Executive Succession, Strategic Reorientation and Performance Growth: A Longitudinal Study in the U.S. Cement Industry

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This research explores the performance consequences of CEO succession, executive team change, and strategic reorientation in different contexts. Based on team demography and organization learning ideas, we argue that CEO succession or executive team change enhances incremental organization change, while either strategic reorientation or the combination of CEO succession with executive team change triggers discontinuous organization change. We hypothesize that these contrasting intervention modes are appropriate in different contexts. A longitudinal study of the U.S. cement industry from 1918–1986 demonstrates that simple CEO succession is positively associated with subsequent performance when context is stable, but significantly more negatively associated with subsequent performance in turbulent contexts. Executive team change has significant effects on organization adaptation in both stable and turbulent contexts. Strategic reorientations are negatively associated with subsequent performance in stable contexts, but significantly more positively associated with subsequent performance in turbulent contexts. As a set, these results reinforce a demographic approach to succession research and indicate that CEO succession, executive team change, and reorientation are each distinct and important levers shaping organization adaptation. The impacts of these levers are contingent on organization context.

(Executive Succession; Reorientation; Organization Learning; Top Management Teams; Turbulence)

Introduction

This paper explores the effects of both change in senior executive teams and actions initiated by these teams on subsequent organizational performance. Where much of the succession literature focuses on CEO succession, we consider the executive team as the unit that mediates between internal forces for stability and external forces for change (Hambrick and Mason 1984, Wiersema and Bantel 1992). As such, we untangle CEO succession from executive team change and explore the effects of different types of senior team change and strategic reorientation on subsequent organizational performance. We argue that the effects of senior team change and strategic reorientation are contingent on organization context.

We employ concepts of first- and second-order learning to motivate relations between senior team succession, reorientation, and organization outcomes. Viewing succession and reorientation as mechanisms for organizational learning (e.g., Virany et al. 1992, Lant and Mezias 1992, Milliken and Lant 1991), we link the scope of these organizational changes to organization learning modes and, in turn, organizational adaptation. Where substantial executive team change and/or reorientation may be associated with disruption and performance decline in stable contexts (e.g., Friedman and Singh 1989), in turbulent contexts, reorientations and/or sweeping executive team changes may be associated with organizational adaptation (e.g., Virany et al. 1992, Haveman 1992).

0025-1909/96/4207/0939$01.25

To explore these ideas, we develop hypotheses that link CEO succession, executive team change, and strategic reorientation to subsequent organization performance. Our study focuses on the U.S. cement industry from 1918 through 1986. During this 68-year period, this commodity industry evolved through long periods of relative stability punctuated by technological and regulatory jolts (Tushman and Anderson 1986, Romanelli and Tushman 1986). Given the relatively stable nature of the cement industry, we develop hypotheses on the effects of CEO succession, executive team change, and strategic reorientation on subsequent organizational performance. We also model the effects of senior team change and strategic reorientation under conditions of environmental turbulence and/or organizational performance crisis.

Theory and Hypotheses

Executive Succession, Strategic Reorientation, and Organization Learning

Organizations evolve through alternating periods of convergence and reorientation (Tushman and Romanelli 1985, Romanelli and Tushman 1994, Miller and Friesen 1984). Convergence refers to incremental and interlinked changes that increasingly stabilize established patterns of activities. During convergent periods, patterns of activity evolve to accomplish organization objectives in an ever more coherent and efficient manner. Reorientations punctuate convergent periods. Reorientations are system-wide organization changes involving concurrent shifts in strategy, structure, power, and control mechanisms. During reorientations, organizations do not incrementally improve existing organizing modes, but shift to fundamentally different operating modes (Romanelli and Tushman 1994). During convergent periods, senior teams are responsible for managing incremental substantive and symbolic changes that sustain established activity patterns (Pfeffer 1981). During reorientations, however, it is the task of senior executives to both define and legitimize substantively new activity patterns (Miller 1991, Romanelli and Tushman 1988). While strategic reorientations may be initiated by the existing top team (e.g., Smith 1988), these organization transformations are often executed through dramatic change in the executive team (Chandler 1962, Miles 1982, Lant et al. 1991).

There are two contrasting learning modes which are related to convergent periods, reorientation, and executive team change. First-order learning involves incremental updating of established premises that continuously improves existing competencies and standard operating procedures (Hedberg et al. 1976, Lant and Mezias 1992). First-order learning builds on the past as the status quo is maintained and updated (Louis and Sutton 1991, Weick 1979). In contrast, second-order learning is characterized by a shift in core assumptions and decision-making premises. Second-order learning involves unlearning prior premises and SOPs and developing new frames and interpretive schemes (Bartunek 1984, Fiol and Lyles 1985). Where first-order learning reduces behavioral variability, second-order learning increases variability, creating a diverse experience base from which new understandings and objectives can emerge (Hedberg et al. 1976).

Both executive succession and reorientation are mechanisms for organizational learning. The replacement of a CEO or of executive team members alters the top team's demography and, in turn, the team's ability to attend to and deal with environmental conditions (O'Reilly et al. 1993). New team members bring different competencies, resources, and perspectives to the team (Ancona 1989, Milliken and Lant 1991). Increases in functional heterogeneity create opportunities for the executive team to incorporate new skills into existing repertoires (Wiersema and Bantel 1992). At the same time, new executives alter the tenure distribution of the executive team. With new executive team members, tenure heterogeneity increases, which is associated with decreased social integration (O'Reilly et al. 1989). Executive succession also reduces average team tenure. Decreased team tenure and increased heterogeneity are associated with more open and diverse problem solving practices, more extensive communication networks, and altered bases of competence and power within executive teams (e.g., Wagner et al. 1984, Finkelstein and Hambrick 1990).

