

RESEARCH NOTES AND COMMENTARIES

SOFTWARE FIRM TURNAROUNDS IN THE 1990S: AN ANALYSIS OF REVERSING DECLINE IN A GROWING, DYNAMIC INDUSTRY

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Investigations into management actions that reverse organizational decline have produced inconsistent findings. Prior studies have focused on the value of retrenchment actions versus strategic actions to engineer a performance turnaround. These studies, however, have generally not controlled for the cause of firm decline, overlooking a major theoretical contingency. Examining prepackaged software firms in the 1990s, we test the association of strategic and retrenchment actions in facilitating turnarounds in a munificent industry. The results show that measures of strategic actions—new product introductions, strategic alliances, and acquisitions—were positively associated with turnarounds. Conversely, measures of retrenchment actions—layoffs, asset reductions, and product withdrawals—were negatively associated with performance recovery. Our results suggest declining firms in munificent industries cannot retrench their way back to prosperity. Copyright © 2013 John Wiley & Sons, Ltd.

INTRODUCTION

What strategies enable declining firms to turn around their performance? While it has been argued that managers almost always first reach for the scalpel and retrench when faced with declining performance (Morrow, Johnson, and Busenitz, 2004), the theoretical and empirical link between retrenchment and turnaround performance for declining firms is equivocal at best (Barker and

Mone, 1994; Castrogiovanni and Bruton, 2000) or even negative in some circumstances (Bruton, Ahlstrom, and Wan, 2003). Similarly, following the early lead of Schendel, Patton, and Riggs (1976), other researchers have looked at the role of strategic actions in the turnaround process. However, most of the research in this area has examined factors that facilitate or suppress strategic change at firms trying to recover from decline without examining its performance implications (e.g., Barker and Duhaime, 1997; Barker and Mone, 1998).

This paper sheds light on turnaround processes by examining the role of strategic and

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retrenchment actions in turning around the performance of firms in a munificent industry. Based on strategic contingency theory (Hofer, 1980), many scholars have argued that the effectiveness of various actions in response to decline are contingent upon the causes of decline (Arogyaswamy, Barker, and Yasai-Ardekani, 1995; Hofer, 1980; Schendel *et al.*, 1976). When organizational decline is a result of poor strategic posture, strategy changes should be more effective in engineering a turnaround (Barker and Duhaime, 1997; Schendel *et al.*, 1976). Following a similar logic, retrenchment actions should not be associated with recovery from declines due to weak strategic posture because such actions do not address the causes of decline (Arogyaswamy *et al.*, 1995; Hedberg, Nystrom, and Starbuck, 1976; Hofer, 1980) and have potentially disruptive effects on employee performance (Datta *et al.*, 2010) and product development routines (Dougherty and Bowman, 1995) at a time when the firm is vulnerable to failure or continued decline.

We account for the cause of decline by examining the turnaround attempts of firms in the prepackaged software industry in the 1990s. Because the computer software industry experienced tremendous growth during the 1990s, and therefore had a munificent environment, performance declines at software firms during this time period would likely have been the result of poor strategic positioning (versus fighting for efficiency in a hostile industry). Thus, our study provides a partial test of the contingency theory of turnarounds as we examine the association of strategic actions and retrenchment actions with performance recovery at firms likely suffering from decline due to poor strategic position in a munificent environment.

THEORETICAL BACKGROUND AND HYPOTHESES

Beginning with Schendel *et al.* (1976) and subsequently Bibeault (1982) and Hofer (1980), the early turnaround literature established the distinction between “strategic” and “operating” actions in turnaround efforts from decline. Strategic actions focus on changing or adjusting a firm’s domains (i.e., products and markets) or how the firm competes within those domains with key changes in

functional areas (Barker and Duhaime, 1997; Ginsberg, 1988). These changes may involve the development of new resources and capabilities that help the firm compete more effectively (Morrow *et al.*, 2007). Proponents of strategic actions for turning around argue that when organizational decline results from the failure of firms to maintain sufficient alignment with their environment due to organizational stagnation and inertia, such decline requires firms to reinvent themselves through strategic reorientation that alters the firm’s product or market domains and/or changes how the firm competes in its remaining domains (Barker and Duhaime, 1997). Under this view, declining firms with weak strategic positioning will ultimately fail unless fundamental strategy changes are made before the firm exhausts its financial resources.

