

The Relationship between Management Control System Usage and Planned Change Achievement: An Exploratory Study

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ABSTRACT *Although the relevance of management control systems to successful change achievement has been conceptually acknowledged, empirical matters such as measuring the contribution of control systems to effective change implementation lack practical investigation. Using data obtained from managers in 22 organizations, we explore the extent to which managers believe their management control systems are employed when implementing planned change. Relationships between commonly employed management controls and implementation success are also estimated. Results indicated that managers used management control systems less extensively than other elements of change process, although usage of control systems increased with implementation. A strong relationship was found between the use of control systems based on outcomes monitoring and implementation success. However, there was no significant relationship between the use of behavior-based controls and implementation success. Overall, the findings suggest that many organizations may underutilize formal controls, particularly those related to outcomes monitoring, when managing change.*

KEY WORDS: Management control systems, rewards, performance appraisals, planned change, outcomes monitoring

Introduction

How important are management control systems to the achievement of planned change? Some scholars have argued that formal control systems are vital to effective implementation, particularly when the change is strategic in nature

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(e.g., Kotter and Schlesinger, 1979; Simons, 1995). Others are less sanguine, arguing that the reactive nature of most management control systems reduces managers' ability to anticipate future challenges and opportunities that often arise during the implementation process (Schreyogg and Steinmann, 1987; Preble, 1992). Research has produced little compelling evidence to rectify these competing perspectives. Empirical studies that assess the role of management control systems in change implementation should therefore offer potentially meaningful contribution.

This study explores the empirical linkage between management control systems and the achievement of planned change. Data from 80 managers in 22 organizations are analyzed to examine the extent to which management control systems are employed in the implementation process. In addition, relationships between commonly employed management controls and implementation success are estimated. The theoretical and practical issues of these findings on the governance of planned change are then discussed.

Background

Management Control Systems

Management control systems are formal, information-based routines that managers use to maintain or alter patterns in organizational activities (Simons, 1995, p. 5). Central to most management control systems is setting behavioral or output standards and employing mechanisms to ensure that these standards are achieved (Lawler and Rhode, 1976; Merchant, 1985). Most of these mechanisms are diagnostic in nature; meaning that they require assessment of how well performance is achieving objectives and analysis of where problems may exist (Otley and Berry, 1980). Corrective action flowing from diagnosis is aimed at revising behavior, goals, or both in order to sufficiently reduce a perceived performance gap. Many information systems can be employed in a diagnostic control capacity, including profit plans, budgets, project management systems, human resource processes, and systems that measure strategic performance (Simons, 2000).

In this study, we view management control systems as tools that managers use to control employee behavior that enables the successful implementation of planned change. We view three variables as central to operationalizing management control systems: performance review and appraisals, rewards and outcome monitoring. Performance review and appraisals are often used for controlling employee behavior (Lawler, Mohrman and Resnick, 1984; Kerr, 1988). Secondly, reward systems are often utilized to motivate behavior to achieve positive organizational outcomes (Cummings and Schwab, 1973; London and Oldham, 1976; Kerr and Slocum, 1987; Merchant, 1989). Thirdly, outcome monitoring is used to formulate information streams that provide a picture of how the organization is functioning (Ackoff, 1970; Lawler and Rhode, 1976; Kaplan and Norton, 1992) and used for assessing the information in order to assess whether the initiative is on track and taking corrective action when necessary (Anthony, 1965; Lorange and Scott Morton, 1974; Simons, 2000).

Planned Change

The literature is unclear as to the importance of management control systems when implementing planned organizational change. Planned change refers to a premeditated, agent-facilitated intervention intended to modify organizational functioning towards a more favorable outcome (Lippitt *et al.*, 1958). Since they help keep things on track (Merchant, 1985), control systems should help managers govern the implementation process (Simons, 1995). Indeed, high-level control system variables have been specified in many conceptual change models (e.g., Tichy, 1983; Burke and Litwin, 1992). Moreover, poor control system utilization has been cited as a deterrent to effective change achievement by both scholars (Kotter and Schlesinger, 1979) and by empirical commentators (Charan and Colvin, 1999).

