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**Environmental Change and Management Staffing: An Empirical
Examination of the Electric Utilities Industry**

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Environmental Change and Management Staffing: An Empirical Analysis of the Electric Utilities Industry

Abstract

This paper examines the relationship between environmental change, changes in competitive dynamics, and top management staffing in the electric utilities industry during the period surrounding the passage of the Energy Policy Act of 1992 (EPAct 92). The findings suggest that following the passage of the EPAct 92, competition in the electric utilities industry intensified placing greater emphasis on achieving internal, firm-level efficiencies. This external environmental change and the corresponding shift in the competitive context resulted in an adjustment in the composition of the top management coalition in these firms. The dominant coalition following the EPAct 92 consisted of older managers with longer company and industry tenure who had efficiency-oriented backgrounds in operations, engineering, and accounting/finance.



Environmental Change and Management Staffing: An Empirical Analysis of the Electric Utilities Industry

Introduction

The adaptation research within the organizational theory literature (e.g. Pfeffer and Salancik, 1978; Katz and Kahn, 1978) posits that changes in the external environment tend to encourage the selection of top-level managers whose backgrounds and skills are more appropriate for the new environment. Using deregulation as a proxy for environmental change, prior studies have empirically examined this relationship in the railroad (Guthrie, Grimm, and Smith, 1991) and airline (Thomas and Ramaswamy, 1993) industries.

The two studies yielded somewhat inconsistent findings. Guthrie et al. (1991) found evidence to support their contention that following deregulation, railroad companies adopted new strategies that emphasized innovation, risk-taking, and an external, market-focused perspective. Top railroad executives tended to have fewer years of industry and company tenure (i.e. more outsiders were employed at the top level), more years of formal education, be younger, and come with backgrounds in functional areas of marketing rather than engineering, operations, or accounting/finance. In contrast, Thomas and Ramaswamy (1993) concluded that following deregulation, airline companies emphasized efficiency and cost control. In turn, top airline executives were older, had longer tenures both in the company and in the industry (i.e. more insiders were employed at the top level), and came from functional backgrounds in engineering, operations, and accounting/finance, rather than marketing.

Thus, the same environmental change (i.e. deregulation) produced very different adaptive reactions in two different industries. To explain the inconsistency, Thomas and Ramaswamy



(1993) argued that the nature of competitive change that results from the change in the external environment must first be identified prior to examining the adaptive response by companies in an industry. These authors used a finer grained analysis to test their hypotheses, by adding an extra methodological step to their study. They suggested that it is necessary to examine the type of competitive change brought about by a change in the external environment, and its relationship to changes in management staffing, to increase the generalizability of the findings of a study of any specific industry.

This paper makes a contribution to the strategic management/organizational theory literature by examining the environmental change-management staffing relationship in yet another industry setting -- the electric utilities industry. Using the finer-grained methodology pioneered by Thomas and Ramaswamy (1993), this study examines the effect of environmental change and the change in competitive dynamics it stimulates on management staffing of firms in the electric utilities industry during the period surrounding the passage of the Energy Policy Act of 1992 (EPAct 92).

The paper also makes a contribution to managerial practice by analyzing one of the effects of a significant environmental change -- industry-level deregulation -- on the strategic responses of firms. Given the significant impact of any type of regulatory change, firms must be aware that regulation, or the absence of it, can change the intensity and configuration of rivalry in an industry (Porter, 1985). These changes in industry conditions can shift the balance of power among firms in an industry, depending on how firms respond strategically to the new



industry conditions. By examining one set of firm level responses -- top management changes -- this study may shed light on how firms may achieve and sustain competitive advantage under new competitive conditions.

The next section of the paper discusses the framework that allows us to identify changes in competitive dynamics as a result of environmental change. We then examine the nature of the competitive change in the industry that was associated with the passage of the EPAct 92. Next, we develop arguments and hypotheses that predict how top management teams will be affected by the changed competitive environment. Finally, we test the hypotheses using a sample of U.S. electric utility firms.