While the theory behind turnarounds through strategic actions has been consistent, empirical findings have been inconsistent. For example, Hambrick and Schecter (1983) found business units unsuccessful at turning around their performance had carried out strategic actions. Providing counter evidence, Barker and Duhaime (1997) showed the presence of significant domain changes, competitive policy changes, and strategic actions for the average turnaround. However, their study was limited by examining only successful turnaround attempts and thus lacked a control sample of failed firms. While a number of published papers using comparative case studies have highlighted successful turnarounds through large-scale strategy changes (e.g., Hofer, 1980; Schendel *et al.*, 1976), these studies, with the exception of Hofer’s (1980) analyses, also lacked control samples of declining firms that failed to recover from decline.

Operating actions for turnaround, on the other hand, focus on short-run cost reduction actions such as asset reduction and employee reduction. These actions fall into the general category of organizational retrenchment, many times used as a synonym to operating actions or increasing operational efficiency. Michael and Robbins (1998: 35) define retrenchment as a set of organizational activities undertaken to achieve cost and asset reductions and disinvestments. Bibeault (1982) and Robbins and Pearce (1992) assert that the fundamental objective for a declining firm is survival through the return to a positive cash flow. Retrenchment and other cost-cutting activities are

the quickest way to achieve this objective. Selling assets generates cash. Cutting costs may reduce cash outflow. After returning to positive cash flow, a declining firm can then shift its objectives towards development and growth (Pearce and Robbins, 1993).

Empirical studies examining the role of retrenchment in the turnaround process have also arrived at equivocal results. Robbins and Pearce (1992) studying textile firms that experienced decline concluded that retrenchment was not only pervasive, but was indispensable in achieving turnaround. This finding is supported by other empirical studies (e.g., Michael and Robbins, 1998; Robbins and Pearce, 1993). However, other researchers have questioned the retrenchment-turnaround link. In a response to Barker and Mone (1994), Robbins and Pearce (1992) reanalyzed Robbins and Pearce's textile firm sample and concluded that there was insufficient evidence to support the assertion that retrenchment yielded more successful turnaround attempts when actual levels of firm financial performance were examined rather than performance change over time. Barker and Duhaime (1997), in their review of the turnaround literature, argued that most of the studies finding that retrenchment led to recovery from decline utilized samples where firms likely had low need for strategic change (Barker and Duhaime, 1997). The studies used firms in low growth or stagnant manufacturing sectors where firms were most likely to be suffering from industry-contraction-induced declines rather than poor strategic positioning. As such, a management focus of becoming more efficient should have led to performance improvement for the firms in these studies as they were not in need of strategic renewal.

Other studies have also shown questionable value for retrenchment activities in response to decline. Castrogiovanni and Bruton (2000) found no retrenchment effects on turnaround performance following acquisitions of distressed business units. Bruton *et al.* (2003) found retrenchment actions to even be negatively related to turnarounds for family-owned Chinese firms in Asia. Furthermore, Barker *et al.* (1998) found that, while turnaround firms become more efficient than firms that continued to fail, variance decomposition of the increased efficiency at turnaround firms showed it was almost entirely due to revenue gains as opposed to asset and cost reductions.

