The Scanning of Task Environments in Hospitals: An Empirical Study

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Abstract

The objectives of the paper were to identify the natural taxonomy of hospitals based on their task environmental scanning activities, and to test if scanning practices had any relationship with the overall performance of these hospitals. A cluster analysis yielded four groups of hospitals each of which had distinct scanning characteristics. Results showed significantly different performances across these groups. Hospitals with the most advanced scanning function performed better than hospitals that used less advanced methods to scan the task environment.

Introduction

Environmental scanning[1] is a major step in the strategic planning process (Zahra, 1987). In this step, events from outside the organization are collected and analyzed with a view to determining their impact on the organization's plans (Daft and Weick, 1984; Milliken, 1990). The output of environmental scanning is a listing of key factors that could either prove to be opportunities worth exploiting or threats that need to be countered.

Prior studies that examined scanning practices (e.g. Culnan, 1983; Smeltzer, Fann and Nikolaisen, 1988, Daft, Sormunen and Parks, 1988) used what has been called "context-free" samples (Blair and Boal, 1991). In other words, by using samples of firms drawn from a variety of industries (i.e. free of any specific context), these studies did not account for industry effects. Researchers (e.g. Blair and Boal, 1991) have argued that by extending "context-free" studies to "context-specific" domains (or using firms from one specific industry), insight into the applicability of generic management theories can be obtained. Such insights could benefit both practitioners and researchers involved with specific industries. The objective of the current study is to examine environmental scanning practices in the health care industry.

Several researchers have pointed out that the context of the health care industry has changed dramatically in the last decade (e.g. Shortell, Morrison, and Robbins, 1985; Alexander and Amburgey, 1987; Ginn, 1990; Topping and Hernandez, 1991; Liedtka, 1992). The industry's environment has become more turbulent and dynamic because of factors such as prospective payment[2], competition, technological developments, and new consumer expectations. Concomitant with the changing environment, many health care entities have found an increasing need to respond by becoming more aware of the importance of strategic planning. Shortell, Morrison, and Robbins (1985) state that the difference between the winners and the losers (in the industry) is likely to be their ability to *strategize*, that is, to develop and implement plans to position themselves so as to take advantage of the rapidly changing market, product, technological and social environments relative to their competitors (p. 220).

In their thorough review of the health care strategy literature, Topping and Hernandez (1991) pointed out the dearth of research in environmental scanning and analysis. The authors rationalized this by stating that environmental analysis and scanning is an emerging area in health care strategy research and recommended that additional work be done to learn more about how health care organizations monitor the external environment.

The specific purpose of this paper is to examine how hospitals scan and analyze the task environment. The task environment (which consists of competitors, customers, and suppliers), rather than the general environment (consisting of social, technological, political, legal and economic forces), was the focus of the study for the following reasons: first, it covers those areas where major changes are taking place in the industry (Desai and Margenthaler, 1987). Second, most strategic planning scholars agree that the task environment's effect on an organization is *direct*, whereas that of the

general environment is *indirect* (e.g. Pearce and Robinson, 1991; Thompson and Strickland, 1992).

The study is important for both practitioners as well as health care strategy researchers. For practitioners, a description of how hospitals scan can help them develop scanning systems for organizations that do not have such systems. Also, a relationship between scanning efficiency and performance, if one exists, would underscore the importance of scanning to strategic planning. For health care strategy researchers, this study would indicate the extent of application of concepts drawn from general industry research to the specific context of health care organizations. Thus, the study follows Blair and Boal's (1991) recommendation to extend theory generated in a context-free environment to context-specific situations.

Theoretical Background

Environmental Scanning in the General Setting

Context-free studies in macro environmental (which includes the task and the general sectors) scanning have emerged continually since Aguilar (1967) established the key role of scanning in strategic planning. The general trend of studies on environmental scanning has been to suggest theoretical models of scanning (a prescriptive focus) as well as to provide periodic perspectives on the state-of-the art in scanning practices (a descriptive focus). Table 1 contains a summary of the literature on environmental scanning in the general context. However, three empirical studies are discussed in this section because they help establish the theory base for the current study.

