-3.022*	NA
	$Operations_1$ (1)	.921*	.921*	NA
	$Controls_1$ (8)	-1.729	-1.729	NA
	$Outcome_1$	NA	NA	NA
	Managed $Care_1$			
$Governance_2$	(2)	.019	.019	NA
	$Governance_1$ (1)	.713*	.713*	NA
	$Operations_1$ (7)	-.015*	-.015*	NA
	$Controls_1$	NA	NA	NA
	$Outcome_1$	NA	NA	NA
	Managed $Care_1$			
Managed	(1)	.489*	.489*	NA
$Care_2$	$Governance_1$ (2)	-.018	-.018	NA
	$Operations_1$ (3)	-.015	-.015	NA
	$Controls_1$ (4)	-.088	-.088	NA
	$Outcome_1$ (6)	.327*	.327*	NA

[1] The number in parentheses indicates the corresponding hypothesis.
[2] An asterisk (*) indicates that the parameter estimate is at least 1.96 times its standard error.

TABLE 4: Results of Hypothesis Testing

Hypothesis	Result
H1: Momentum over time	Strongly supported
H2: Managed care and Governance	Not supported
H3: Managed care and Operations	Not supported
H4: Managed care and Controls	Mixed supported
H5a: Managed care --->Performance Change (negative and direct)	Supported
H5b: Managed care --->Performance Change (indirect)	Not supported
H6: Performance ---> Managed Care Change	Supported
H7: Governance and Operations	Supported
H8: Controls ---> Operations Change	Not supported
H9: Governance ---> Performance Change (indirect)	Not supported
H10: Operations ---> Performance Change	Moderately Supported
H11: Controls ---> Performance Change (indirect)	Not supported

Hypotheses 5 and 6 concerned the relationship between performance and managed care strategies. Hypothesis 5a is supported. The negative direct effect (-.121) suggests that managed care participation in the late 1980s improved hospital efficiency (cost per patient day) in the early 1990s.

Hypothesis 5b is tested by noting the significant total (-.048) and indirect (.063) effects of managed care on performance in Table 3. The indirect of .063 does not support the hypothesis. Moreover, 95% of this effect is accounted for by the path between managed care in time 1 and cost per patient day in time 2 through managed care strategies in time 2. This is neither the predicted path nor the predicted direction and therefore Hypothesis 5b is not supported.

Hypothesis 6 is supported. Hospitals with relatively high costs per patient day (poor performance) were more likely to increase their commitments to managed care in the subsequent period.

The next set of hypotheses (7 and 8) examined the relationships between different organization design variables over time. The reciprocal relationship between governance and operations (Hypothesis 7) was supported while Hypothesis 8, the influence of control systems emphasis on operations change, was not supported.

The final set of hypotheses (9-11) predicted relationships between the organization design variables and performance. Hypotheses 9 and 11 were not supported. Hypothesis 10 receives moderate support. The total effect (.008) of operations on performance was positive and significant but is mostly accounted for by the significant indirect effect (.006) through operations in time 2 whereas a direct relationship was predicted.

Discussion

The purpose of this research was to develop and test a longitudinal model of hospital strategic change. Despite the growth in research on hospitals, relatively few studies have addressed the internal dynamics of hospital change. Organizational changes are either ignored or the focus is on strategy per se rather than on the internal architecture that brings a strategy to life.

The theoretical model of hospital strategic change fit the data well, but support for the individual hypotheses were mixed. Six of the 12 hypotheses were not supported. In the paragraphs that follow, we discuss and interpret these results.

Changes In Strategic Orientation

The strong indication of momentum in the variables suggests that California hospitals in the late 1980's and early 1990's were in a period of transition. Although there is a plethora of literature noting the inability of organizations to adapt to their environments, the hospitals in this sample made significant changes in both strategy and organization design. The source of change in a particular aspect of strategic orientation was most often commitment to that aspect in the prior period. Hospitals committed to managed care strategies in 1986-87 increased their commitment in the early 1990's; hospitals with strong inpatient orientations in their operations in the earlier period increased that orientation in the later period; and so on. This supports the research of Miller and Friesen (1980) and others who find that momentum in the direction of change dominates organization adaptation. However, such momentum should not be confused with stability. Far from being stuck, frozen with inertia, and unable to adapt to their environments, the hospitals in this study did change their strategies, operations, and control systems. Moreover, serial relationships alone represented a poor fit to the data.

Other sources of change in a hospital's strategic orientation also exist, although support was mixed for the relationships proposed between managed care and organization design variables. Managed care strategies were only able to influence control systems in the subsequent period, and the effect was negative. Hospitals more involved in managed care strategies in the late 1980's spent less on control systems tracking patients, physicians, and payors in the early 1990s. As noted below, this may be an artifact of the sample.

The only other significant relationship between organization design variables was the reciprocal relationship between physician involvement in governance and operations. It appears that hospitals
did alter their emphasis on inpatient or outpatient services in response to physician involvement on the board of directors and that operational emphases do impact board make up. These results elaborate on the findings of Goodstein and Boeker (1991). They found that changes in board composition were positively related to service additions but unrelated to service divestitures. The data here suggest that hospitals can and do shift their service offerings from one form of delivery to another in response to governance changes.