Other Change Process Variables

In order to empirically study management control systems, it is necessary to discuss other change process variables that are viewed as essential to the implementation success of planned change. To obtain other change process variables for our study, we examined the widely cited change models of Tichy (1983), Nadler and Tushman (1989), Burke and Litwin (1992), and Kotter (1996). In particular, we sought elements that were common to these models under the assumption that such commonalities would provide some conceptually valid change process variables for our investigation. Our study revealed three elements common to these models: determining the content and actions of the initiative, developing new behavior and work processes necessary to achieve the change, and communicating to the organization during implementation.

Considerable theoretical support can be found for linking these three elements of change process to change achievement. Action plans have been conceptualized as linking pins between organizational levels on the way to goal achievement (Likert, 1961). The development and delivery of new skills would seem a necessary prerequisite to attaining the organizational goals that would signify successful change implementation (e.g., Kerr and Jackofsky, 1989; Terpstra and Rozell, 1993). Finally, systematic communication and feedback have been suggested as essential to effective change in organizations (Huseman *et al.*, 1980; Klein, 1993; Kotter, 1996).

While a number of studies have focused on contingency relationships between control system elements and the content of change strategy (e.g., Govindarajan and Gupta, 1985; Simons, 1987), there has been little investigative focus on the relationship between management control systems and change achievement (Langfield-Smith, 1997; Otley, 1999). Given the need for better empirical understanding of implementation phenomena in general (Pettigrew *et al.*, 2001), research that examines the relevance of management control systems to the process of planned change offers potential for contribution. In this study, we offer insight into the extent to which managers employ control systems when implementing change. In addition, we estimate the significance of the relationship

between management control systems and implementation success. Our study explores both management control system variables and other variables that have been shown to be significant to the successful implementation of planned change. Hypotheses related to these objectives are expressed in the following section.

Hypothesis Development

Extent of Management Control System Use

Although control systems are often prescribed as necessary elements of effective change process (e.g., Goodstein and Burke, 1994; Simons, 1995), many managers appear to ignore or avoid formal control systems to manage change (Charan and Colvin, 1999). Lorange and Murphy (1984) suggested that managers might not use management control systems when implementing change out of fear that their original plans would be proven wrong. Moreover, the outcomes of many changes, particularly those strategic in nature, are often difficult to measure (Nadler and Tushman, 1989), which may reduce the effectiveness of control systems based on measuring and monitoring mechanisms (Goold and Quinn, 1990). Furthermore, routine activities associated with management control, such as reviewing status reports and following up on corrective actions, may be viewed as boring and mundane to many managers when compared to other change-related activities such as developing change strategy and meeting with employees, customers, and other stakeholders to motivate the change program. Because of these challenges, managers are likely to favor other change-related activities over management control systems during the implementation process. Stated more formally:

Hypothesis 1_a: Use of management control systems will be significantly lower than the use of other change process elements when implementing planned change.

Identifying performance measures that reflect successful change achievement should be essential to the efficacy of control systems in the context of managing change (Goold and Quinn, 1993; Simons, 1995). However, managers often initiate change without a clear notion of what the final results will be or how to measure them (Nadler and Tushman, 1989). Empirical evidence indeed suggests that many change initiatives proceed for long periods without substantive measurement (Troy, 1994; Carr *et al.*, 1996). As implementation progresses, though, it is likely that the outcomes and goals of a change initiative may become easier to visualize as initial plans are revised and executed over time. As goals and reflective measures crystallize, employing management control systems as part of implementation structure should increase. Since planned change often takes longer to implement than initially intended (Alexander, 1985), use of management control systems might increase over time as the lagged results of implementation efforts become available for control-based tracking efforts. For example, a change from individual to team-based problem solving may take months or years before substantial effects are observed. It may be some time, therefore, before enough information is available to enable the effective use

of management control systems to track implementation progress. Therefore we hypothesize that:

Hypothesis 1: Use of management control systems will increase as implementation of a planned change progresses.

Management Control Systems and Change Achievement

As noted above, there are a number of arguments against the usefulness of management control systems for implementing change. The reactive nature of many control systems (Schreyogg and Steinmann, 1987), difficulties with goal identification and measurement (Nadler and Tushman, 1989), and the intrusive nature of many monitoring-based control systems (Amsler, Findley and Ingram, 2001) suggest an insignificant or perhaps negative role for management control systems in the implementation process.