The argument for retrenchment having a positive association with turnarounds, regardless of the causes of decline, is also questioned by the burgeoning literature on organizational downsizing that has accumulated over the last 20 years. When a firm reduces assets or costs, it is likely that organizational headcount will also be reduced. Outside of the context of decline, research has shown that organizational downsizing (1) creates numerous workplace-related problems that hurt employee performance (Datta *et al.*, 2010), (2) reduces a firm's capacity to innovate by upsetting product development routines (Dougherty and Bowman, 1995), and (3) generally has negative consequences for subsequent firm financial performance (Guthrie and Datta, 2008). Although it can be normatively argued that firms should downsize when faced with future projected cash-flow problems, the evidence from the downsizing literature suggests that cost savings are not delivered without creating other organizational problems (Datta *et al.*, 2010).

Our arguments can therefore be summarized as follows. First, the effectiveness of management actions attempting to turn around performance depends on the causes of decline. Second, within a munificent industry, individual firms that declined were likely suffering from firm-based decline whereby poor performance is caused by misfit between the firm's strategy and the environment. Third, because such strategy-environment misfit requires strategic change to realign a firm's resources and capabilities with the environment, strategy changes are more likely to lead to performance turnaround. Finally, because retrenchment activities focus on generating efficiency rather than strategic change, such activities therefore will be associated with decreased chances of turning around because of their negative side effects on the organization and its employees.

Strategic actions As discussed earlier, theorists have argued that change in strategy is necessary to turn around the performance of a firm experiencing firm-based organizational decline (Arogyaswamy *et al.*, 1995; Barker and Duhaime, 1997; Hedberg *et al.*, 1976). Generically, the main ways that firms can change their strategies are by altering the domains (i.e., products and markets) in which they compete or changing the way they compete within existing domains (Barker and Duhaime, 1997; Ginsberg, 1988). Changing a declining firm's

strategy may entail changing the product/market mix of the firm through two possible means. First, a firm can change its strategy autonomously by recombining existing resources and capabilities into new product offerings (Morrow *et al.*, 2007). New product offerings not only provide the firm with a means to more effectively leverage its current resources and capabilities, but also to create more value for its existing customers as well as to attract new ones.

Furthermore, when a firm's current resource base is not adequate to engineer a change in strategy, it can acquire new resources and capabilities externally through acquisitions and strategic alliances (Morrow *et al.*, 2007). With the urgency created by survival threatening decline, internally developing the new resources and capabilities might not be feasible because of the time required. Acquisitions and strategic alliances provide an expeditious means of accessing and leveraging resources necessary for strategic repositioning but not currently owned by the firm.

Given these arguments, three main visible actions that would allow declining firms in a munificent industry to change their strategic positions were: (1) new product introductions, (2) strategic alliances, and (3) acquisitions. While each of these actions would have likely incurred costs for declining firms and presented a certain likelihood of failure, the firms' poor performance in a very munificent environment indicates weak strategic positioning. In such situations, the costs of lack of strategic change are likely greater than the costs of making such changes (e.g., Haveman, 1992).

Hypothesis 1a: New product introductions will be positively related to performance turnarounds for firms declining in a munificent industry.

Hypothesis 1b: Strategic alliances will be positively related to performance turnarounds for firms declining in a munificent industry.

Hypothesis 1c: Acquisitions will be positively related to performance turnarounds for firms declining in a munificent industry.

Retrenchment actions Conversely, the use of retrenchment actions should not have provided

any substantial performance benefits for declining firms in a munificent industry. Given the poor strategic position of such declining firms, retrenchment should not have addressed the causes of decline in seeking increased efficiency. Some researchers have argued that use of retrenchment strategies by top managers at declining firms could hamper turnaround efforts and increase the chances of failure because they often have dysfunctional effects on firm employees and culture (Barker *et al.*, 1998). This argument is supported by the growing literature on hidden costs of organizational downsizing such as disruption of social networks and learning (Dougherty and Bowman, 1995), employee overload and burnout (Datta *et al.*, 2010), and a deterioration of quality, productivity, and effectiveness (Cameron, Freeman, and Mishra, 1991).