Fahey and King (1977) assessed the existing practices in corporate environmental scanning. Using a small sample of twelve U.S. firms, the authors classified the scanning models in use into three types: irregular, regular, and continuous. These three formed a continuum in that the irregular model was reactive in its orientation, the regular model proactive to a limited extent, while the continuous model was broad in scope as well as being proactive. Only two of the twelve firms studied had scanning systems that could be termed "continuous", while six firms (50 percent of the sample) had only rudimentary scanning systems that could, at best, be called "irregular."

Thomas' (1980) survey of the state-of-the art practices revealed results that contradicted the earlier findings of Fahey and King (1977). Examining the strategic planning processes in nine leading global companies (including Ciba-Geigy, Citicorp, General Electric, and IBM), the author found evidence that indicated the use of sophisticated scanning systems, at least in large organizations. The author found that each of the nine organizations employed a large number of specialists (i.e. people trained in environmental monitoring) for the scanning function that was invariably proactive and broad in scope and that formed a vital element of the corporate planning department.

Jain's (1984) study of corporate environmental scanning practices was conducted on a much larger sample than those of Fahey and King (1977) and Thomas (1980). Questionnaire data from 186 *Fortune* 500 firms provided support for Fahey and King's (1977) contention that most U.S. corporations do not use advanced models for environmental scanning. Jain (1984) also classified scanning models on a continuum, but used terminology different from Fahey and King's (1977). Jain's models progressed in phases: phase 1 was the primitive model, phase 2 the ad hoc model, phase 3 the reactive, and phase 4 the proactive model. Jain (1984) considered phases 3 and 4 (the reactive and the proactive models) to be advanced scanning phases. In the primitive model, scanning is done without a specific purpose. The purpose of scanning in the ad hoc model was to enhance understanding of a specific event, while in the case of the reactive model, the purpose was to make an appropriate response to markets and competition. In the proactive model, the objective of the scanning system was to predict the environment for a desired future. Toward this end, the scanning system is constantly on the lookout for a competitive advantage. Only 14 of the 186 companies (about 8 percent) surveyed by Jain (1984) had a proactive scanning system in use. One hundred and twenty eight firms in the sample (nearly 70 percent) used either the primitive or the ad hoc models.

Environmental Scanning in the Health Care Setting

A recent review of the health care strategy literature found only two studies that described environmental scanning practices used by organizations in this industry (Topping and Hernandez, 1991). Wheeler, Porter-O'Grady and Barrell's (1985) prescriptive study discusses how hospitals should approach scanning the technological changes that confront these organizations. Using the case of a single hospital, the authors examine the issue of preparing for technological changes by using a variety of techniques (such as scenario development, brainstorming, Delphi panels, etc) as well as by institutionalizing such techniques in the strategic planning process.

Fottler, Blair, Whitehead, Laus, and Savage (1989) provide a tool kit for hospital executives to use in identifying their institution's key stakeholders as well as to assign responsibility for keeping track of these stakeholders. The tool kit seeks to answer questions such as Who matters? and Why? Using both qualitative (interviews with 14 hospital executives) and quantitative (survey of 16 hospital administrators) data, the authors

Table 1
Review of Selected Environmental Scanning Literature in a Context-Free Setting

Author(s)	Article Intent	Methodology	Findings
Keegan (1974)	Theory building	Personal interviews with 50 executives	Little systematic scanning done. Also, external sources more important than internal sources.
Preble (1978)	Prescription	Discussion	Environmental scanning key to survival in an age survival in an age survival in an age rapidly changing external environment.
Fahey, King and Narayanan (1981)	Theory testing	Mail survey of 36 experts and interviews with executives from 12 U.S. companies.	Sophisticated scanning systems not used by many U.S. companies
Stubbart (1982)	Theory testing	Extension of Fahey and King (1977). Interviews with executives of 12 companies.	Benefits of scanning may have been overstated by academics. Scanning systems difficult to implement.
Culnan (1983)	Theory testing	Mail survey of 362 employees of 2 organizations.	Positive link between accessibility and use of information sources.
Smeltzer, Fann and Nikolaisen (1988)	Theory testing	Semi-structured interviews with 88 small business owners/managers.	Small business owners scan regularly. Magazines and journals were the most popular sources of information.
Daft, Sormunen and Parks (1988)	Theory testing	Interviews with chief executives of 50 manufacturing firms.	High performers scanned more frequently and more broadly than low performers.
Calori (1989)	Theory building	Discussion	Suggests a model of scanning based on industry dynamics.
Subramanian, Fernandes and Harper (1993)	Theory testing	Mail survey of 101 Fortune 500 companies.	Sixty percent of sample firms had advanced scanning systems. Also, relationship exists between advanced scanning system and performance.