Top Management Succession and Turnover

Organizational theorists (e.g. Aldrich and Pfeffer, 1976; Katz and Kahn, 1978) suggest that top executive succession is a means of adapting the organization to environmental alterations. Pfeffer and Salancik (1978) argue that environmental changes influence the distribution of power and control in organizations. Through this influence, the environment affects the selection and removal of top executives.

Studies of executive or top management succession have generated great interest in recent years. Perhaps the topic has become so important because organizations are often identified by their top managers and the decisions they make (Hambrick and Mason, 1984). After all, top managers are considered to be responsible for an organization's strategy, design, and performance (Dalton and Kesner, 1985). As a result, internal and external stakeholders of



organizations often interpret top management changes as an indication of the future strategic direction of the firm (Beatty and Zajac, 1987).

Accordingly, one stream of top management succession research suggests that the most effective changes in top management involve a match between the characteristics of the successor and the strategic needs of the organization (Gupta, 1984; Hambrick and Mason, 1984). These studies by strategic management scholars examined succession as one aspect by which organizations aligned themselves with a competitive environment (Kesner and Sebor, 1994).

But competitive environments are not static. Competitive environments often adjust themselves to conditions that emerge as a result of external environmental change. Thus, environmental changes can influence changes in top management teams by pressuring the organization to select new managers that will better be able to strategically align the organization with its new competitive environment (Pfeffer and Salancik, 1978). For example, Guthrie et al. (1991) argued that the deregulated railroad industry was “unstable and complex,” which prompted railroad companies to adopt an innovative, market-focused approach in response. Relative to the regulated industry environment, Guthrie et al. (1991) found that railroad managers in the deregulated era had fewer years of company and industry tenure, were better educated, younger, and came from different functional backgrounds, compared with managers in the regulated era.

Similarly, Thomas and Ramaswamy (1993) studied deregulation as a surrogate for environmental change in their study of the airline industry. But their methodology included one important new step. They first determined the type of competitive orientation (a focus on



efficiency versus a focus on market orientation) that was dominant among successful airline companies following deregulation, and then examined the environment change -- top management staffing relationship. The authors reasoned that one could not assume that all deregulated environments in all industries are, as Guthrie et al. (1991) put it, “unstable and complex.” Rather, only by establishing "the changes in critical contingencies" (Thomas and Ramaswamy, 1993: 877) following the environmental change, one can predict specific, directional changes in top management characteristics. Other research supports these authors' view. For example, Reger, Duhaime and Stimpert (1992) found that the impact of environmental turbulence varies by industry context. Adaptation appears to be contingent on industry-specific factors such as the threat and number of new entrants, market growth rate and capacity utilization (Thomas and Ramaswamy, 1993). Therefore, any hypotheses that predict how firms will adapt to environmental change must be linked to the specific nature of the competitive changes driven by the external jolt.

Likewise, the generalizability of the findings of a study of the environmental change -- management staffing relationship in one industry context will be increased by examining the type of competitive change brought about by the external environment. This is the approach used in the current study. The two-step process used in the current study is portrayed in Figure 1.

Insert Figure 1 About Here

Regulation as Environmental Change

Mahon and Murray (1981) have argued that the transition from a regulated to a deregulated environment involves dramatic environmental changes for firms within an industry.



Regulation is the establishment of standards through formal legislation designed to control various aspects of industry activity including prices, entry, and exit (Cohen, 1987). Regulation in the U.S. electric utility industry allowed power companies to operate as natural monopolies with entry and prices determined by regulatory commissions. Incumbent utility companies did not have to overly concern themselves with obtaining and sustaining a competitive advantage. But the EPAct 92 began the process of deregulation of the electric utility industry. Deregulation, then, can be seen as a significant environmental change, that in the case of the electric utility industry, significantly changed the rules of competition for power companies.

The EPAct 92

In recent times, market forces have gradually pushed the electric utility industry toward competition. This process was greatly accelerated, however, by the passage of the EPAct 92. According to Grant (1995:15),

this legislation promotes competition in the electric generation market and mandates wholesale transmission access. Under the Act, the Federal Energy Regulation Commission is empowered to direct an electric utility to provide wholesale wheeling.