The scope of executive team change triggers different learning modes within the firm. Those executive team changes limited to either CEO succession or executive team change trigger incremental change in the system.

New CEOs who do not simultaneously initiate changes in their teams will be dependent on their team's current competence, procedures, processes, and cognitive frames (e.g., Ancona 1989, Wiersema and Bantel 1992). Further, CEOs who do not initiate executive team change may be held hostage to the team's existing political equilibrium (e.g., Greiner and Bhambri 1989). Existing executive teams may be interested in change only within the current frame.

Similarly, change in executive team members under an existing CEO might not introduce new and diverse experiences into the team to alter established patterns of activities. In choosing new team members, an incumbent CEO is as much a product of institutionalized understandings as any member of the old team (Virany et al. 1992). Due to restricted communication patterns and cognitive processes, the incumbent CEO may be committed to established executive team processes and thus be resistant to substantive executive team change (Bettman and Weiss 1983, Miller 1991). Succession events limited to the CEO or to the executive team with incumbent CEOs trigger only incremental change and updating of the status quo within the senior team and larger organization (e.g., Grusky 1963, Salancik and Pfeffer 1977).

Strategic reorientations trigger second-order learning. Reorientations involve shifts in core organization assumptions, values, and axioms. During reorientations, new premises of action are linked to altered structures, strategies, bases of power, and control practices. These profound organizational shifts trigger a period of experimentation and organizational variability as new SOPs, cognitive frames, and interaction patterns evolve through trial and error (Weick 1979, Milliken and Lant 1991).

Second-order learning may also be triggered by sweeping executive team change. Where CEO change without concurrent executive team change, or executive team change without CEO succession may reinforce the status quo, concurrent CEO succession and executive team change dramatically affect executive demography and both internal and external processes (Wiersema and Bantel 1992, Virany et al. 1992). Sweeping executive changes shift a team's competence base and increase its heterogeneity of experiences which form the basis for experimentation (O'Reilly and Flatt 1989, Grinyer and McKiernan 1990). Reduced executive team tenure also decreases the team's social integration (O'Reilly et al. 1989, 1993). These demographically younger executive teams revise SOPs and decision-making processes and, in turn, may reshape decision-making premises and core organization assumptions (Dutton and Jackson 1988, Bartunek 1984). New executive teams may possess less vested interest in established power distribution; indeed, their individual interests may be in changing existing power balances (e.g., Helmich and Brown 1972). Finally, completely reconfigured executive teams are a signal to both internal and external actors that widespread change is likely (Neustadt 1980, Johnson 1990).

Executive Succession, Strategic Reorientation, and Performance Change in Different Contexts

The performance consequences of different types of senior team change and strategic reorientation, or contrasting learning modes, are contingent on organization context (Virany et al. 1992, Lant et al. 1992). In stable contexts, first-order learning associated with either CEO succession or executive team change will be positively associated with subsequent organizational performance. Incremental change in top team demography is associated with consistent updating of organizational repertoires and continued enhancement of senior team skills and processes. Efficiency improves as the firm hones its skills, adjusts inconsistencies about a given set of objectives, and establishes reliable relations with actors inside and outside the firm (O'Reilly et al. 1993; Argyris and Schon 1978). In stable contexts, these incremental changes reinforce the status quo and will be positively associated with subsequent performance.

HYPOTHESIS 1A. *In stable contexts, CEO succession will be positively associated with subsequent organizational performance.*

HYPOTHESIS 1B. *In stable contexts, executive team succession will be positively associated with subsequent organizational performance.*

Strategic reorientations are risky undertakings under any conditions (Virany et al. 1992, Lant and Mezias 1992). Concurrent change in strategy, structure, and control processes triggers uncertainty and variability in the firm and in its relations with external actors. While

reorientation may be a functional response in turbulent environmental conditions, reorientations will be inversely associated with subsequent performance in stable contexts as new SOPs and cognitive frames undermine prior patterns of interaction so functional during the prior convergent period.

HYPOTHESIS 2. *In stable contexts, strategic reorientations will be negatively associated with subsequent organizational performance.*

CEO succession or executive team change, by themselves, may not be dramatic enough to break inertia that teams and organizations develop during convergent periods. It may be that inertia can be broken when CEO succession is directly coupled with executive team change (e.g., Greiner and Bhambri 1989). In these sweeping executive changes, the new team has fundamentally different demographic characteristics and intra-group processes than the prior team. These sweeping executive team changes are associated with substantive and symbolic organization changes (e.g., Wiersema and Bantel 1992, Grinyer and McKiernan 1990). While this variation may be functional in turbulent environments (e.g., Virany et al. 1992), concurrent CEO and executive team change will be associated with negative consequences for organizations in stable contexts as reliable convergent patterns are broken.