Table 2
Summary Information for Scanning Activity Measures

Scanning Activity Item	Responses	Item-Scale Correlation
1. Does your hospital conduct patient exit interviews and other surveys of patient satisfaction?	(a) Seldom or never	
	(b) Occasionally, but not on a formal basis	0.69
	(c) Yes, systematically on a formal basis	
2. Does your hospital collect information regarding trends in demand for various types of treatments, and the availability in the market of competitive services?	(a) Rarely or never	
	(b) Ocassionally	0.62
	(c) Yes, on a systematic, continuous basis	

Cronbach Alpha for the 8-item scale was 0.80

develop and empirically support an approach for systematic stakeholder assessment.

Past research on environmental scanning in hospitals thus, has not only been very limited in number but, also has been exploratory in nature exemplified by small sample sizes. Topping and Hernandez (1991) explain the reason for only a small number of research studies on environmental scanning in hospitals by stating that these works are "examples of emerging research on macro-environment and task environment analysis and the forces that constitute those environments" (p. 61). The present study attempts to increase understanding of how hospitals scan their task environment by means of an empirical analysis of a large sample.

Methods

Sample

The sample for this study was drawn from the *American Hospital Association Guide to the Health Care Field.* Six hundred and forty seven acute care hospitals were randomly selected for this study. The population included a wide variety of hospitals in terms of size, occupancy rates, total annual expenditure, number of annual admissions, and total payroll expenditures - variables that have been recommended for determining hospital differences (Feldstein, 1971).

The pre-tested, self-administered questionnaires were sent to chief administrators of the 647 hospitals. The initial mailing followed by a reminder resulted in 357 responses (55 percent response rate). Of these, 26 responses were not used because of missing data, thus leaving 331 usable responses. Chi-square tests were used to assess the non-response bias. These tests did not reveal any significant difference between responding and non-responding hospitals in terms of size (X^2 = 12.61, p = 0.36), occupancy rate (X^2 = 15.37, p = 0.47), per bed total annual expenditure (X^2 = (11.57, p = 0.28) and per bed payroll expenditure (X^2 = 14.31, p = 0.41).

Data Collection

Data for this study were collected as part of a larger study on the management practices in health care organizations. A six-part questionnaire was designed to collect data. The part relevant to this study was the one dealing with the existence of task environment scanning activity. Data were also collected on performance of hospitals as reflected by the surrogate measures of occupancy rate, per bed annual expenditure and per bed payroll expenditure.

A pilot study was conducted using a subset of the population used for the study itself. The pilot questionnaire was mailed to the chief administrators of five hospitals. The participants were asked to complete the questionnaire and to comment about the length of time necessary to fill out the questionnaire, any survey questions or statements that needed clarification, methods of response improvement, and follow-up techniques. Personal interviews were also conducted with four of the five chief administrators. Modifications were made to the questionnaire based on these suggestions.

Measure of Task Environment Scanning Activities

The items used for measuring task environment scanning activities were derived from past conceptual and empirical studies related to environmental scanning (e.g. Fahey and King, 1977; Preble, 1978; Jain, 1984; Calori, 1989). Table 2 provides summary information and sample of the items used to measure the task environment scanning activities of the hospitals. Also, summary information about the psychometric properties of scanning activity measures is provided in Table 2.

The statements used for measurement also conform to standard measurement criteria: (a) all items were positively and significantly correlated with the overall scale (the correlations for the eight items that dealt with scanning were between 0.42 and 0.69), and (b) all items increased the reliability of the scale.

Measure of Performance

While it may be desirable to measure the productivity and efficiency of hospitals in terms of financial information, such data are difficult to obtain. The competitive situation facing many hospitals, the absence of a clear profit motive among some hospitals, and a lack of knowledge on the part of many administrators about what data to gather and how to use the data makes them reluctant to respond to questionnaire surveys on the subject of organizational productivity and profits (Coddington and Moore, 1987; Subramanian, Kumar and Yauger, 1993). Nevertheless, the *American Hospital Association Guide to the Health Care Field* does contain data on a variety of factors, such as number of beds, total expenditures, number of admissions per year, and census (average number of in-patients) that may be reflective of performance. This study used occupancy rate, per bed annual total expenditure and per bed payroll expenditure as performance measures. Since these measures include hospital size (number of beds), census (average number of in-patients receiving care each day), total expenditure and payroll expenditure they allowed us to take into account factors that have been frequently used to determine hospital differences (Feldstein, 1971). In addition, these measures have been used in the past (e.g. Thomas, Clark and Gioia, 1993) to measure hospital performance.