Wholesale wheeling refers to the transmission of electric power from any electric generating entity to another utility. The passage of the EPAct 92 created a new class of independent power producers that could either generate power of their own, or, alternatively, buy power from an electric utility and sell it to end users.

The EPAct 92 also loosened the legal restrictions on ownership of generating facilities, and allowed a new breed of generators (e.g. equipment vendors, fuel suppliers, municipalities, universities, etc.) to compete with established utilities. Analysts predict that non-utility



generation may capture up to 50 percent of the market for new electricity capacity (Rosemann and Poirier, 1993). The entrance of new providers of electric power has significantly altered the competitive landscape of the industry. Electric utilities now have to contend with competitors in their hitherto protected marketplace, with the competition coming from buyers of their electric power that, through wholesale wheeling, have not invested in capital intensive power generation facilities.

Thus, the enactment and passage of the EPAct 92 changed the rules of engagement in the electric utilities industry, similar to the way deregulation changed competition in the railroad and airline industries.

The Dominant Dimensions of Competition

Important research in business-level strategic management has established that organizations adopt internally consistent strategic postures ranging from an efficiency orientation to a market orientation (Miles and Snow, 1978; Porter, 1980). Firms generally use one of these two strategies to position themselves in a competitively advantageous manner (Porter, 1980). Efficiency oriented strategies are characterized by extensive cost controls, a large volume of sales, and the ability to charge lower prices than the competition and still make a profit (Huo and McKinley, 1992). Market-oriented strategies are associated with the ability of firms to create unique, value-enhancing product or service attributes other than low price (Porter, 1985).

Another stream of research has suggested that the skills and expertise of top managers reflect the dominant strategic orientations of their organizations. Top managers of efficiency oriented firms are frequently older, have extensive industry and company-specific experience,



and have backgrounds in efficiency-oriented functions such as finance and accounting. Managers of market oriented firms are generally younger, have less industry and company tenure, and bring with them backgrounds in external functions such as advertising, sales, research, and product development (Govindarajan, 1989; Thomas and Ramaswamy, 1993).

These two literatures can be combined to create a framework for studying the changes in the competitive dynamics of an industry as a result of environmental change, and how later changes in top management teams are related to such dynamics. This approach is consistent with the Thomas and Ramaswamy (1993) study. The current study of the electric utilities industry under conditions of regulation and deregulation allow us to characterize the competitive dynamics of the industry under both situations. Then, by examining changes in the top managerial ranks from the first period to the second, we can determine whether or not these changes coincided with the new competitive requirements that resulted as the industry moved into an era of deregulation.

The EPAct 92 and the Changing Dimensions of Competition

In accordance with the model outlined in Figure 1 and with the work of Thomas and Ramaswamy (1993), we first examined the competitive factors that were related to the performance of the companies we studied both before and after the passage of the EPAct 92. Based on these findings, we then developed hypotheses that would relate management characteristics to changes in the external environment. Consistent with the Thomas and Ramaswamy (1993) study, we used two contrasting competitive foci -- an efficiency orientation and a market orientation -- to categorize the competitive factors at play in the electric utilities



industry. The two orientations indicated above are consistent with the dominant typologies in the business-level strategy literature, in that an efficiency orientation is akin to Porter's (1980) "cost leaders" and Miles and Snow's (1978) "defenders", while a market orientation corresponds to Porter's (1980) "differentiators" and Miles and Snow's (1978) "prospectors"¹. We first identified factors specific to the electric utilities industry that indicate an efficiency focus, and then identified those that indicate a market orientation focus. Power production and power distribution expenses were selected as efficiency indicators, and customer service and sales expenses were the market orientation indicators (Huo and McKinley, 1992). **Consistent with the Thomas and Ramaswamy (1993) methodology**, all indicators were measured as a percentage of total revenues in order to control for the potentially confounding effect of firm size. Return on investment (ROI) was the measure of performance used. Firm level data were obtained from *Financial Statistics of Major U.S. Investor-Owned Electric Utilities* published by the U.S. Department of Energy.