Two general types of retrenchment actions have been examined in turnaround research: asset reduction and cost reduction (Pearce and Robbins, 1994; Robbins and Pearce, 1992). Asset reduction involves the elimination of an entire business or other hard assets such as plants or facilities. Cost reduction often involves layoffs of personnel (i.e., downsizing) to reduce firm labor costs (Barker *et al.*, 1998). While these actions by managers may focus on trying to make the firm more efficient, we expect these actions to have been, on average, harmful to software firms trying to recover from decline in the 1990s. Any efficiencies gained should not have been able to resuscitate a software firm with a poor strategy. Also, the negative side effects from retrenchment actions will reduce the chances of turning around. Our arguments suggest the following hypotheses:

Hypothesis 2a: Layoffs (cost retrenchment) will be negatively related to performance turnaround for firms declining in a munificent industry.

Hypothesis 2b: Asset reduction (asset retrenchment) will be negatively related to performance turnaround for firms declining in a munificent industry.

Hypothesis 2c: Asset reduction (product withdrawal from the market) will be negatively related to performance turnaround for firms declining in a munificent industry.

METHODOLOGY

Sample selection

Strategic management researchers have a long history of using certain industries at certain points in time as natural laboratories for building and testing theory. Some industries provide unique structures and methods of competing that enable the testing of theory under more optimal conditions. For the purpose of examining turnaround attempts, if we could examine the actions of declining firms in an industry during a time period of robust industry growth, we could then control for one of the two major causes of decline. The prepackaged computer software industry (SIC 7372) grew very rapidly in the 1990s. During the 1990–1996 time frame, when our sample firms declined, U.S. software industry sales grew at an annualized rate of over 30 percent and industry employment grew at an annualized rate of nearly 20 percent (U.S. Census Bureau, 1997). It could therefore be considered a munificent industry during that time frame. Declining firms in such an industry would be suffering from firm-based decline (Arogyaswamy *et al.*, 1995), and industry-contraction-based decline could be virtually ruled out.

The population for the study was U.S.-based, prepackaged computer software firms that were publicly traded in the 1990–1996 period. We used financial data from the *Compustat* database to identify software firms that declined during the 1991–1996 period of time. To be classified as experiencing organizational decline, a firm needed to be a publicly traded firm with a main SIC code listing of 7372 and have at least two consecutive years of declining return on assets (ROA) after a base year with ROA being greater than or equal to five percent. This criterion ensured that the sample firms had a noticeably sharp downturn in performance as opposed to firms that simply stagnated with a mediocre performance. Also, a two-year performance drop ensures that decline did not occur due to a single year anomaly for firms such as a major financial write-off of assets. In addition to declining ROA, sample firms also had to report a net loss (i.e., negative ROA) in the second year of decline. This criterion is in conformity with characterizations by management researchers that organizational decline should be a survival-threatening event (Barker and Mone,

1994; Chen and Hambrick, 2012). Applying these criteria to firms competing in SIC code 7372 with a base year (i.e., the year of above 5% ROA) of 1990–1996 yielded a sample of 114 firms.

Turnarounds versus nonturnarounds To be considered successful in turning around, a firm must (1) have at least two years of increasing ROA after the two declining years of ROA, and (2) have achieved and maintained positive ROA by at least the sixth year after the base year before decline started (e.g., Morrow *et al.*, 2004). Overall, there were 36 cases of successful performance turnarounds, which indicates that slightly less than 32 percent of declining software firms were able to turn around. This percentage indicates that the turnaround process was difficult as a majority of firms failed to recover.