However, the benefits of management control systems should outweigh these disadvantages when implementing planned change. Planned change refers to a premeditated, agent-facilitated intervention intended to modify organizational functioning towards a more favorable outcome (Lippit *et al.*, 1958). It reflects the teleological category of change theory that views organizational change as being achieved primarily through the adaptive behavior of individuals in light of internally set goals (Van de Ven and Poole, 1995). However, the goals between individuals and the organization often diverge when a new initiative is introduced, causing many to resist the change (Piderit, 2000). Management control systems help mitigate this resistance by encouraging goal congruence throughout the organization (Anthony, 1965). Goal congruence is achieved through the establishment of performance objectives at the individual and organizational level, and subsequent tracking of performance versus those goals. As managers seek to close performance gaps signaled by the control system, organizational and individual goals align, serving to link various levels of the organization and to reduce resistance to change (Likert, 1961).

Moreover, the adaptive, incremental nature of teleological change (Van de Ven and Poole, 1995) implies that organizational processes and performance standards will require significant and perhaps frequent modification during the change's implementation. These midstream modifications are a high probability event, since organizational changes are rarely implemented as originally intended (Mintzberg and Waters, 1985; Quinn, 1980). The tracking of performance that occurs as part of management control system activity permits managers to take the pulse of an implementation effort and diagnose the extent to which actual outcomes are consistent with the goals of the change initiative. A significant performance gap signals the need for corrective action and prompts managers to subsequently modify organizational processes, goals, or both. Without the systematic tracking mechanism, managers may not sense that a change initiative is off course and in need of revision, which may result in unsatisfactory implementation. Therefore:

Hypothesis 2: Use of diagnostic management control systems will be positively related to the successful implementation of planned change.

Methodology

Sample

Our sample came from organizations that were participating in a change management seminar sponsored by an industrial consortium. Many of these organizations had sent more than one manager—sometimes the majority of their top management teams—to participate in the seminar. This was attractive, since multiple respondents can counter the response bias possible when using retrospective accounts in organizational research (Golden, 1992). Seminar participants were asked to complete our research questionnaire during the session. Only organizations where more than one response was obtained were included in this study; multiple responses from 22 organizations were secured for this investigation. With 80 managers responding in total, a mean of 3.6 respondents per organization was obtained.

General information about the sample organizations appears in Table 1. Manufacturing and service sectors were evenly represented. Approximately two-thirds of the organizations were privately owned, while the rest of the sample consisted of publicly owned and not-for-profit organizations. Over 90% of respondents were at least middle-level managers; more than half were upper-level managers. In the questionnaire, managers were asked to respond based on how their organizations were implementing a current change initiative. Table 1 also includes a brief description of these ‘reference changes’ along with respondents’ mean estimates of the degree to which the changes had been implemented. The content of the change initiatives varied widely, ranging from large-scale changes in strategy, markets, and culture to more project-oriented changes. The reference changes ranged from 25% to 100% implemented.

Measures

Management control system variables

Although management control systems assume many practical forms (e.g., Simons, 1999), they are often conceptualized as linked to either behavior or output control (Fama, 1980). Three scales were developed to assess the extent to which both behavioral and output control systems were employed during the change’s implementation (see the Appendix for all items used in this study). Two single item scales assessed the use of two commonly used behavioral control systems. Since performance review and appraisal systems are often employed to control employee behavior (Lawler *et al.*, 1984; Kerr, 1988), one single item scale measured the extent to which managers reviewed employee performance during the implementation process. The other single item scale reflected the use of incentives and rewards as part of the implementation process, since reward systems have often been utilized to motivate behavior consistent with positive organizational outcomes (Cummings and Schwab, 1973; London and Oldham, 1976; Kerr and Slocum, 1987; Merchant, 1989). The third scale was a composite of two items meant to reflect the presence of outcomes monitoring and control: information streams that provide a picture of how the organization is functioning (Ackoff, 1970; Lawler and Rhode, 1976; Kaplan and Norton,