HYPOTHESIS 3. *In stable contexts, the combination of CEO succession and executive team change will be negatively associated with subsequent organizational performance.*

Organizational contexts may be turbulent due to environmental and/or organizational conditions. Turbulence can be driven by environmental events (e.g., Meyer et al. 1990) and/or by organizational performance crisis (e.g., D'Aveni 1989). When environments are turbulent, first-order learning reduces the likelihood that executives will perceive the need for revised action (Milliken and Lant 1991, Louis and Sutton 1991). Inertia associated with incremental executive team change anchors the organization to its past even in the face of turbulent contexts (e.g., Morison 1966). The benefits of first-order learning are achieved at the price of decreased ability to adapt as an ever more redundant experience base drives out an executive team's ability to learn outside a given frame (Levitt and March 1988, Fredrickson and Iaquinto 1989). Second-order learning is, however, appropriate under turbulent conditions. In turbulent contexts, organizational variability associated with sweeping executive succession and/or reorientation triggers experimentation that gives the firm a greater chance of adapting to these uncertain conditions than sustained reinforcement of the status quo (e.g., Burgelman 1991, Meyer et al. 1990, Haveman 1992).

Second-order learning is risky. Although younger (i.e., shorter tenured), more heterogeneous executive teams may be able to deal with uncertainty more effectively than older, more homogeneous teams, these new teams incur liabilities of newness. Sweeping executive succession and/or reorientation represent a break from history and precedent and, as such, drive out competence accumulated through prior convergent periods (Carley 1992, Keck and Tushman 1993). Further, system-wide action has uncertain outcomes. However, action, even mistakes, provides new information that forms the basis for learning (March et al. 1991). When environments are turbulent, action with uncertain, possibly negative outcomes may have more survival value than persistent improvements of established activity patterns (Weick 1979, Haveman 1992).

Stable contexts might be punctuated by periods of turbulence due to technological, legislative, or wartime jolts (e.g., Meyer et al. 1990, Miles 1982). In the cement industry, the introduction of suspension preheating technology was a competence-destroying discontinuity which resulted in increased entry and exit rates (Tushman and Anderson 1986). Similarly, regulatory jolts such as the abolition of base-point pricing altered competitive conditions in the cement industry. During these turbulent periods, sweeping executive succession and reorientation may be appropriate as organizations develop new processes and competencies to fit environmental shifts. At the firm level, performance crises may trigger the need for fundamentally new operating procedures. If a firm's performance is consistently decreasing, sustained reinforcement of the status quo may only accentuate performance decline (D'Aveni 1989, Hambrick and D'Aveni 1992).

During periods of industry-wide change and/or organizational performance crisis, use of concurrent succession or reorientation breaks organization inertia and initiates fundamental shifts in organizational processes

and competencies. New senior teams are more likely to be receptive to change, alter decision making processes, and execute strategic reorientations than incumbent senior teams (Wiersema and Bantel 1992, Milliken and Lant 1991). These system-wide shifts increase the likelihood of attending to altered contexts (e.g., Greiner and Bhambri 1989, Grinyer and McKiernan 1990).

HYPOTHESIS 4. *In turbulent contexts, CEO succession coupled with executive team change will be more positively associated with subsequent organizational performance than in stable contexts.*

HYPOTHESIS 5. *In turbulent contexts, reorientation will be more positively associated with subsequent organizational performance than in stable contexts.*

On the other hand, succession limited to CEOs or executive teams by themselves will not be pervasive enough to bring in requisite expertise or trigger dissensus and team conflict so necessary to deal with changing environmental conditions (Fredrickson and Iaquinto 1989). Such tentative executive team changes will not be sufficient to attend to and deal with turbulent contexts.

HYPOTHESIS 6. *In turbulent contexts, CEO succession or executive team change, by themselves, will be more negatively associated with subsequent organizational performance than in stable contexts.*

Methodology

This research reports results from a longitudinal data base gathered on the United States cement industry from 1900–1986. While there are external validity problems in single industry studies, there are also substantial internal validity benefits. Industry studies provide a clearly demarked population where data can be gathered from industry inception to some end date. Such research designs have limited left-censored data and can control for both cohort effects and common environmental characteristics. Like other commodity industries (e.g., Smith 1988, Fredrickson and Iaquinto 1989), the cement industry in the United States has a history that exhibits relatively long stable periods punctuated by environmental jolts such as wars, technological discontinuities, and legislation (see also Anderson and Tushman 1986, Romanelli and Tushman 1986). Our data were gathered from the Bradely Pulverized Annual Cement Directories (1901–1986) and from technical and trade journals (*Rock Products* and *Pit & Quarry*).

Over the full 1900–1986 time period, 291 cement firms existed. Given our evolutionary theoretical framework and our desire to reduce left censoring issues, we gathered data on firms from their birth. Data were collected from the birth of the firm until the firm ceased producing cement, was sold, merged, or went bankrupt, or until the end of the data collection period. Performance data from birth were available, from Moody's Industrial Manuals, for 59 firms beginning in 1918. Given these performance data limitations, our sample overrepresents larger, older public cement firms. (See Keck and Tushman 1993 for a full description of sample differences for firms with and without performance data.) While there are external validity and sample bias costs associated with this sample, these costs must be weighed against the benefits of studying a large sample of firms over a long time period. (In subsample analyses by Keck and Tushman 1993 there were only marginal differences in results between samples with and without performance data.)

Because not all firms operated for the entire observation period, we do not have observations for all firms in all years. This results in fewer than the number of observations one would expect in balanced, pooled time series/cross sectional designs and requires special analysis considerations addressed in the analysis section. After eliminating observations with partially missing data, we have 921 firm-year observations. Table 1 presents descriptive statistics and correlations for each of the variables described below.