An efficiency orientation was identified by measuring total power production expenses and total distribution expenses. Total power production expense (PWRPRO) was the sum total of operating and maintenance expenses for the utility. Total distribution expense (DISEXP) included all expenses relating to the transmission of power and maintenance of transmission facilities. In a capital intensive industry such as electric utilities, it is important to control

¹ According to the Miles and Snow (1978) classification, defenders emphasize a narrow domain by controlling secure (and often premium) niches in their industries. They engage in little or no product or market development and stress efficiency of operations. Prospectors, on the other hand, constantly seek new opportunities and stress product development. The other two categories in the Miles and Snow classification are analyzers who exhibit characteristics of both defenders and prospectors and reactors who do not follow a conscious strategy and are viewed as a dysfunctional organizational type.

≡

expenses relating to both the production of power and its transmission. Utilities focused on reducing these expenses by investing in new equipment and maintaining strict control over the deployment of resources to these activities.

As surrogates of a market orientation, total customer service expense (CUSSER) and total sales expense (SALEXP) were used. Customer service expense included expenses for providing assistance to customers and those related to producing and disseminating information and instructions to customers. A utility's sales expenses included salaries of sales supervisors and other sales personnel and advertising expenses.

Data on the above measures were collected for two periods. Since the EP Act was passed in 1992, the period 1990-1991, the two years immediately preceding the enactment and passage of the Act, was selected as the base period, while period II was 1993-1994, the two years immediately following the Act. We expected significant differences in competitive conditions because of the Act and consequent management changes when comparing 1990-1991 and 1993-1994. A multiple year period was used to smooth unique situations that an utility may encounter in a particular year. **While a two-year time may not be adequate to fully capture the reaction to an external change in the form of executive succession, two reasons were used to justify the selection of this time period. First, in the opinion of the researchers, the nature of the change brought about by the EPAct 92 was significant enough for electric utilities to warrant a quick reaction. Second, a similar time period was used by Thomas and Ramaswamy (1993) in their study of the airline industry.** Investor-owned utilities were selected as the population for this study because they represent the largest percentage of



electricity generated by all utilities and because of the availability of financial and top management demographic data. From the total of 148 investor-owned utilities for which data was available for both periods, a random sample (restricted because of researchers' resource constraints) of 50 utilities were selected. In order to ensure that the sample of 50 companies was representative of the population, we did a chi-square analysis to test the difference in annual revenue between the sample firms and those in the population. The analysis indicated that the difference between the two groups was not significant ($X^2 = 0.37$; $p > 0.18$). Table 1 shows the profile of the target group in terms of average annual total revenue, average annual operating income, the standard deviation and the range.

Insert Table 1 About Here

Data for periods I and II were independently pooled prior to the multiple linear regression analysis. Subsequently, independent regression models were developed for each period. Such a procedure was used by Thomas and Ramaswamy (1993) who provide the rationale for the methodology. Table 2 reports the results of this analysis.

Insert Table 2 About Here

The results of the regression analysis indicated that in period I (immediately preceding the passage of the EPAct 92), superior performance (as measured by return on investment) was associated with lower levels of power production and power distribution expenses. Enhanced efficiency and control of production and distribution costs were the key drivers of competition. Market orientation indicators had a non-significant relationship to performance in this period. The dimension of competition did not change following the EPAct 92 (i.e. in period II), in that



efficiency once again drove competition and market factors were not significantly related to performance. However, the increase in the proportion of variance in ROI explained (i.e. the adjusted r^2) which went from 39% before the EPAct 92 to 47% following the EPAct 92 underscores the greater emphasis on efficiency as a key dimension of competition following the environmental change. In summary, following the enactment and passage of the EPAct 92, the competitive environment for electric utilities necessitated a greater focus on efficiency than prior to the regulation.