Table 1. Summary of respondents

ID	Sector	Ownership	Size ^a	Number Respondents	Change Description	% Implemented ^b
1	Mfg	Private	3	5	New business segment entry	60%
2	Service	Non-profit	4	6	Vision/mission diffusion	83%
3	Service	Private	3	2	Wholesaler partnership program	75%
4	Service	Non-profit	4	2	NASA	75%
5	Mfg	Private	5	7	High performance work group structure	25%
6	Service	Private	3	4	Employee activity management process	63%
7	Service	Public	4	4	Corporate restructuring	56%
8	Service	Private	4	4	Predictive maintenance service development	69%
9	Service	Private	2	2	Project cost estimation system	38%
10	Mfg	Private	1	3	New product line rollout	75%
11	Mfg	Private	3	4	Project management system	63%
12	Mfg	Private	3	2	Work team empowerment	100%
13	Service	Private	5	4	Team-based structured problem solving	25%
14	Mfg	Public	4	5	Outsourcing of assembly process	85%
15	Service	Non-profit	5	3	TQM implementation	33%
16	Mfg	Private	3	2	Vendor delivery time improvement	63%
17	Mfg	Public	5	3	Reduce % of purchased production	67%
18	Mfg	Public	4	4	Product creation team structure	81%
19	Service	Private	5	5	New product development and rollout	75%
20	Service	Private	3	3	Communication of business plan vision	33%
21	Mfg	Private	3	3	Just-in-time production process	42%
22	Mfg	Private	4	3	Pay—for-performance incentive system	92%

^a1 = 0–50 employees.

2 = 50–100 employees.

3 = 100–500 employees.

4 = 500–1000 employees.

5 = 1000+ employees.

^bAverage of respondent estimates.

1992), and using the information to assess whether the initiative is on track and taking corrective action when necessary (Anthony, 1965; Lorange and Scott Morton, 1974; Simons, 2000). Items were rated on a scale ranging from 1, 'no formal system in place', to 5, 'a formal, effective system in place'.

Other change process variables

Two scales were developed to measure the formality of the change determination process. Given the centrality of problem definition and situational analysis to effective change determination (e.g., March and Simon, 1958; Churchman, 1968; Van de Ven and Poole, 1995), a three-item composite scale gauged the extent to which managers systematically analyzed the organization's current situation and defined the deficiencies that motivated the change. Since breaking large, abstract goals into smaller, actionable pieces is thought critical to operationalizing change (Barnard, 1938; Likert, 1961; Ansoff, 1965), a single item scale assessed the extent to which action plans were established to implement the change. Another scale was generated to reflect development of new behavior and work processes necessary to realize change (Nadler and Tushman, 1980; Wexley and Latham, 1980; Terpstra and Rozell, 1993; Cottrill, 1997). This scale was a composite of three items that measured the extent to which skills necessary to enact the change were systematically developed and delivered. Finally, to assess the use of systematic communication and feedback during implementation (Huseman, Alexander and Driver, 1980; Klein, 1993; Kotter, 1996), a two-item composite scale measured the degree to which performance results were communicated to employees during the initiative. All items were rated on a scale ranging from 1, 'no formal system in place', to 5, 'a formal, effective system in place'.

Business results

While assessing outcomes related to a change's implementation usually requires a multidimensional approach (Tushman and O'Reilly, 1997), the focus of many change initiatives is often on business-related results (e.g., Kotter and Heskett, 1992). Given this focus, a single item asked respondents to rate the extent to which the change initiative had produced meaningful business results for the organization. Items were rated on a scale ranging from 1, 'little or no results to speak of', to 5, 'highly effective results achieved'.

Control variables

A number of control variables were included. Responses to each of the control variables were on a 1 to 5 scale. Since the usage of management control systems and other elements of change process might to depend on the degree to which the reference change had been implemented, respondents were asked to estimate the reference change's percentage towards completion (1 = implementation not yet begun; 5 = 75–100% implemented). Scope of a change might also influence choice of particular control system elements as well as the potential impact on organizational outcomes. For instance, changes with a broader, more strategic scope might be more difficult to implement or have a

more significant effect on organizational outcomes than smaller, more incremental changes (Nadler and Tushman, 1989; Burke and Litwin, 1992). Therefore, respondents estimated the percentage of the organization that would be impacted once the change was implemented (1 = 0–20%; 5 = 80–100%). Since use and effectiveness of particular management control systems may depend in part on an organization's past change history (Nadler and Tushman, 1980) and on learning capabilities (Kloot, 1997), respondents were asked to estimate the organization's historical success with implementing change (1 = not very successful; 5 = very successful) and the organization's experimenting tendency (1 = organization frowns on experimenting; 5 = organization is trying something new constantly). Finally, since general governance structure tends to increase with the hierarchical structure found in larger organizations (Ouchi, 1980; Williamson, 1991), size of the organization was estimated by the respondents (1 = 0 to 50 employees; 5 = more than 1000).