Performance. Organizational performance is measured by yearly return on assets. To derive performance change subsequent to succession or reorientation, the dependent variable was coded as the relative change in ROA from the time of organizational change until two years later. This performance change was adjusted by industry change in ROA to control for year effects. The dependent variable is represented by the equation

$$\text{Performance change} = [r(t+2) - r(t)] - [i(t+2) - i(t)],$$

Table 1 Descriptive Statistics

			Correlations									
					Executive Team Change							
	Mean	Std. Dev.	Performance Change	CEO Succession	Overall	Entries	Exits	Reorientation	Jolt	Performance Crisis	Past Performance	Firm Age
Performance Change	−0.01	0.06	–									
CEO Succession	0.13	0.34	0.04	–								
Executive Team Change												
Overall	0.17	0.25	−0.01	0.29**	–							
Entries	0.09	0.14	−0.04	0.23*	0.85**	–						
Exits	0.08	0.14	0.02	0.28**	0.83**	0.45**	–					
Reorientation	0.10	0.30	0.01	0.19**	0.19**	0.18**	0.16**	–				
Jolt	0.54	0.50	0.02	0.03	0.05	0.03*	0.05	0.10**	–			
Performance Crisis	0.30	0.46	0.13**	−0.01	0.01	0.01	0.01	0.05	−0.01	–		
Firm Performance	0.13	0.12	−0.30**	−0.01	−0.05	−0.01	−0.06*	0.02	0.05	−0.18**	–	
Firm Age	40	21	0.01	−0.02	−0.04	−0.04	−0.02	−0.03	0.10**	−0.01	0.09	–
Firm Capacity	9.0×10^6	9.8×10^6	0.01	0.19**	0.19**	0.17**	0.18**	0.14**	0.16**	−0.04	−0.07*	0.04

* $p < 0.05$.
** $p < 0.01$.
$N = 921$.

where $r(t)$ equals ROA at time t and $i(t)$ equals average industry ROA at time t. This variable ranged from −0.66 to 0.42 with a mean of −0.01 and a standard deviation of 0.06.

Performance crisis was determined by examining the firm's ROA level over three successive years. If ROA decreased two years in succession,[1] then a dummy variable representing performance crisis was coded as 1. Thirty percent of the firm-year observations were so defined as performance crises.

Since regression to the mean is a plausible rival hypothesis for change in organizational performance, the firm's return on assets, $r(t)$, was also included as a regressor.

Executive Succession. Both CEO change and the extent of change in the executive team were measured. The executive team was defined as all individuals that reported directly to the CEO. The average team size was 5.3 members. CEO succession, coded as a binary variable, occurred in 122 of the 921 firm-year observations. Change in the executive team was measured by counting in each year, for each firm, the number of executives reporting to the CEO who were not on the team in the previous year (number of entering executives) and the number of executives who were listed the prior year but not in the current year (number of exiting executives). The overall change in the executive team was taken as the sum of the number of entering and exiting executives for the given year. Each of these measures, number of executive entries, exits, and total fluctuation, was standardized by the size of the team in that year.

Reorientations. Reorientations are discontinuities in the life of a firm. Tushman and Romanelli (1985) define a discontinuity as simultaneous change in strategy, structure, power, and control systems. Given the nature of available historical data on the cement industry, it was possible to collect comprehensive data on only strategic and structural change. Given these constraints, reorientations were defined as having occurred when both strategy (adding cement types and brands, adding cement plants, and/or distribution centers) and structure (divisionalizing, adding functions, adding level, and/or consolidating senior positions) changed over a maximum of two years.

[1] Mathematically, a performance crisis occurs in year t when $r(t) < r(t-1) < r(t-2)$.

A three-step process was employed to identify reorientations. Based on Tushman and Romanelli's (1985) definition of reorientations, three independent coders compiled a preliminary test of reorientations by reviewing firm-level historical data (these data were from the Bradely Pulverizer Annual Directories and from technical and trade journals). These researchers agreed on over 90 percent of their reorientations. Discrepancies were reviewed by the three coders and agreement was reached for each reorientation. This set of reorientations was then used to develop a precise set of guidelines for empirically defining a reorientation (see Appendix 1). These inductively derived criteria were then used to rereview the data to generate a final set of reorientations.

Environmental Turbulence. Historically, the U.S. cement industry has been relatively stable. The cement industry had less changeable demand, fewer relative entries and exits, and less forecast error than an industry like minicomputers (Tushman and Anderson 1986). This stability was punctuated by periods of turbulence. Turbulence from technological jolts, regulatory action, or war was coded as a binary variable where 1 indicates turbulence during and subsequent to the event. Two discontinuous technological changes were identified: the introduction of computerized long kilns in 1960 and suspension preheating in 1972 (Tushman and Anderson 1986). To account for the diffusion of these technologies, we coded as turbulent all years from the discontinuities through the emergence of their respective dominant designs in 1965 and 1979 (Anderson and Tushman 1990). Regulatory changes included the banning of information sharing in 1923 and its reversal in 1925, the abolition of base-point pricing in 1947, the Federal Highway Act of 1956, and the Clean Air Act in 1969. Since the impact of these regulatory jolts was not instantaneous, we coded the year of the regulation and the two subsequent years as turbulent. Finally, we coded 1941–1945 as turbulent due to World War II.

Control Variables. Since organizational performance change is likely to vary with organization age and size, these variables were also measured. Firm age is the number of years since the firm's founding, ranging from 2 to 90. Firm size is measured by the cement-producing capacity of the firm in barrels per year, ranging from 876,000 barrels per year to 54,070,000 barrels per year.