Environmental Change and Management Staffing

Based on the results obtained in the first stage of the study, we developed hypotheses that relate the change in external environment to changes in the dominant coalition of electric utility companies. We note that Guthrie et al. (1991) examined the demographic characteristics of unspecified "principal officers." Consistent with the approach used by Thomas and Ramaswamy (1993), the current study examined executives who were in the position of senior vice president or above. This dominant coalition can be expected to have the greatest impact on organizational decisions. We predicted that three characteristics of members of top management teams would be associated with the intensified emphasis on efficiency that is being required by electric utility firms following deregulation, notably following the passage of the EPAct 92: the years of company and industry tenure of managers, their age, and their functional background training.

Company and Industry Tenure

Studies (e.g. Hambrick and Mason, 1984, Guthrie et al. 1991) point out that managers recruited from outside of the organization and outside of the industry tend to bring with them



fresh perspectives for handling new competitive conditions. On the other hand, managers with long company and industry tenure may have developed competencies relevant to their particular industry conditions. Company insiders such as these are more likely to share the long-held traditional values of the firm, and they are more familiar with its organizational processes (Helmich and Brown, 1972). Insiders have been associated with fewer organizational changes than outsiders (Helmich, 1975; Wiersema, 1992). Pfeffer and Leblebici (1973) found that as industries became more competitive, executives tended to come from inside their firms to a greater degree than in industries that were less competitive. **The passage of the EAct 92 did not result in a change in the direction of the competitive environment in the electric utility industry. Rather, it increased the importance of efficiency as the primary driver of competition. Accordingly, we pose the following hypothesis:**

H1: *Following the EAct 92 in the electric utilities industry, managers will on average have greater years of company and industry tenure than those managers employed prior to the EAct 92.*

Age

Researchers (e.g. Hambrick and Mason, 1984) have argued that a manager's age indicates that person's flexibility and propensity to take risks. Younger managers are thought to be more flexible and risk seeking than their older colleagues, and younger top managers are more likely to pursue innovative growth strategies than their older counterparts (Child, 1974; Grimm and Smith, 1987). On the other hand, older managers will tend to be more conservative, less risk-prone, and committed to managing the organization as it has been managed in the past



(Stevens, Beyer, and Trice, 1978). Rosen and Jerdee (1976) found that older employees were more resistant to change in a study that examined the effects of age on selection evaluations. In the electric utility industry following the passage of the EPAct 92, firms continued competing by intensifying their efficiency measures. Although this intensification of activities was significant, it did not represent a change in the mode of competition among utility companies. It has been noted that the propensity to adopt organizational innovations is negatively associated with a strict efficiency focus such as that which was observed after the passage of the EPAct 92 because innovation adoption requires a decision to invest scarce resources (Kwon and Zmud, 1987). It can be argued, then, that changes in the top management of electric utility companies after the EPAct 92 would favor older managers over younger managers, because older managers would be more likely to continue on a strategic path that was oriented towards traditional, efficiency measures. This leads to the following hypothesis:

H2: Following the EPAct 92 in the electric utilities industry, managers will on average be older than those managers employed prior to the EPAct 92.

Functional background

Dearborn and Simon (1958) found that a manager's orientation and behavior are influenced by experience in a functional area. Subsequent research has supported the association between top management functional background and the strategic focus of the organization (e.g. Chaganti and Sambharya, 1987; Pfeffer and Salancik, 1978). Further, it has been proposed that managers with different types of functional expertise will rise to become part of the dominant



coalition of the organization when this expertise is considered critical to helping the organization achieve its strategic goals (Miles and Snow, 1978). For example, Pfeffer and Salancik (1977) found that top hospital administrators tended to have more training in hospital administration when the hospitals received more funding from insurance companies than from private donations. Organizations with an external or a marketing orientation require strategic actions that include close monitoring of customer needs, increased sales, and new product design with added value and service components. To implement these strategies effectively, top managers of these organizations are likely to possess functional training and expertise in marketing and sales (Gupta and Govindarajan, 1984). On the other hand, organizations with an internal or an efficiency focus require strategic actions that emphasize cost reduction, engineering and operating efficiencies, and financial controls (Guthrie et al., 1991). Thus, top managerial expertise in internally oriented functions such as operations, engineering, accounting, and finance would be a good match with electric utility companies' efficiency orientation following the passage of the EPAct 92. We therefore posit the following hypothesis:

H3: Following the EPAct 92 in the electric utilities industry, managers with backgrounds in operations, engineering, and accounting or finance will continue to be more dominant than managers with backgrounds in marketing.