Method

Since managers were asked to rate aspects of both the actions and outcomes of implementation process, considerable response bias was possible. Researchers have noted problems with self-rated measures of change, based largely on the argument that a rater's basis for comparison shifts as the organization itself changes (e.g., Zmud and Armenakis, 1978). To reduce the bias effects, respondents from each organization were split into two groups. For example, if four responses were obtained from an organization, they were divided into two groups of two. In one group, only the two individual's responses to questions about change process activities were admitted; their responses related to outcomes were omitted. In the other group, only the two individual's responses related to outcomes were admitted. For each group, the individual responses were then combined into an average response. Average or summated scales reduce measurement error by combining indicators and reducing reliance on a single response (Hair *et al.*, 1998). In light of the sample size and the need to conduct some multivariate analyses, missing data were replaced with means at the item level. Examination of means, standard deviations, and correlations before and after replacement revealed only minor differences. Finally, the summated scales from each group were combined with the mean outcomes from the other group to form the average response for each organization. Average responses for each of the 22 organizations were developed in this manner and provided the basis for subsequent hypothesis testing. Descriptive statistics and bivariate correlations for the study variables appear in Table 2.

Analysis and Discussion

Results

Mean responses that reflect the extent to which the 22 sample organizations employed management control systems and other elements of change process appear in Table 3. Note that the mean responses related to the two human resource

Table 2. Descriptive statistics and bivariate correlations of study variables (N = 22)

	Mean	Std dev	1	2	3	4	5	6	7	8	9	10	11	12
1 Perf Appraisal	2.06	0.868												
2 Rewards	1.85	0.556	0.10											
3 Outcome Monitoring	2.31	0.725	0.06	*0.44										
4 Problem Analysis	2.56	0.721	*0.45	-0.15	0.07									
5 Action Planning	2.77	0.775	-0.17	0.14	0.15	† - 0.41								
6 Skill Development	2.55	0.710	-0.26	0.14	†0.39	-0.26	†0.39							
7 Communication	2.21	0.835	0.21	*0.50	0.23	0.07	*0.46	†0.40						
8 Business Results	2.37	1.008	0.35	0.29	**0.65	0.35	0.01	0.34	†.39					
9 % Complete	3.50	0.881	0.03	0.09	0.10	0.03	0.20	0.02	0.33	0.36				
10 Change Scope	3.09	0.959	-0.09	0.20	-0.18	0.17	-0.26	-0.04	0.25	0.15	-0.02			
11 Org Size	3.70	0.876	-0.27	0.00	0.19	-0.16	-0.24	0.07	-0.13	-0.01	-0.16	0.04		
12 Previous Success	2.97	0.886	-0.04	0.07	0.17	0.23	-0.01	0.34	†0.38	0.36	*0.44	-0.07	-0.09	
13 Experiment Tendency	3.68	0.723	0.19	-0.27	†-0.42	-0.07	0.07	-0.05	0.05	-0.31	0.02	0.14	†-0.38	-0.13

†p < 0.10.

*p < 0.05.

**p < 0.01.

Two tailed test.

Table 3. Comparison of change process means (Two tailed, two sample t-tests assuming unequal variances)

	Mean	Std Dev	1	2	3	4	5	6
1 Perf Appraisal	2.06	0.868						
2 Rewards	1.85	0.556	ns					
3 Outcome Monitoring	2.31	0.725	ns	0.05				
4 Problem Analysis	2.56	0.721	0.05	0.01	ns			
5 Action Planning	2.77	0.775	0.01	0.01	0.10	ns		
6 Skill Development	2.55	0.710	0.05	0.01	ns	ns	ns	
7 Communication	2.21	0.835	ns	ns	ns	0.10	0.05	ns

0.01: $p < 0.10$.
 0.05: $p < 0.05$.
 0.01: $p < 0.01$.
 ns: non-significant.

control elements of performance appraisal and rewards systems were significantly lower than most other change process elements. Outcomes monitoring was found marginally lower than most other elements. These findings generally support Hypothesis 1_a and suggest that managers tend to employ management control systems to a lesser degree than other elements of change process.