Dummy variables were also introduced to control for cohort-based effects (Boeker 1989, Romanelli and Tushman 1986). Seven cohorts were defined based on year of entry into the cement industry. Of these seven, dummy variables were used to identify cohorts one through six, while cohort seven firms were taken as the base case.

Analyses

The pooled time series design of our database requires the use of a regression model that corrects for both autocorrelation and heteroscedasticity. We use Kmenta's (1986) generalized least squares model to generate firm-specific corrections for the autocorrelation among firm-year residuals and heteroscedasticity between interfirm residuals. These corrected data are then pooled to form the sample for single generalized least squares (GLS) regressions that meet classical OLS regression assumptions. Use of this model has two implications. First, corrections for autocorrelation and heteroscedasticity reduce the number of observations, as the first year of each firm's time series is lost. Second, the model generates R^2 values that are unreliable (Sayrs 1989). As such, we do not report R^2 values.

Tables 2 and 3 each report four regression models. Where Table 2 reports executive team change as the sum of team entries and exits, Table 3 separately reports entries and exits. Model 1, our baseline, examines the effects of reorientation, CEO succession, and executive team change on performance change while controlling for types of turbulence: environmental jolt and organizational performance crisis. Model 2 tests for the impact of combined CEO succession and executive team change on performance change by adding a CEO succession/executive team change interaction term to Model 1. Models 3 and 4 examine the impacts on subsequent performance of CEO succession, executive team change, reorientation, and the combination of CEO succession and executive team change under conditions of environmental turbulence (Model 3) and organizational performance crisis (Model 4). Beyond environmental and organization turbulence, each regression also includes controls for organization age, size, prior performance, and cohort.

Table 2 Determinants of Performance Change: Generalized Least Squares Regression Coefficients

	Model 1	Model 2	Model 3[a]	Model 4[b]
Intercept	0.0080**	0.0041*	0.0024	0.014**
CEO change	0.015**	0.028**	0.039**	0.033**
Executive team change	0.00010	0.0045**	0.0046**	−0.0095**
Reorientation	−0.0097**	−0.012**	−0.012*	−0.021**
CEO × executive team change		−0.041**	−0.067**	−0.037**
Types of turbulence:				
Environmental jolt	0.0048	0.0049	0.0039	0.0037
Performance crisis	0.011**	0.013**	0.014**	0.0055
Turbulence × CEO × executive team change			0.077**	0.019
Turbulence × reorientation			0.0090	0.031**
Turbulence × CEO change			−0.035**	−0.038**
Turbulence × executive team change			−0.0018	0.025**
Past performance	−0.18**	−0.18**	−0.18**	−0.19**
Age	0.00073**	0.00075**	0.00076**	0.0007**
Capacity	-5.7×10^{-10} **	-4.5×10^{-10} *	-4.1×10^{-10} *	-7.6×10^{-10} **
Cohort 1	−0.040*	−0.037*	−0.036*	−0.045**
Cohort 2	−0.029**	−0.027**	−0.027**	−0.03**
Cohort 3	−0.045**	−0.043**	−0.041**	−0.039**
Cohort 4	−0.0090	−0.0091	−0.0077	−0.011
Cohort 5	−0.017**	−0.016**	−0.014**	−0.019**
Cohort 6	0.0061	0.014**	0.015**	0.0015
DF	808	807	803	803

* $p < 0.05$.
** $p < 0.01$.
[a] Industry-wide environmental turbulence.
[b] Firm-specific performance crisis.

In each model, control variables indicate regression to the mean effects, a positive association between age and performance change, and a negative association between firm size and performance change. Birth cohort also affects performance change.

Results

Executive Succession, Strategic Reorientation, and Performance Change in Different Contexts

Hypotheses 1A and 1B argued that in stable contexts, CEO succession and executive team change would each have positive effects on subsequent organizational performance. Controlling for environmental and organization turbulence, in the relatively stable cement industry, CEO succession is positively associated with subsequent performance across all models in Table 2. Executive team change has, however, inconsistent impacts on subsequent organizational performance in Models 1–4.

To further explore effects of executive team change, Table 3 reports the same models as Table 2 with executive team change disaggregated into executive team entries and exits. These results indicate very different performance impacts of the two types of executive team change. In each model, the entry coefficient has a different sign than the exit coefficient. Controlling for organization and environmental turbulence, in three of the four models, executive team entries are significantly inversely associated with subsequent performance. On the other hand, executive team exits are positively associated with subsequent performance in each of the four models, although significantly in only two.

Table 3 Determinants of Performance Change: Generalized Least Squares Regression Coefficients