Given its expected primacy, managed care's general lack of influence on organization design may be an artifact of the sample. Because of the "no missing data" constraint, the research sample contained only hospitals that had managed care contracts during both periods, and consequently may underrepresent hospitals who entered managed care for the first time. The sampled hospitals may have already made the adjustments in governance, operations, and controls as a result of their initial entry into the managed care market. This would explain the negative relationship between managed care strategies in time 1 and control emphases in time 2. If a hospital has already responded to a change in strategy with an increased emphasis on control systems, that emphasis might appropriately be scaled back four years later and resources allocated to more productive projects.

Contrary to expectations, governance, operations, and control systems emphasis had no effect on subsequent increases in managed care strategies. The influence of governance in this model was limited to changes in operations despite the pervasive effects found by others. Physician involvement did not influence managed care strategy nor did managed care strategy affect the number of physicians on the board. Other variables might better capture physician involvement with the hospital including physician status as hospital based vs. non-hospital based and other legal linkages such as owned physician practices.

Although not a particular focus of this study, operations' and control systems' lack of influence on managed care strategies or other variables calls to question the basis of the resource based view of strategy formulation. This perspective argues that, over time, hospitals will leverage those competences or capabilities aligned with managed care strategies by increasing hospital commitment to these strategies. While hospitals in this sample increased their commitment to managed care, it was not because of operational mixes or control systems emphases. Hospitals may be unaware of their competencies and how they can be used to exploit opportunities. This represents an area for future research.

Another surprise was the lack of influence by control systems. The industry press is full of admonitions about the importance of a strong information and control function given the need to control costs of service delivery and health care reform. As noted above, the lack of results here

may also be a function of prior commitments to managed care and its concomitant commitment to control systems. This seems less likely an explanation given the considerable investment required in information and control systems.

Strategic Orientation And Performance

There was generally good support for the performance hypotheses. Hospitals with low performance (high cost per patient day) were more likely to increase their commitment to managed care strategies over time. The influence of performance on strategic change has received mixed support, but the findings here are consistent with hospital studies by Goes and Meyer (1991) and Goodstein and Boeker (1991). Goes and Meyer found that low hospital performance was predictive of a change in strategic orientation while Goodstein and Boeker found no relationship between low performance and additions/deletions of service. The data here support the conclusion that performance pressures are an important impetus to strategic change.

Managed care strategies helped hospital efficiency over time. By the late 1980s, participation in managed care strategies was a fait accompli and hospitals committed to this strategy enjoyed a direct benefit to performance. The more inpatient volume a hospital had in an earlier time period, the more efficient it was in a later period. This finding is most likely the result of efficiencies in capacity utilization.

However, the significant, indirect effect between managed care and performance through the organization design variables, while expected, was in the wrong direction and did not operate as expected. The data suggest an overall negative relationship between managed care and performance, but a positive indirect effect through managed care strategy in time 2. Early commitments to managed care strategies were followed by increased commitments that subsequently raised hospital inefficiency.

One explanation for this effect is that strategic change, in the short run, has a negative impact on performance. Strategic change may require some period of time to bear fruit. Our data suggest that the lag may be quite long even in an industry where the pace of change is quite high. If that is valid, then researchers need to be very careful when interpreting cross-

sectional studies of strategy and performance that do not account for this lagged effect.

A second explanation for not finding the expected indirect effect between managed care and performance through changes in governance, operations, and controls is that organization design is really not that important to performance. A key issue in strategy is the relative effect of strategy formulation and implementation. The data here suggest that strategy's impact is positive and direct over the long term but negative over the short term. Organization design variables, on the other hand, had no long term performance effect, but did have a mixed short term effect. Some variables were associated with improvements in efficiency (i.e., operational mix) while others hurt efficiency (i.e., governance and controls). Given their cross-sectional nature, however, we cannot make any causal speculations.

Limitations Of The Study

This study has several limitations that should be kept in mind. First, each dimension of strategic orientation was measured with only one variable. Other indicators for governance, operations, and controls might better tap these dimensions. Our acknowledgment of this fact, by arbitrarily assigning a 10% error variance, does not alleviate the problem completely. Future studies should utilize multiple measures to improve the representation of the latent constructs.

Second, care should be taken to generalize these results to other industries. Hospitals are somewhat unique in their and diffused power structures and operational complexities. Physicians, regulators, and insurers, as well as managers and technically trained employees all share a measure of influence in a hospital that is difficult to find in other industries. In addition, the breadth and interdependence of services in a hospital are quite complex.

Third, despite the call for more longitudinal research, the number of empirical attempts at modeling dynamic processes is small and the impact of our simple and straightforward assumptions are unknown. Researchers familiar with LISREL know that a model's fit to the data can be improved dramatically by freeing error covariances. Further theoretical work is needed on guidelines for specifying longitudinal models of this type.

Conclusions

This study supports a momentum model of strategic change. A hospital's strategic orientation tends to develop and change along an established trajectory. Far from implying stability or inertia, such changes are also guided by performance and other variables within a strategic orientation. The longitudinal model used here represents a good start in specifying the relationships between variables of strategic orientation over time. In addition, it provides a means for unraveling the impact of strategic change on performance, a complex process that warrants additional research.

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