To test whether the use of management control systems increased as implementation progressed (Hypothesis 1_b), the overall sample was split into two groups (Table 4) to reflect different time periods in the implementation process. An ‘early’ implementation group consisted of 13 organizations with changes ranging from 25% to 68% complete (mean = 49%). An ‘advanced’ implementation group consisted of the remaining 9 organizations with changes

Table 4. Mean levels of change process variables at different implementation levels (Two tailed, two sample t-tests assuming unequal variances)

Variable	‘Early’ implementation	‘Advanced’ implementation	Difference
Number Organizations	13	9	
%Complete	49	82	***1.30
Performance appraisal	2.04	2.07	0.03
Rewards	1.76	1.98	0.22
Outcomes monitoring	2.18	2.61	†0.43
Problem analysis	2.56	2.57	0.01
Action planning	2.54	3.09	†0.55
Skill development	2.47	2.67	0.20
Communication	1.88	2.69	*0.81
Business Results	1.97	2.94	*0.97

† $p < 0.10$.
 * $p < 0.05$.
 ** $p < 0.01$.
 *** $p < 0.001$.

ranging from 75% to 100% complete (mean = 82%). While the mean management control system response (i.e., performance appraisal, reward systems, outcomes monitoring) was higher for the advanced group, only the difference in outcomes monitoring was statistically significant ($p < .10$). Thus, marginal support was obtained for Hypothesis 1_b's notion that use of management control systems increases as implementation progresses.

To evaluate the relationship between the use of management control systems and implementation outcomes, hierarchical regression analysis was conducted using the business results item as the dependent variable (Table 5). Initial entry of the control variables (Model 1) indicated no significant effects on business results. Next, the two human resource-related management control system variables were entered (Model 2). The performance appraisal variable entered significantly ($\beta = .456$; $p < .05$). Surprisingly, a minus sign accompanied the regression coefficient estimated for the reward systems variable, although the estimate was insignificant in the overall hierarchical analysis. While the fit of Model 2 was not significant, the percentage of variation explained by this model increased considerably over Model 1 ($R^2 = .228$). Entry of the other management control system variable, outcomes monitoring (Model 3), was significant ($\beta = .639$; $p < .01$). The overall model was significant as well ($F = 5.03$; $p < .01$), and reflected a large percentage increase in explained variation ($R^2 = .617$). The final two models (Models 4 and 5) reflected the effects of adding other variables of change process. None of these additional variables entered the model significantly and did little to increase the percentage of explained variation. Overall, the regression results support Hypothesis 2

Table 5. Hierarchical regression results using business results as dependent variable

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
% Complete	0.274	0.270	0.243	0.225	0.252
Change scope	0.218	0.272	*0.406	*0.533	*0.650
Organization size	-0.091	0.008	-0.080	-.107	-0.028
Prev implementation success	0.195	0.224	0.163	0.246	0.301
Experimenting tendency	-0.355	-0.415	-0.258	†-0.370	†-0.384
Performance appraisal		*0.456	*0.405	*0.572	*0.719
Rewards		-0.023	-0.250	†-0.426	-0.314
Outcomes monitoring			**0.639	**0.652	*0.534
Problem analysis				-0.271	-0.164
Action planning				0.064	0.309
Skill development					0.190
Communication					-0.325
R ²	0.312	0.498	0.770	0.801	0.844
Adjusted R ²	0.082	0.228	0.617	0.602	0.609
ΔAdjusted R ²		0.146	0.389	-0.015	0.007
F	1.36	1.84	**5.03	*4.02	*3.60

† $p < 0.10$.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

suggesting that a significant relationship exists between the use of management control systems and the achievement of effective change.