Analysis and Results

Statistical Procedures

The objectives of the analysis were to (1) identify the natural taxonomy of hospitals based on their task environment scanning activities, and (2) to test if the task environment scanning practices had any significant relationship with the overall performance (using multiple measures) of these hospitals. Thus, there were two major stages to the analysis. In the first stage, Cluster Analysis technique was used to develop an empirical taxonomy in a way such that hospitals within a group exhibit a similar pattern of activities to scan the task environment, but among groups the scanning activities are distinct.

In the second stage, Analysis of Variance (ANOVA) was used to test if there was any significant difference in the performance of the hospitals classified into the different clusters. Performance data were obtained and analyzed for five successive years. This was done to ensure that the findings were consistent over a period of time and did not reflect a temporary aberration. As such, five separate ANOVAs were performed, one for each of the five years. The results of these analyses are presented in the next section.

Cluster Analysis for Establishing Taxonomy

The cluster analysis of the eight element task environment scanning activity vectors uncovered a four-group taxonomy of scanning activity mixes. To provide an overview of the scanning activity mix similarities and dissimilarities, the means and standard deviations of each scanning activity mix are provided in Table 3.

An examination of Table 3 reveals that among the scanning activity mixes there are not only differences in the levels and extent of activities shown, but also distinct patterns in the relative use of alternative activities. To facilitate discussion, the mixes have been labeled from I to IV in an order that in general reflects increasing

Table 3
Scanning Activity Means and Standard Deviation by Scanning Activity Mix

Scanning Activity	Scanning Activity Mix I	II	III	IV	Total
Obtaining Market Information	1.88	2.10	2.71	2.72	2.34
	(.65)	(.64)	(.47)	(.49)	(.69)
Evaluating New Services	1.45	1.75	1.88	2.71	2.04
	(.58)	(.55)	(.49)	(.50)	(.76)
Monitoring Customer Choice	1.45	1.75	2.82	2.90	2.77
	(.61)	(.22)	(.39)	(.31)	(.47)
Scanning Trends of Competitors	1.80	2.10	2.12	2.74	2.25
	(.53)	(.55)	(.33)	(.44)	(.63)
Information System for Changes	1.15	2.05	2.35	2.29	1.87
	(.37)	(.51)	(.49)	(.62)	(.73)
Monitoring Changes in Service Demand 1.76	1.85	2.29	2.59	2.16	
	(.43)	(.37)	(.47)	(.59)	(.62)
Strategic Planning for Markets	1.59	2.70	1.47	2.85	2.23
	(.73)	(.57)	(.51)	(.36)	(.84)
Planned Contingency Moves	1.70	2.25	1.77	2.93	2.02
	(.54)	(.44)	(.44)	(.56)	(.59)
Group Size	112	49	41	130	331
% of Sample	33.7	14.7	12.3	39.3	100

Note--Standard deviations are in parentheses.

overall task environment scanning activities. The scanning activity mixes have been labeled as the (1) Neophytes, (2) Inadequates, (3) Incompletes, and (4) Sophisticates. These mixes are discussed below.

Scanning activity Mix I characterizes a third of the hospitals in the sample and reveals a profile that is quite distinctive. The most notable features of this Mix are the absence of a comprehensive information system (mean of 1.15 on a scale where 1 = low and 3 = high) to collect and store scanning data, as well as the lack of ability to use such data in the strategic planning process (mean of 1.59). However, hospitals in this Mix also indicate a relatively higher mean (1.88) in their ability to obtain market information. Because of their modest ability to collect information about the task environment and a lack of a comprehensive information system to use scanning information in the strategic planning process, these hospitals will be referred to as the "Neophytes."