	Model 1	Model 2	Model 3[a]	Model 4[b]
Intercept	0.013**	0.0097**	0.013**	0.015**
CEO change	0.015**	0.028**	0.039**	0.033**
Executive team				
entries	−0.010	−0.023**	−0.044**	−0.021**
exits	0.0015	0.039**	0.070**	0.015
Reorientation	−0.0093**	−0.011**	−0.0086*	−0.021**
CEO change × executive team				
entries		−0.00046	−0.0095	−0.020
exits		−0.084**	−0.14**	−0.058**
Types of turbulence:				
Environmental jolt	0.0038	0.0030	0.0029	0.0034
Performance crisis	0.0078**	0.010**	0.0067*	0.0053
Turbulence × CEO × executive team				
entries			0.026	0.021
exits			0.14**	0.011
Turbulence × reorientation			0.0054	0.032**
Turbulence × CEO succession			−0.035**	−0.037**
Turbulence × executive team				
entries			0.036*	−0.0018
exits			−0.058**	0.043*
Past performance	−0.19**	−0.18**	−0.19**	−0.18**
Age	0.00071**	0.00069**	0.00075**	0.00066**
Capacity	-7.4×10^{-10} **	-6.6×10^{-10} **	-7.2×10^{-10} **	-8.0×10^{-10} **
Cohort 1	−0.045*	−0.041*	−0.049**	−0.044*
Cohort 2	−0.030**	−0.028**	−0.033**	−0.029**
Cohort 3	−0.044**	−0.041**	−0.044**	−0.038**
Cohort 4	−0.0089	−0.0079	−0.010	−0.0098
Cohort 5	−0.020**	−0.018**	−0.018**	−0.019**
Cohort 6	−0.00032	0.0058	0.0040	−0.0013
DF	806	804	798	798

* $p < 0.05$.
** $p < 0.01$.
[a] Industry-wide environmental turbulence.
[b] Firm-specific performance crisis.

Hypothesis 1 is supported for CEO succession and executive team exits, but not for executive team entry. It may be that in this relatively stable, commodity industry, entries into the senior team trigger dissensus, while losing an incumbent CEO or existing team members does not threaten the full team's core competencies or disrupt team processes.

Hypothesis 2 argued that reorientations would be inversely associated with subsequent organizational performance in stable contexts. In support of this hypothesis, results in Table 2 indicate that when controlling for turbulence, reorientations are inversely associated with subsequent organizational performance. Reorientations may disrupt routinized patterns of interaction so functional in stable contexts.

Hypothesis 3 argued that the combination of CEO succession with executive team change would trigger profound changes in both the senior team and larger organization, and that these sweeping changes would be associated with decreased performance in stable contexts. As predicted, controlling for turbulent conditions, CEO succession coupled with executive team change is

inversely associated with subsequent performance (see Table 2, Models 2–4).

Results in Table 3 indicate that the effects of combining CEO succession with executive team change are driven by executive team exits. In each model, the CEO/entry interaction term is insignificant, where the CEO/exit interaction terms are each negative and significant. Where simple CEO succession or executive team exits are positively associated with subsequent performance, coupling CEO succession with executive team exits is associated with the reverse. It may be that broad senior team exits trigger experimentation and variability that are inconsistent with incremental change required in stable contexts.

Hypothesis 4 argued that in turbulent contexts, the combination of CEO succession and executive team change would be more positively associated with subsequent performance than in stable contexts, while Hypothesis 5 argued that strategic reorientation would be more positively associated with subsequent performance in turbulent contexts than in stable contexts. Turbulence was modeled with interaction effects in Model 3 (industry turbulence) and Model 4 (organizational performance crisis). In support of Hypothesis 4, the combination of CEO succession and executive team change is more positively associated with subsequent performance during periods of environmental turbulence than during stable periods. Combined CEO succession/executive team change is not, however, significantly associated with enhanced performance during organizational performance crises (see Table 2, Models 3 and 4).

Results in Table 3 indicate that when coupled with CEO succession, executive team exits have a more important role in organizational adaptation than executive team entries. Where the combination of CEO succession and executive team exits is inversely associated with subsequent performance holding environmental turbulence constant, sweeping senior team exits are more positively associated with subsequent performance under turbulent environmental conditions. Further, where both CEO succession and executive team exits are by themselves inversely associated with subsequent performance in turbulent environmental contexts, coupling CEO succession with executive team exits enhances subsequent performance. The combination of CEO succession and executive team entries, however, has no significant impact on subsequent performance under any conditions.

In partial support of Hypothesis 5, strategic reorientations are more positively associated with subsequent performance change only under organizational performance crisis conditions; reorientations are not associated with enhanced performance under turbulent environmental conditions. Where strategic reorientations are inversely associated with subsequent performance when turbulence is controlled, their impact on organizational adaptation shifts under performance crisis conditions. Evidently, strategic reorientations have greater impacts on organizational adaptation to performance crisis than sweeping executive team change. In contrast, sweeping executive team exits have a greater impact on organizational adaptation than reorientation during periods of environmental turbulence.

Hypothesis 6 argued that simple CEO succession or executive team change would be more negatively associated with subsequent organizational performance in turbulent contexts than in stable contexts. Where CEO succession has positive effects on subsequent performance holding context constant, in support of Hypothesis 6, CEO change is associated with decreased organizational performance under conditions of both environmental turbulence and organizational performance crises (see Table 2, Models 3 and 4). Evidently, simple CEO succession does not trigger sufficient change in team or organizational dynamics to deal with either environmental or organizational crisis.

Contrary to Hypothesis 6, executive team change is more positively associated with subsequent performance during organizational crises and not significantly associated with decreased performance during periods of environmental turbulence (see Table 2, Models 3 and 4). Results in Table 3, however, indicate that the overall executive team change results in Table 2 mask important differences between executive team exits and entries and their impacts on subsequent organizational performance during periods of contextual turbulence. Quite contrary to Hypothesis 6, executive team entries and exits have enhanced impacts on subsequent organizational performance even in turbulent contexts. During periods of environmental turbulence, executive team entries are significantly more positively associated

with subsequent performance, while executive team exits are significantly associated with the reverse (see Table 3, Model 3). Similarly, during organizational performance crises, executive team exits are significantly more positively associated with subsequent organizational performance.