Discussion

'We're great starters, but we're terrible finishers' is an admission that managers have frequently uttered in our presence regarding their organizations' change-management capabilities. Indeed, evidence suggests that many change initiatives remain open years after their initiation and intended closure (Alexander, 1985; Troy, 1994). While lack of closure may partly reflect a trend towards initiating large-scale changes that require long time periods to implement (Nadler and Tushman, 1989), it may also imply that many organizations lack the governance skills and structure necessary to bring effective closure to their change initiatives. Management control systems have often been proposed as mechanisms for facilitating such closure (e.g., Anthony, 1965; Lorange, Scott Morton and Goshal, 1986; Simons, 1995). The findings from this study suggest that managers utilize management control systems to a lesser extent than other elements of change process—despite a significant relationship between the use of management control systems and implementation success.

These findings corroborate our field observations that managers often initiate change without establishing much in the way of formal controls to ensure effective implementation. 'We'll worry about those things later' is a phrase we've heard in this regard. Management control systems would seem to naturally flow from change planning processes, since goals and objectives identified during planning activities provide the basis for measurement and control (Hofer and Schendel, 1978; Goold and Quinn, 1993). However, managers appear to shun control systems for change management purposes. Although sporadic evidence suggests that the dull nature of control activities (Charan and Colvin, 1999) or perhaps management style characteristics (Lorange and Murphy, 1984) may play a role in this regard, further research is necessary to more fully understand why managers avoid or ignore control systems for change management purposes.

Results from this study hint that different management control systems may vary in their impact on change processes and outcomes. Control systems based on monitoring of behavior and outcomes were found positively related to business results. Incentive-based control systems, on the other hand, were found to have a slight negative relationship to implementation success once other change process variables were taken into account. This finding seems to contradict studies that highlight reward systems as explaining inter-organizational differences in successful change implementation (e.g., Agarwal and Singh, 1998). Prior to this study, however, few investigations have compared the relative impact of various management control systems on change achievement in a multivariate design such as this one. Multivariate analyses tend to uncover relationships with unique explanatory power while obscuring relationships with high amounts of common or shared variance (Hair *et al.*, 1998). Moreover, there is reason to believe the monitoring-based controls may be superior change governance mechanisms. Performance measurement and monitoring raise the accountability of managers (Bourdon, 1982; Hatstrup and Ford, 1995) and

reduce agency problems (Fama, 1980; Eisenhardt, 1989). Moreover, monitoring-based control systems help managers cope with the dynamic, revisionist nature of planned change. Most planned changes are almost certain to require midstream correction to original courses of action (Lindblom, 1959; Mintzberg and Waters, 1985; Van de Ven and Poole, 1995). Since monitoring systems permit managers to routinely track the progress of change implementation via behavior and outcomes assessment (Simons, 1995), these systems should provide timely signals to managers about the need to initiate revision. Other management control systems, such as those based on incentive and rewards, may be less useful in signaling the need for revision. The primary controlling feature of reward systems, for instance, is the incentive that encourages employees to practice behavior consistent with performance objectives (Kerr, 1988). Since incentives are usually established with a planned course of action in mind (Simons, 2000), the reward system itself may require modification when the planned course of action requires revision. Indeed, monitoring of the reward system itself may be necessary to ensure that incentives continue to align with organizational goals and objectives (Milgrom and Roberts, 1992). Future research should follow up on the findings of this study and further pursue the potential consequences of monitoring-based controls on implementation outcomes and change achievement.

Some peripheral findings from the regression analysis (Table 5) are noteworthy. As change process variables were added to the initial model, regression coefficients of two variables identified as control variables turned significant. Change scope was estimated as positively related to business results ($p < .10$) while experimenting tendency was found negatively related to business results ($p < .05$). The change scope relationship might be expected—changes with broader, more strategic scopes are more likely to have a significant effect on business-related outcomes. The negative relationship between experimenting tendency and business results is more difficult to explain. One stream of thought is that experimenting tendency, a factor commonly associated with learning organizations (Nevis, DiBella, and Gould, 1995), should position organizations to better achieve change. Findings here suggest the opposite—that tendency to try new things actually impedes successful change. Plausibly, organizations that constantly dabble with change have difficulty obtaining closure on their initiatives, perhaps preferring to begin new projects instead. While this finding rests on the fringe of this investigation's scope, it is noteworthy and appears to offer opportunity for further inquiry.