Forty nine hospitals (14.7% of the sample) were characterized by scanning activity Mix II. While these hospitals make good use of scanning information in their strategic planning process (mean of 2.70), their scanning function is only modestly capable of evaluating the efficacy of new services offered (mean of 1.75), as well as in monitoring customer satisfaction (mean of 1.75). In other words, these hospitals make good use of limited scanning information that they obtain. Thus, this group of hospitals will be designated the "Inadequates."

Scanning activity Mix III represents the smallest group of hospitals with an n of 41, or 12.3% of the sample. This mix scores very highly on its ability to obtain market information (mean of 2.71) and in monitoring customer satisfaction (mean of 2.82). However, since hospitals in this mix had the lowest score (mean = 1.47) of all mixes on their ability to use scanning information in their strategic planning process this group will be

Table 4
Features of Scanning Types

Scanning Activity Characteritic	Neophytes	Inadequates	Ability of Incompletes	Sophisticates
Obtaining mkt. information	Average	Average	Very High	Very High
Evaluating new services	Low/Average	Average	Average	Very High
Monitoring customer satisfaction	Low/Average	Average	Very High	Very High
Competitive trends	Average	Average	Average	Very High
Using info. system to collect & store data	Low	Average	High	High
Monitoring changes in service demand	Average	Average	High	Very High
Using scanning data for contingency moves	Average	Average	Average	Very High
Using scanning data in strategic plans	Average	Very High	Average	Very High

		Collection of Information	
		High	Low
Use of Information	High	Sophisticates	Inadequates
	Low	Incompletes	Neophytes

referred to as the "Incompletes."

The largest group in the sample (39.3%) was the scanning activity Mix IV. The means for all eight task environment scanning items for this group were greater than the overall sample means. Moreover, these hospitals not only scored very high on their ability to obtain scanning information, they were also quite capable of using scanning information in the strategic planning process (mean of 2.85). This group will be designated the "Sophisticates."

While these summary labels may appear to oversimplify the complex nature of the environmental scanning process and its role in strategic planning, they generally conform to past findings in this area. Thus, they are consistent with and also extend Fahey and King's (1977) typology of scanners as irregular, regular, and continuous, and Jain's (1984) primitive, ad hoc, reactive, and proactive types. The current study adds the scan-

Table 5
Analysis of Variance: Differences in Occupancy Rates Over Five Years Among Clusters Based on Scanning Activities

Year[a]	Group	Mean[b]	Standard Deviation	F Ratio	Difference[c]	Group
First	I	55.65	15.34			
	II	55.13	16.98			1 & 4*
	III	55.70	15.87	5.82***		2 & 4*
	IV	62.46	12.86			
Second	I	57.26	14.02			1 & 4*
	II	56.98	14.19			2 & 4*
	III	57.74	16.25	6.93***		3 & 4*
	IV	64.32	10.87			
Third	I	61.71	12.89			1 & 4*
	II	62.18	12.55			2 & 4*
	III	61.57	13.64	6.68***		3 & 4*
	IV	68.25	11.12			
Fourth	I	67.48	11.68			
	II	69.05	11.24			1 & 4*
	III	66.89	11.14	4.31**		3 & 4*
	IV	72.29	11.14			
Fifth	I	68.19	12.58			
	II	70.25	11.65			1 & 3*
	III	67.98	10.84	5.82***		3 & 4*
	IV	74.64	10.96			

[a] Occupancy data included in the analysis is from five years ago (first) to current year (fifth).
[b] The mean occupancy rate is in percent.
[c] Difference among these groups are significant based on Tukey's test.
degrees of freedom (3,328) * significant at <.05
** significant at <.01 *** significant at <.001

ning-strategic planning interface to the existing typologies that deal purely with the scanning function. Table 4 presents features of these four types.

The Relationship Between Scanning Activity Mixes and Performance

As mentioned earlier, performance data were obtained and analyzed for five successive years. The objective was to ensure that the differences found were consistent over a period of time and that they did not merely reflect the effects of some temporary extraneous influence. Table 5 reports the ANOVA results for performance as measured by occupancy rate, while Tables 6 and 7 report ANOVA results for performance as measured by per bed annual total expenditure and per bed payroll expenditure respectively.