These results indicate that executive team entries and exits are important levers for organizational adaptation in turbulent contexts. However, adaptation patterns under conditions of performance crisis are very different than adaptation patterns in turbulent environmental contexts. In the former, enhanced organizational performance is associated with executive team exits, while in the latter condition, adaptation is associated with minimizing executive team exits and accentuating executive team entries.

Discussion

This research has explored how changes in senior teams and actions taken by senior teams affect subsequent organizational performance. Our fundamental premises were that CEO succession must be distinguished from executive team change, that change in senior teams as well as strategic reorientations are important levers for organizational adaptation, and that the performance consequences of different types of actions/succession events would be contingent on organization context.

Quite contrary to the literature which indicates that CEO succession is inconsequential or simply a symbolic event (e.g., Lieberson and O'Connor 1972, Lant and Mezias 1992), our results indicate that CEO succession is associated with substantive effects on subsequent organizational performance: the effects of CEO succession were contingent on organization context. Holding environmental turbulence constant, in the relatively stable, low discretion cement industry, CEO succession was positively associated with subsequent organizational performance. While these results do not support the view of CEO succession as an inconsequential event, they also do not support the view of CEO succession as an adaptive event in turbulent contexts (e.g., Pfeffer and Salancik 1978, Salancik and Pfeffer 1977). Quite the contrary, CEO succession, by itself, was more negatively associated with subsequent organizational performance in turbulent contexts than in stable contexts.

These CEO succession-organizational performance results support a demographic approach to the CEO succession literature (e.g., O'Reilly et al. 1993). Such an approach focuses on the executive team as the nexus between internal forces for stability versus external forces for change. It is the executive team that requires the competence, internal processes, and political networks to mediate between environmental demands and organization constraints (Wiersema and Bantel 1992, Milliken and Lant 1991). As a single member of a larger executive team, CEO succession by itself only marginally affects executive team demography and team processes. Incremental changes triggered by simple CEO succession may be associated with first-order learning, which is functional in stable contexts but dysfunctional in turbulent contexts. These contingent impacts of CEO succession on subsequent performance suggest that contradictory results in the CEO succession literature (e.g., Puffer and Weintrop 1991) may be untangled if greater attention is paid to senior team demography and the change in team demographic characteristics triggered by CEO succession.

Action taken by executive teams also affects organizational adaptation. Based on organizational learning ideas, we predicted that strategic reorientations would have fundamentally different effects on organizational adaptation, contingent on organization context. As predicted, holding turbulence constant in the relatively stable cement industry, strategic reorientations were inversely associated with subsequent performance. Variability associated with organization-wide action disrupts ongoing organization processes which are so crucial in stable, low discretion contexts (Tushman and Romanelli 1985). In contrast, reorientations were more positively associated with subsequent performance under organizational performance crisis conditions. System-wide action in the face of crisis has survival value independent of actions taken (see also Meyer et al. 1990, Lant and Mezias 1992). These results are consistent with those of Virany et al. (1992), who found that in the turbulent minicomputer industry, strategic reorientations were positively associated with organizational adaptation. These results suggest that second-order learning associated with reorientations may be functional in turbulent contexts, yet dysfunctional in stable contexts.

Executive team change had strong, sometimes unexpected impacts on organizational adaptation. Executive team exits had different impacts on subsequent organizational performance than executive team entries. Contrary to predictions, when environmental turbulence was controlled, executive team entries were inversely associated with subsequent organizational performance. It may be that new members of the executive team bring different points of view and trigger dissensus which is not adaptive in stable, low discretion environments (Hambrick and Finkelstein 1987). Senior team exits, however, were positively associated with subsequent organizational performance. In simple environments, it may be that redundant information, institutional memory, and organization structures buffer senior teams against team turnover (Carley 1992). Losing senior team incumbents may be associated with greater senior team homogeneity and, in turn, enhanced flexibility and problem solving based on existing team processes and competencies (Louis and Sutton 1991, O'Reilly et al. 1993).

In turbulent contexts, executive team change had significant impacts on organizational adaptation contingent on type of organization turbulence. During periods of environmental turbulence, executive team entries were more positively associated with subsequent performance, while executive team exits were more negatively associated with subsequent performance than in stable contexts. It may be that when environments shift and the locus of crisis is outside the firm, organizational adaptation is associated with bringing in new executive team expertise even as existing competence is retained. In contrast, under organizational performance crisis conditions, executive team exits were more positively associated with organizational adaptation than in stable contexts. Evidently, when the source of the crisis is within the firm, incumbents must leave to open the senior team to altered team processes and action.

These results indicate that executive team changes have more profound effects on organization outcomes than simple CEO succession. These results and those of Virany et al. (1992) suggest that while CEO succession is associated with incremental senior team change, executive team change may be a source of more fundamental change in senior team demography and processes and, in turn, second-order learning. Where much succession literature focuses on CEO change (e.g., Zajac 1990, Puffer and Weintrop 1991), our results reinforce the view of the CEO as a single, though powerful, member of a larger senior team (e.g., Hambrick and Mason 1984, Wiersema and Bantel 1992). Future succession and/or adaptation research might focus less on CEO succession and more on the demography, characteristics, and processes of senior teams (e.g., Ancona 1989, Flatt 1993).