Of the 78 firms that were classified as nonturnarounds, several patterns of performance existed. First, some firms continued in existence but failed to achieve or maintain the upturn in ROA necessary to be classified as a turnaround firm. Second, firms that stopped reporting results on *Compustat* after declining were investigated. If these firms declared bankruptcy, were liquidated, delisted by stock exchanges, or acquired while still unprofitable, we classified them as nonturnarounds. This inclusion of firms that went bankrupt or disappeared after declining addresses one of the key criticisms of sample selection in turnaround studies, which is survival bias (Barker and Mone, 1994). Analyses of variance (ANOVAs) comparing the ROAs of turnaround and nonturnaround firms confirmed that during the predecline year and the two-year period of decline there are no significant differences in the ROAs between the turnaround and the nonturnaround firms (i.e., $p > 0.05$). In the fourth, fifth, and sixth years, however, there are significant differences in the reported ROAs of turnaround and surviving nonturnaround firms ($p < 0.05$).

Data collection

Using *LexisNexis*, we first identified all newspaper and trade articles for each sample firm for the first three years of decline. The reason we focused on gathering data on firm actions from years 1 to 3 was that (1) these actions were the firm's critical first responses to decline, and (2) the three-year time frame is long enough that firms should be able to initiate turnaround action plans. Also,

since turnaround was measured in years 3–6, as discussed earlier, the time lag allows us to make stronger causal conclusions for the effects of various management actions. Next, two coders using NVivo N6 software performed a structured content analysis of each article and classified it into the pre-established action categories such as layoffs, alliances, product introductions, etc. The two coders developed the categories by looking at commonly recurring actions taken by firms in the early-coded articles and then matching these actions to those that have been commonly seen in the literature on turnarounds as representing strategic or retrenchment actions. This procedure is fairly well established in the competitive dynamics literature to measure competitive actions (Ndofor, Sirmon, and He, 2011). All retrenchment and strategic actions were determined by the two coders analyzing newspaper and trade articles for each sample firm.¹

Retrenchment actions Following prior research, retrenchment actions are separated into cost retrenchment and asset retrenchment (Robbins and Pearce, 1992). Cost retrenchment refers to the wholesale reduction in costs, especially labor costs. We operationalized cost retrenchment with an indicator variable for whether or not the firm engaged in *layoffs* in years 1–3. Layoffs are defined as the wholesale reductions in employees. Similarly, asset retrenchment refers to the elimination of long- and short-term assets. Two common types of management actions reported in articles were classified as asset retrenchment. *Asset reduction* occurred when a firm sold or closed any of its physical assets. *Product withdrawal* occurred when a firm closed or sold product lines. We used indicator variables to operationalize all of these retrenchment actions because insufficient information existed to create continuous variables. For example, in most layoff cases, it was impossible to ascertain the proportion of the workforce let go. The same conditions applied to product withdrawals.

Strategic actions Strategic actions were operationalized as those actions that lead to product/market expansion or innovation within existing

markets (e.g., Ginsberg, 1988). Three actions were coded to capture this change in strategy: *number of new product introductions*, *number of new alliances*, and an indicator variable for whether or not the firm engaged in an *acquisition*. Note that all of these actions were included in Barker and Duhaime's (1997) broad-stroke measure of strategic change that was developed from surveys of chief executives in a cross-sample of manufacturing firms. Since this study is focused on the software industry, these actions emerged from the content analysis as primary actions taken by firms to change strategy.

Control variables We further measured a number of control variables that prior research has shown to affect turnaround attempts. These included a dummy for the year of commencement of decline, a dummy indicating whether or not there was a change in *CEO* during decline, the *current ratio* of the year before decline to capture financial slack, a dummy to capture *financing*, i.e., whether additional equity or debt was raised during decline years, total assets prior to decline to capture *firm size*, ROA before decline to capture *base performance*, and, finally, we controlled for *extent of decline* by subtracting the sample firm's ROA in Year2 (i.e., the second year of decline) from the firm's base performance year ROA before declining.

ANALYSES AND RESULTS

Table 1 presents the means, standard deviations, and correlations of the variables. Several observations are noteworthy from Table 1. First, the correlations between various retrenchment and strategy change actions are generally low to moderate in size with the exception of the correlation between *number of new product introductions* and *number of new alliances* ($r = 0.70$, $p < 0.001$). Therefore, sample firms in general seemed to be either simultaneously introducing many new products and entering more alliances or doing few of both. Because of this high correlation between *number of new product introductions* and *number of new alliances*, we will report results for these variables separately and combined in our analyses.