The results show that for each of the five years included in the analysis, occupancy rates, per bed annual expenditure and per bed payroll expenditure showed statistically significant differences across these scanning mixes. Tukey's test[3] for time period 1 (1984) shows that the performance measures were significantly higher for the "Sophisticates" as compared to the "Neophytes," (e.g. 62.46 vs. 55.65, F = 5.82 for occupancy rates) as also for the "Sophisticates" in comparison with the "Inadequates" (e.g. 94.66 vs. 109.63, F = 7.68 for per bed annual total expenditure). Time periods 2 (1985) and 3 (1986) showed that the occupancy rates for the "Sophisticates" (64.32 and 68.25, F = 6.93) were significantly higher than those of the other three types. Time period 4 (1987) showed significant differences between the "Sophisticates" (72.29, F = 4.31 for occupancy rates) and two other types, the "Neophytes" (67.48), and the "Incompletes" (66.89). Finally, for time period 5 (1988) significant differences were found in the occupancy rates of the "Sophisticates" (74.64, F = 5.82) in comparison to both "Neophytes" (68.19) as well as "Incompletes" (67.98). Tukey's tests, however, revealed minor within-group differences across the three performance measures. For example, while there were significant differences using occupancy rates in 1987 between "neophytes" and "sophisticates" and also between "incompletes" and "sophisticates," the performance measure per bed payroll expenditure for the same

Table 6
Analysis of Variance: Difference In Per Bed Annual Total Expenditure Over Five Years Among Clusters Based on Scanning Activities

Year[a]	Group	Mean[b]	Standard Deviation	F Ratio	Group Difference[c]
First	II	125.43	44.55		
	II	109.63	49.37	7.68***	1 & 4*
	III	103.38	43.45		2 & 4*
	IV	94.66	41.54		
Second	I	115.53	38.83		
	II	99.53	42.94	6.95***	1 & 4*
	III	97.63	40.18		2 & 4*
	IV	88.42	37.81		
Third	I	109.48	34.77		
	II	94.35	39.11	7.53***	1 & 4*
	III	93.48	36.01		2 & 4*
	IV	83.88	32.58		
Fourth	I	101.79	31.83		
	II	92.26	33.09	7.42***	1 & 4*
	III	88.89	32.56		2 & 4*
	IV	77.42	29.87		
Fifth	I	89.46	29.46		
	II	81.90	31.53	4.54**	1 & 4*
	III	79.84	32.28		
	IV	71.58	29.46		

[a] Annual total expenditure data included in the analysis is from five years ago (first) to current year (fifth).
[b] The mean per bed expenditure is in thousand of dollars.
[c] Difference among these groups are significant based on Tukey's test.
degrees of freedom (3,328)
* significant at <.05 **significant at <.01 *** significant at <.001

period yielded difference between "neophytes" and "sophisticates" and between "inadequates" and "sophisticates."

Discussion

The purposes of the study were to examine how hospitals scanned the task environment and to find out if a relationship existed between scanning activity and performance. Thus a cluster analysis of 331 hospitals yielded four distinct groups of hospitals. A comparison of longitudinal performance data indicated significant differences across these four groups.

The results indicate that less than 40 percent (130 out of 331) of the target hospitals had what could been termed advanced scanning systems (the "Sophisticates"). Such a system not only requires regular scanning activity involving information about competitors and customers, it also requires use of the information in the strategic planning process. This presumably gives the hospital an edge over its competitors in terms of forming actions to take advantage of current trends.

Table 7
Analysis of Variance: Difference In Per Bed Annual Total Expenditure Over Five Years Among Clusters Based on Scanning Activities

Year[a]	Group	Mean[b]	Standard Deviation	F Ratio	Group Difference[c]
First	I	53.47	20.98		
	II	48.16	25.05	5.30**	1 & 4*
	III	44.53	18.75		2 & 4*
	IV	42.17	18.22		
Second	I	50.95	18.23		
	II	45.42	22.07	6.56***	1 & 4*
	III	42.01	16.61		2 & 4*
	IV	39.65	16.33		
Third	I	49.21	16.05		
	II	44.95	19.87	6.27***	1 & 4*
	III	41.56	14.60		2 & 4*
	IV	39.04	14.44		
Fourth	I	46.23	15.79		
	II	43.09	18.11	5.60**	1 & 4*
	III	40.16	12.82		2 & 4*
	IV	36.55	15.37		
Fifth	I	41.43	15.36		
	II	38.04	17.05	3.89**	1 & 4*
	III	36.25	12.77		
	IV	33.94	14.53		