Method

Data on the characteristics of the dominant management coalition for the two periods (1990-1991 and 1993-1994) studied were obtained from *Dun and Bradstreet's Reference Book of Corporate Management*. Obtaining data from the same publication ensured consistency in data



collection. For a randomly selected list of 10 companies, the *Dun and Bradstreet* demographic data were cross validated with the company's 10-K reports. For the 50 companies for which data were collected, period I resulted in 141 and period II in 144 executives, all of whom held positions of vice-president or higher. Since the study used a 3-year time difference between the two periods (1990-1991 and 1993-1994), a lack of turnover among these executives could confound the study's results. To safeguard against this, the names of executives in the base period (1990-1991) were compared with the names of executives in the second period (1993-1994). A total of 41 executives (29%) changed from the base period to the second period, in that the second period contained 41 executives who did not work in the utility in the base period.

Since the objective of the study was to test for differences across means while controlling for interrelations among dependent variables, a multivariate analysis of variance (MANOVA) procedure was used. Following a MANOVA to test the overall significance of the differences in means, univariate F-tests and planned comparison tests were performed. To test hypothesis 3, a chi-square test was used.

Results

Since the MANOVA was significant (approximate $F= 7.71$, $p<.01$), univariate and planned comparison tests were performed. Table 3 displays these results.

Insert Table 3 About Here

The first hypothesis related to the age of the dominant coalition. Following the EPAct 92, the dominant coalition in the electric utilities industry were significantly older than their counterparts



prior to the Act (57.88 vs. 54.54, $p < .01$). These results support hypothesis 1. The dominant coalition also held longer tenures both within the company (26.12 vs. 21.37, $p < .01$), and industry (28.30 vs. 25.24, $p < .01$), thereby providing support for hypothesis 2.

The third hypothesis posited that following the enactment of the EPAct 92, managers with backgrounds in operations, engineering, and accounting or finance (internally oriented functions) will continue to be more dominant than managers with backgrounds in marketing. As seen in Table 4, the proportion of executives with backgrounds in internally oriented functions (operations, engineering, and accounting/finance) increased from 69.50 percent to 82.60 percent in period II ($X^2 = 34.21$, $p < .01$), while executives from marketing declined in proportion from 13.60 percent to 10.70 percent ($p < .01$), thus providing support for the hypothesis. Interestingly, the category “other” also showed a significant decrease in period II. This category consisted of managers whose functional area could not be clearly classified as being either internally oriented or externally oriented. They included managers in the areas of law and human resources. Since the executive succession literature is silent with regards to expected changes in these functions (following an environmental change), we did not examine this finding further.

Insert Table 4 About Here

Discussion and Implications

The results of this study shed considerable light on the environmental change -- top management succession nexus. Following the occurrence of a significant environmental event, e.g., the enactment and passage of the EPAct 92, competition in the electric utilities industry intensified with increased emphasis on internal efficiencies. This change in the external



environment resulted in a concomitant adjustment in the composition of the dominant coalition in these organizations. We predicted that the dominant coalition would have longer company and industry tenure, be older, and come from internally-focused functional areas. Empirical results substantiated these predictions in both cases. Following the passage of the EPAct 92, the executive teams of electric power companies consisted of older managers with longer company and industry tenure, predominantly from efficiency-oriented backgrounds in operations, engineering and accounting/finance.

Our findings are consistent with those of Thomas and Ramaswamy (1993), and they increase the generalizability of the notion that only by observing the unique impact of environmental shifts, such as deregulation, on the competitive dynamics of an industry can one accurately examine organizational adaptation. Although previous research has suggested that market forces become more important following deregulation (Guthrie et al., 1991), this may be the case in only one industry. The findings of our study and those of Thomas and Ramaswamy (1993) suggest that it is necessary to identify the nature of the competitive change in an industry following deregulation before cogent observations about the nature of managerial changes can be noted. Since each industry may respond uniquely to the same environmental change (such as deregulation or the enactment of a new law), it becomes necessary to first delineate what the change is before attempting to relate it to the management staffing issue.