Prior to the analyses, we tested for selection bias in our sample using the *Heckprob* procedure. Using a Wald test for independence of equations

¹ To ensure reliability, each article on all sample firms was initially read and classified by two coders. Both coders concurred 84 percent of the time on identifying firm actions, which represents a high level of intercoder reliability. A third coder went over and classified actions on which the two coders did not agree.

Table 1. Descriptive statistics and bivariate correlation matrix^a

	Mean	Standard deviation	1	2	3	4	5	6	7	8	9	10	11
1 Performance turnaround	0.32	0.47											
2 Firm size ^b	3.62	1.47	0.18										
3 Current ratio	3.26	1.88	-0.08	-0.08									
4 Asset reduction	0.15	0.36	-0.08	0.15	-0.15								
5 Product withdrawal	0.07	0.26	-0.12	0.01	0.08	-0.12							
6 Layoffs	0.25	0.43	-0.04	0.14	0.06	0.05	0.16						
7 New product introductions ^b	2.30	1.11	-0.03	0.37	0.06	-0.08	0.16	0.39					
8 Acquisition	0.75	0.43	0.08	0.13	-0.12	0.13	0.16	0.19	0.07				
9 CEO change	0.08	0.27	0.15	0.22	-0.04	-0.03	0.17	0.13	0.27	0.02			
10 Strategic alliances ^b	2.67	1.11	0.04	0.43	0.05	0.03	0.12	0.32	0.70	0.21	0.33		
11 Base performance	12.79	7.07	-0.16	0.03	-0.16	-0.14	0.02	0.05	0.01	0.13	-0.03	-0.03	
12 Extent of decline	64.29	60.26	-0.20	-0.14	0.05	0.06	0.11	0.08	-0.14	-0.04	-0.13	-0.17	0.21

^aCorrelations greater than |0.18| are significant at $p < 0.05$. Two-tailed test of significance used. $N = 114$. For parsimony, year dummy variables are not included in the table.

^bNatural logs used.

(i.e., $\rho = 0$), the χ^2 statistic was not significant, $\chi^2(1) = 0.47$; $p = 0.49$, indicating no evidence of selection bias. We therefore did not account for selection bias in our analyses.

Prior performance, which in this study was expected to affect probability of turnaround, has also been shown in prior studies to affect the probability of CEO replacement (Zhang, 2006). Therefore, there is the potential for endogeneity issues between CEO replacement and prior performance. We therefore created a proxy for probability of CEO replacement that is uncorrelated with prior performance by following a two-stage approach utilized by Wiersema and Zhang (2011). We regressed CEO replacement on base performance, extent of decline, and year dummies. The residual from this regression is used as our proxy for probability of CEO replacement independent of prior performance effects and used in the analyses.

The results of our analyses are reported in Table 2. Columns 1–4 in Table 2 report conditional logistic regression coefficients while marginal effects are reported in the last column. The first column (Model 1) shows the results of when the control variables are entered. As indicated, turnaround firms generally had less steep declines than nonturnaround firms. However, even when controlling the depth of decline, they also tended to have higher base performance before declining. As such, nonturnarounds, on average, seemed to be higher performers whose declines were much worse.² Year dummy variables representing the base year before decline for each firm were also entered into Model 1 and the remaining models. These variables correct for any time-based effects on turnaround chances of sample firms turning around and are not reported for parsimony.

Models 2–4 test the hypotheses about the association of strategic actions and retrenchment actions with performance turnarounds at the sample software firms. As discussed previously, the *number of new product introductions* and *number of new alliances* are reported separately

²An examination of Table 1 also reveals no significant correlations (at $p < 0.05$) between *base performance*, *extent of decline*, and various firm actions. This fact is important because it discounts the possibility that the extent of decline was deterministically driving the types of actions that managers were taking at the sample software firms.