[a] Annual total expenditure data included in the analysis is from five years ago (first) to current year (fifth).
[b] The mean per bed expenditure is in thousand of dollars.
[c] Difference among these groups are significant based on Tukey's test.
degrees of freedom (3,328)
* significant at <.05; **significant at <.01; *** significant at <.001

About a quarter of the sample (90 out of 331) hospitals either had moderately good scanning systems but did not have the capacity to make use of scanning information in the planning process, or made good use of limited scanning information (the "Incompletes" and the "Inadequates"). Though the current study did not attempt to find reasons for these, it is likely that these organizations are evolving toward the next stage in the scanning continuum. Their relative lack of sophistication in collecting and using scanning information is reflected in the performance of these two groups which were lower than those for the "Sophisticates" in all the years analyzed. More than a third of the hospitals considered in the study (112 out of 331) had what could be called a very elementary or primitive scanning system (the "Neophytes"). In interviews with executives, Stubbart (1982) found that the major reason for a number of organizations not implementing advanced scanning systems was a lack of understanding of how to do so. While Stubbart's (1982) subjects were employed in the general business sector, it is possible that many hospital executives also do not know how to implement scanning systems in their organizations. The current study offers support for a relationship between an

organization's scanning system and its performance. Perhaps the existence of such a relationship would help underscore the importance of scanning and encourage more hospitals to implement advanced systems.

Fottler (1987) indicated that performance measures for hospitals should use efficiency indicators (e.g. occupancy) as well as effectiveness indicators (such as financial viability). The current study measured performance solely through efficiency measures. This, admittedly, has some serious limitations. However, a number of the hospitals included in this study belonged to the not-for-profit sector. As such, more concrete financial measures of performance were not available for these hospitals. In addition, we believe that since we have looked at multiple measures of efficiency over an extended period of time, it will overcome some of the limitations associated with the use of a single type of measure (i.e. efficiency) for assessing performance.

Recently, researchers (Jennings and Lumpkin, 1992; Subramanian, Fernandes and Harper, 1993) found support for a relationship between an organization's strategic orientation and the thrust of its scanning activity. This finding, done in the general business context, should be extended to the health care industry. Also, future research should look at how hospitals scan the general environment, since the current study looked solely at the task environment scanning activity. Extending the research done on scanning in the general context to the health care industry will help in understanding this important activity in the strategic planning process. ❧

Notes

1. Gregory Dess and Alex Miller provide a formal definition of environmental scanning in their book *Strategic Management* (McGraw-Hill, 1993): "it is the process of monitoring and evaluating information from the external environment and disseminating it to key people within the organization" (p. 38).
2. Under prospective payment, hospitals receive a set amount to treat a patient with a given diagnosis regardless of the actual costs. This is a departure from the prior practice of cost-plus payment (Ginn, 1990).
3. While ANOVA measures differences among groups, Tukey's test takes two groups at a time (e.g., 1&2, 1&3, 1&4, 2&3, ...) and measures whether the difference is significant.