Limitations and Further Research

This study possessed some limitations. The small sample size restricted our ability to detect significant differences and restrains the generalizability of the findings. Although demographic data suggested a reasonable cross section of industrial sectors, samples for this study were certainly not randomly obtained and came from the same group of seminar participants. Larger, broader samples should be employed in follow-up investigations to this work. Future studies could also improve on the measurement scales employed in this study. Compared to the

dozens or perhaps hundreds of variables thought to influence the process of change, our model of planned change was necessarily simplified. Many other aspects of change process might be added to the model to enrich the multivariate texture. For example, climate and culture (Burke and Litwin, 1992) and politics (Tichy, 1983) seem interesting variables due to their potential impact on management control system activities. Our single item measure of implementation success could also be expanded to include other dimensions of implementation success. For example, Miller's (1997) scale that combined completion, achievement, and acceptability dimensions of change outcomes might be useful in subsequent investigations.

Conclusions

While this study's findings have a provisional tone, we hope they elevate theoretical and practical sensitivity about the role of management control systems in implementing planned change. To us, the literature (and practice for that matter) has evolved into a somewhat incongruent state regarding organization structure and planned change implementation. Decentralized, autonomous structure has long been associated with facilitating innovation and change in organizations (Burns and Stalker, 1961). Many organizations have embraced the decentralized concept. Bureaucracies have been shed, decision-making has been distributed, and less intrusive management styles have been encouraged—all so that the organization can become more nimble and innovative.

While perhaps conducive for initiating change, such structure may not support a change's ultimate execution, since decentralized, autonomous structure discourages activities such as diagnostic monitoring and other formal controls. Bureaucracy may be necessary for successful change implementation, since formal bureaucratic controls can be effective in dynamic environments where goals and performance standards are unclear and fluid (Ouchi, 1980). As scholars become more interested in the notion of paradox in organizational research (e.g., Lewis, 2000), the conflict between fast-moving organizational structure and the ability to implement planned change via formal control systems merits more formal attention. From a practical perspective, many organizations may be reaching or exceeding advisable limits for decentralized control (Bungay and Goold, 1991). Plausibly, lack of bureaucratic structure has rendered some organizations less capable of addressing a significant deviation from plan during implementation—a situation almost certain to arise in any planned change initiative.

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Appendix: Change process, outcomes, and control variable scales

Performance Appraisal^a

PERF1 How was individual performance reviewed?

Rewards^a

R1 Were employees rewarded for working to support the change effort?

Outcomes Monitoring^a

M1 Was information about the progress of the change obtained?

M2 Was information effectively used to enable corrective action when necessary?

Problem Analysis^a

PA1 Was fact-based data used to identify the need for change?

PA2 Did organizational leaders evaluate the current condition (financial, competition, labor, etc.) prior to setting goals for the change?

PA3 Was the gap between ‘where we are’ and ‘where we want to be’ determined?

Action Planning^a

AP1 Was an action plan developed for making the change?

Skill Development and Delivery^a

SD1 Did organization leaders identify important skills and capabilities needed to make the change?

SD2 Did the organization develop necessary skills and capabilities through training, mentoring, outside acquisition or other means?

SD3 Did the organization make sure that needed skills and capabilities were in place in time to complete the changes?

Communication^a

F1 How well were successes of the change effort communicated?

F2 Were successful change results shared in a timely fashion?

Business Results^b

BR1 Did the change have a positive impact on business results?

Control Variables^c

CV1 Overall, how far along is the change towards completion?

CV2 When the change is fully implemented, how much of the organization will be significantly impacted by the change?

CV3 Approximately how many employees does your organization employ?

CV4 Historically, how successful has your organization been at implementing change?

CV5 Which of the following best describes your organization’s tendency to experiment and try new things?

^a1–5 response scale. A ‘1’ represented an informal, ineffective system in place with few results; a ‘5’ represented a formal effective system.

^b1–5 response scale. A ‘1’ represented little or no results to speak of; a ‘5’ represented highly effective results.

^c1–5 response scale. Categories differed for each question.