Table 2. Logistic regression results for performance turnaround^a

Construct	Variable	Model 1	Model 2	Model 3	Model 4	Marginal effects ^b
Controls	(Constant)	1.88 + (1.45)	4.36 * (1.99)	5.04 * (2.24)	4.94 * (2.2)	—
	Firm size	0.21(0.19)	-0.05(0.32)	-0.25(0.33)	-0.27(0.34)	0.02(0.03)
	Extent of decline	-0.02 * *(0.01)	-0.03 * *(0.01)	-0.03 * *(0.01)	-0.03 * *(0.01)	-0.00 * *(0.00)
	Base performance	-0.15 * *(0.06)	-0.24 * *(0.09)	-0.26 * *(0.09)	-0.27 * *(0.09)	-0.03 * *(0.01)
	Current ratio	-0.43(0.15)	-0.43 * (0.22)	-0.47 * (0.24)	-0.47 * (0.24)	-0.04 ⁺ (0.02)
Retrenchment actions	Financing	-0.06(0.62)	-0.10(0.79)	-0.50(0.88)	-0.28(0.84)	-0.02(0.07)
	Product withdrawal	—	-2.13 ⁺ (1.53)	-2.14(1.62)	-2.38 ⁺ (1.57)	-0.11 * (0.05)
	Asset reduction	—	-2.66 * (1.12)	-3.05 * (1.31)	-2.82 * (1.22)	-0.14 * (0.06)
	Layoffs	—	-1.12(0.83)	-1.40 ⁺ (0.86)	-1.43 ⁺ (0.86)	-0.10 ⁺ (0.06)
Executive change	CEO change	—	3.15 * *(1.17)	2.72 * (1.15)	2.95 * (1.17)	0.28 * (0.13)
	Acquisitions	—	1.58 ⁺ (0.86)	1.00(0.89)	1.38 ⁺ (0.87)	0.10 ⁺ (0.06)
Strategic actions	New product introduction ^c	—	0.66 ⁺ (0.41)	—	—	0.07 ⁺ (0.04)
	Strategic alliances ^c	—	—	1.36 * *(.53)	—	0.13 * (0.05)
	New product introduction and alliances	—	—	—	1.33 * *(0.55)	0.12 * (0.05)
	Pseudo R^2	0.25	0.46	0.50	0.49	—
	-Log likelihood	50.09	35.63	33.01	33.65	—
	Chi-squared (χ^2)	34.35 * *	60.96 * *	66.23 * *	64.92 * *	—

^a Conditional logistic regression coefficients are presented in Models 1–4 with their standard errors in parentheses. Significance tests are two-tailed tests.^b Marginal effects at variable means. For dummy variables, marginal effect is for discrete change of dummy variable from 0 to 1. Standardized marginal effects (with their standard errors in parentheses) are presented for easier comparison.^c Marginal effects for *new product introduction* and *strategic alliances* are estimated from Models 2 and 3, respectively.** $p < 0.01$; * $p < 0.05$; + $p < 0.10$ Year dummies are not included for parsimony.

in Models 2 and 3. They are combined for Model 4 by averaging their standardized scores to create one measure. Hypothesis 1 (H1), which argued that strategic actions would be positively associated with turnarounds, was supported in the case of *number of new alliances* ($p < 0.01$). The *number of new product introductions* and *acquisitions* were also positively associated with the chances of turning around, but these results were only significant at $p < 0.10$. Overall, Models 2–4 generally support H1 that strategic actions increase the chances of turning around at declining software firms in the 1990s.