References

1. Aguilar, F.J. 1967. *Scanning the business environment.* New York: MacMillan.
2. Alexander, J.A. and Amburgey, T.L. 1987. The dynamics of change in the American hospital industry: Transformation or selection? *Medical Care Review,* 44(2): 279-321.
3. Blair, J.D. and Boal, K.B. 1991. Strategy formation processes in health care organizations: A context-specific examination of context-free strategy issues. *Journal of Management,* 17(2): 305-344.
4. Calori, R. 1989. Designing a business scanning system. *Long Range Planning,* 22(1): 69-82.
5. Coddington, D.C. and Moore, K.D. 1987. *Market-driven strategies in health care.* San Francisco, California: Jossey-Bass Publishers.
6. Culnan, M.J. 1983. Environmental scanning: The effects of task complexity and source accessibility on information gathering behavior. *Decision Sciences,* 14: 194-206.
7. Daft, R.L., Sormunen, J., and Parks, D. 1988. Chief executive scanning, environmental characteristics, and company performance: An empirical study. *Strategic Management Journal,* 9: 123-139.
8. Daft, R.L. and Weick, K.E. 1984. Toward a model of organizations as interpretive systems. *Academy of Management Review,* 9: 284-295.
9. Desai, H.B and Margenthaler, C.R. 1987. A framework for developing hospital strategies. *Hospital & Health Services Administration,* May: 235-248.
10. Fahey, L. and King, W.R. 1977. Environmental scanning for corporate planning. *Business Horizons,* August: 61-71.
11. Fahey,L., King, W.R., and Narayanan, V.K. 1981. Environmental scanning and forecasting in strategic planning - the state of the art. *Long Range Planning,* 14: 32-39.
12. Feldstein, M. 1971. *The rising cost of health care.* Washington D.C: The Information Resource Press.
13. Fottler, M.D. 1987. Health care organizational performance: Present and future research. *Journal of Management,* 13(2): 367-391.
14. Fottler, M.D., Blair, J.D., Whitehead, C.J., Laus, M.D., and Savage, G.T. 1989. Assessing key stakeholders: Who matters to hospitals and why? *Hospital & Health Services Administration,* 34(4): 525-546.
15. Ginn, G.O. 1990. Strategic change in hospitals: An examination of the response of the acute care hospital to the turbulent environment of the 1980s. *Health Services Research,* 25(4): 565-591.
16. Jain, S.C. 1984. Environmental planning in U.S. corporations. *Long Range Planning,* 17(2): 117-128.
17. Jennings, D.F. and Lumpkin, J.R. 1992. Insights between environmental scanning activities and Porter's generic strategies: An empirical analysis. *Journal of Management,* 18(4): 791-803.
18. Keegan, W.J. 1974. Multinational scanning: A study of the information sources utilized by headquarters' executives in multinational companies. *Administrative Science Quarterly,* 19: 411-421.
19. Liedtka, J.M. 1992. Formulating hospital strategy: Moving beyond a market mentality. *Health Care Management Review,* 17(1): 21-26.

20. Milliken, F.J. 1990. Perceiving and interpreting environmental change: An examination of college administrators' interpretation of changing demographics. *Academy of Management Journal,* 33: 42-63.
21. Pearce, J.A. and Robinson, R.B. 1991. *Strategic Management.* Illinois: Irwin.
22. Preble, J.F. 1978. Corporate use of environmental scanning. *Michigan Business Review,* 30(5): 12-17.
23. Shortell, S.M., Morrison, E.M., and Robbins, S. 1985. Strategy making in health care organizations: A framework and agenda for research. *Medical Care Review,* 42(2): 219-266.
24. Smeltzer, L.R., Fann, G.L., and Nikolaisen, V.N. 1988. Environmental scanning practices in small business. *Journal of Small Business Management,* July: 55-62.
25. Stubbart, C. 1982. Are environmental scanning units effective? *Long Range Planning,* 15: 139-145.
26. Subramanian, R., Fernandes, N., and Harper, E. 1993. An empirical investigation of environmental scanning practices in U.S. corporations. *Management International Review,* 33(3): 271-286.
27. Subramanian, R., Fernandes, N., and Harper, E. 1993. An empirical examination of the relationship between strategy and scanning. *Mid-Atlantic Journal of Business,* 29(3), 29(3): 315-330, December.
28. Subramanian, R., Kumar, K., and Yauger, C.C. 1993. Mission statements of hospitals: An empirical analysis of their contents and their relationship to organizational factors. *Journal of Business Strategies,* 19(1), Spring: 63-78.
29. Thomas, J.B., Clark, S.M., and Gioia, D.A. 1993. Strategic sensemaking and organizational performance: Linkages among scanning, interpretation, action, and outcomes. *Academy of Management Journal,* 36 (2):239-270.
30. Thomas, P.S. 1980. Environmental scanning - the state of the art. *Long Range Planning,* 13: 20-28.
31. Thompson, A. and Strickland, A.J. 1992. *Strategic Management.* Illinois: Irwin.
32. Topping, S. and Hernandez, S.R. 1991. Health Care Strategy Research, 1985-1990: A critical review, *Medical Care Review,* 48(1): 47-90.
33. Wheeler, K.E., Porter-O'Grady, T., and Barrell, C.T. 1985. Technology: A strategic factor in hospital planning. *Health Care Management Review,* 10(2): 55-63.
34. Zahra, S.A. 1987. Corporate strategic types, environmental perceptions, managerial philosophies, and goals: An empirical analysis. *Akron Business and Economic Review,* 18(2): 64-77.