The combination of CEO succession and executive team change reflects wholesale senior team change and, in turn, different team demographics and internal dynamics. Based on organizational learning ideas, we predicted that wholesale senior team change would be more positively associated with subsequent organizational performance in turbulent contexts, but associated with organization decline when environmental conditions were controlled. Our results supported these predictions particularly with respect to executive team exits. Controlling for turbulence, concurrent CEO succession and executive team exits were inversely associated with subsequent organizational performance. Evidently, changing the CEO and top team members together robs the senior team of critical competencies so important in stable contexts. In contrast, coupling CEO succession with executive team exits was more positively associated with organizational adaptation in turbulent environmental contexts. Sweeping senior team change triggers change in competencies and senior team processes necessary to deal with environmental turbulence. Quite contrary to CEO succession or executive team exits by themselves, coupling CEO succession with executive team exits signals a break from the status quo, which is adaptive during periods of environmental turbulence yet dysfunctional when environmental conditions are stable (see also Ancona 1989, Greiner and Bhambri 1989).

The performance consequences of CEO succession, executive team change, and reorientations were found to be independent of the content of actions taken. In the cement industry, when environmental conditions were controlled, CEO succession was adaptive independent of the choice of new CEO. It may be that new CEOs trigger senior team learning and incremental change independent of the characteristics of the new CEO. Similarly, in turbulent contexts, both strategic reorientations

and sweeping CEO and executive team change were adaptive independent of reorientation content and/or content of senior team changes. When environments are uncertain, managers can not know *ex ante* what to do. It may be that action, even with the risk of mistakes, has survival value in turbulent contexts.

This research and that of Virany et al. (1992) shed light on the relations between senior team changes, organization-wide action, and organizational adaptation. Contrary to literature on organization inertia (e.g., Hannan and Freeman 1984) and CEO succession as a symbolic event (e.g., Pfeffer 1981), results from these two very different industries indicate that senior team change and organization action do indeed affect organizational adaptation. These main effects of action on organizational performance change indicate that while organizational learning may have a stochastic component (e.g., March 1988, Levinthal 1990), managers can actively engineer organization futures by taking action (i.e., making bets) in appropriate contexts. While executives can not *ex ante* know the "right" strategy or the "best" successor, taking contextually consistent action enhances performance in both stable and turbulent conditions (see also Haveman 1992).

This research is clearly limited by its single-industry focus and data availability. We cannot eliminate the criticism that our results are idiosyncratic to the cement industry or to our sample of cement firms. However, the fact that a parallel study in the minicomputer industry yielded similar results adds strength to our theory, generality to our results, and begins to get at the issue of external validity. There are, however, advantages of single-industry studies. Given the nature of the cement industry from 1918–1986, we were able to compare the performance consequences of different kinds of organizational changes under very different environmental contexts.

Conclusion

These results and those of Virany et al. (1992), O'Reilly et al. (1993), Lant et al. (1991), and Miller (1991) find that senior team change and reorientation are powerful levers for organizational adaptation. We find that CEO succession has different performance consequences than executive team change and that the performance impacts of senior team change and strategic reorientations are contingent on organization context. Executive team exits have different impacts on subsequent performance than entries. While turnover in senior teams and strategic reorientations affect organizational adaptation, much remains to be done to more deeply understand the relations between environmental conditions, senior team dynamics, and organizational adaptation.

Appendix 1

Cement Industry Requirements for Major Strategic Change[a]

One of the following events must occur over a maximum of two years:

(1) There must be at least a 33.33% change in the number of plants.

(2) There must be at least a 33.33% change in total capacity.

(3) There must be at least a 100% change in the number of distribution centers.

(4) There must be at least a 100% change in the number of sales offices.

(5) There must be at least a 200% change in the number of cement types.

(6) There must be at least a 200% change in the number of cement brands.

(7) If none of the above conditions are met, but there are multiple smaller changes in the different categories, the following formula is used:

(3) × (% change in the number of plants or in the production capacity of the firm. Only one of these can be included in the formula)
(1) × (% change in the number of distribution centers)
(1) × (% change in the number of sales offices)
(0.5) × (% change in the number of cement types)
(0.5) × (% change in the number of cement brands)

Sum Total _____

If the sum total of the above numbers is greater than or equal to 150 then the requirements for a major strategic change have been met.

(8) The firm's first entry into or exit from each of these five types of vertical integration: transportation (truck, barge, rail), materials (rocks, sand, gravel, stone, clay), energy, concrete, or concrete products.

(9) The firm's first entry to or exit from each of these types of unrelated diversification: construction, real estate, bedroom furniture, carpets, construction materials, etc.

Note: The percentages are calculated as follows: (Time2 − Time1)/Time1.

The requirements for a major change in structure are met when one of the following occurs:

[a] These requirements for strategic and structural changes were induced from reorientations identified from historical data.

(1) The roles of President and Chairman are combined or separated.

(2) When the first or least role with a specific titular designation is created or abolished in the top team. For example, if the first Senior Vice President role is added to the top team, a major structural change has occurred.

(3) When the first or last role with a specific functional designation is created or abolished in the top team. For example, if a role of Marketing Vice President is added to the top team, then a major structural change has occurred.

(4) The firm's sales or production structure either becomes or ceases to be divisionalized.

(5) There is a redefinition of the divisional structure of either the sales or production arms of the firm. The addition or deletion of divisions does not count.

(6) There is at least a thirty-percent change in the total number of divisions in either the sales or production branch of the firm.

Note: Both major strategic and structural change must occur within a two-year period in order to be coded a reorientation.

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Accepted by Richard M. Burton, received April 1992. *This paper has been with the authors* 15 *months for* 3 *revisions.*