Hypothesis 2 (H2), which stated that retrenchment actions would be negatively associated with the chances of turning around for declining software firms, was generally supported by the logistic regressions in Models 2–4. *Asset reduction* and *layoffs* were negatively associated with the chances of turning around and significant in all three models. *Product withdrawal* is negatively associated with turning around in Models 2 and 4 but not significant in Model 3. Generally, this pattern of results supports H2. Overall, the logistic regressions with conditional regression coefficients reported in Models 2–4 support both hypotheses. Noteworthy, management actions did not represent a trivial amount of the variance in the odds of turning around. The Cox & Snell pseudo *R*-square statistic rose from 25 percent with the control variables to between 46 and 50 percent once management actions were entered.

Some supplementary analyses were also performed with the data to test other explanations for turnarounds of our software firms. For example, several researchers have suggested that retrenchment actions will positively interact with strategic actions to create recovery, especially if those retrenchment actions happen early in the response to decline followed by later strategic actions (Pearce and Robbins, 1993). We tested this assertion by adding product-term interactions between various retrenchment and strategic actions into the logistic regression models. None of the interaction terms were significant at conventional levels ($p < 0.10$ or smaller). Likewise, others have argued the interaction between CEO changes and strategic changes may be the key to successful turnarounds (Arogyaswamy *et al.*, 1995). Similar product-term interaction analysis combining CEO change with various firm actions also did not yield any significant findings.

DISCUSSION AND CONCLUSION

Our goal in undertaking this study was to test the effects of strategic actions and retrenchment actions on the ability of firms in munificent industries to turn around from decline. The software industry's high growth rate and profitability during the 1990s to a large extent insures that declining firms have firm-specific strategic problems. While the strength of support varies across models, the main pattern of findings was that turnaround attempts in the software industry in the 1990s benefited from strategic actions (i.e., *acquisitions*, *number of new alliances*, and the *number of new product introductions*). Retrenchment actions (i.e., *product withdrawals*, *asset reduction*, and *layoffs*), on the other hand, tended to reduce the chances of turning around. In other words, our results suggest that the managers of declining firms in munificent industries cannot retrench or downsize their firms back to performance growth.

These findings add to the research discussion on corporate turnarounds in several key ways. First, our findings are consistent with scholars who have argued that turnaround attempts from firm-based decline will benefit most from strategy changes (e.g., Arogyaswamy *et al.*, 1995; Barker and Duhaime, 1997; Hofer, 1980; Schendel *et al.*, 1976). The software industry in the 1990s was growing rapidly, and therefore declining firms were likely suffering from firm-based decline (as opposed to industry-contraction-based). Given these industry conditions, strategy changes were more effective turnaround actions.

Our argument that the use of retrenchment actions would impede, rather than enhance, the odds of turnaround for declining firms in a munificent industry was supported. Indeed, there is growing evidence suggesting long-term dysfunctional effects and damaging hidden costs of retrenchment actions such as organizational downsizing (e.g., Datta *et al.*, 2010). Thus, our results suggest that researchers need to think further about when retrenchment may be an appropriate response to decline. We would be remiss to argue that retrenchment is never appropriate. Because we restricted our sample to firms in a single high-growth industry at a point in time when the industry was very profitable, we can only suggest that retrenchment hurts the chances of turning around within that context. A key direction for further

research would be to examine similar actions to this study under a different set of circumstances. One would expect possibly very different results in industries that were mature or going through cyclical contractions due to a recession. It may be more than a coincidence that Robbins and Pearce's (1992) study finding positive benefits for retrenchment was conducted within the confines of the cyclical and mature textile industry. In that type of environment, efficient implementation of the firm's existing strategy may be the most important aspect of recovering successfully. Future research thus needs to examine potential turnaround actions in a greater number of industry environments.

Finally, the results of this study confirm the growing importance—in both research and practice—of competitive actions in explaining firm performance. Competitive actions provide the means through which firms utilize and leverage their resources to gain competitive advantage over rivals and improve their performance (Ndofor *et al.*, 2011). These results indicate that the performance benefits of competitive actions extend beyond firms jockeying for competitive position to firms trying to stem organizational decline and turn around their performance.

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