This study adds to the body of research on executive succession and its relationship to strategic fit. It reinforces prior studies that have suggested that top management staffing changes may be more effective, or more appropriate, if the characteristics of the new leadership match the



characteristics of the firm and its environment (Gupta, 1984; Hambrick and Mason, 1984; Leontiades, 1982). The observation that firms in the electric utility industry intensified their efforts to achieve internal efficiencies following the passage of the EPAct 92 , and the concomitant dominance of managers who possessed characteristics consistent with an internal focus, might suggest that firms carefully scan the various factors affecting the industry environment to determine how it will best be able to compete under the new conditions. Alternatively, the results could suggest that firms pay close attention to the competitive actions of other firms in the industry following an external jolt, and imitate what they perceive to be successful adaptation strategies. This mimetic isomorphism is another type of attempt to achieve the appropriate “fit” between the environment and the firm, although it may be driven by institutional forces acting together with the rational processes that tend to characterize strategic decision making (McKinley, Sánchez and Schick, 1995; Meyer and Rowan, 1977). In either case, executive succession emerges as a way that organizations can align themselves within a competitive environment and reconfigure its internal resources to maximize competitive advantage (Kesner and Sebor, 1994). The notion of top management succession as an adaptation strategy involving a high degree of managerial selection is reinforced.

In addition to its contribution to organizational theory, this study has implications for practicing managers. First of all, the study tests a framework that allows for precise prediction of changes in top management characteristics following environmental change. The results of the study suggests that managers would be well-advised to examine the specific bases of competition



in their industry, and how environmental changes modify them, before they attempt to make strategic responses to what they perceive to be new competitive situations.

Second, the results of this study have specific implications for managers of U.S. electric power companies. The study may provide insight as to how utility managers might respond to ongoing attempts to restructure competition in the power industry. Competition has put the electric utility industry in a transitional stage. Many power companies are, for the first time, initiating strategic planning processes based on competitive market conditions, instead of simply reacting to state regulatory commissions and monopolistic conditions (Murray, 1994; Welsh-Johnson, 1994). The industry is consolidating (Doughty and Rode, 1995), witnessed by the merger of several utility companies since 1990 (Sánchez, 1995). Other companies are unbundling generation, transmission, and distribution services, while others are divesting the generation business altogether (Doughty and Rode, 1995). How these and other competitive moves relate to top management staffing changes might reveal interesting outcomes for firms in this important industry.

One limitation of this study could be that the results may be confounded by the differences between stable and dynamic industries (Dess and Beard, 1984). Dynamism describes the degree of market instability in an industry and the turbulence caused by the interrelatedness between organizations (Aldrich, 1979). McArthur and Nystrom (1991) found that the degree of dynamism significantly interacts with strategy to affect performance. Low dynamism or stable industries, which are characterized by a high level of regulation, include the electric utility industry (McArthur and Nystrom, 1991). Thus, it could be argued that the relatively stable



environment of the electric utility industry might affect the nature of the strategy-performance relationship. Nevertheless, we argue that even if the level of dynamism in the electric utility industry affects strategy and performance, the changes in strategic orientation and top management staffing observed as a result of this study would still be present.

Reflecting on the implications of this single-industry study for future research, we first note that more work is required to increase the generalizability of the notion that the specific nature of environmental change is important to organizational adaptation. We suggest that future studies include firms across multiple industries, to make an even greater contribution to the generalizability of the theory. For example, future studies might identify those environmental changes, including but not limited to regulatory jolts, that affect firms in several industries. Researchers could observe the effects of those changes on the patterns of competition among firms in multiple industries, and then develop specific hypotheses that predict the effects of these competitive changes on top management staffing. This approach would be a significant departure from the ground originally broken by Guthrie et al. (1991) and Thomas and Ramaswamy (1993), and it would begin to address inter-industry patterns of adaptation under conditions of environmental change.



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