AN INFORMATION PROCESSING PERSPECTIVE OF PROCESS MANAGEMENT: EVIDENCE FROM BALDRIGE AWARD RECIPIENTS

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ABSTRACT

Process management is viewed as a strategy for coping with information processing requirements under conditions of uncertainty. In turbulent environments, high performance should be associated with mature, integrated process endpoints that increase information processing capacity. In stable environments, high performance should be associated with modest process management endpoints that reduce information processing requirements. Propositions are explored using data from evaluations of Malcolm Baldrige National Quality Award recipients. Analysis indicated that processes of Baldrige recipients generally fell short of the mature, integrated ideal, consistent with the notion that high-performing organizations limit process management efforts to a degree that fits their information processing needs.
Keywords: quality management, process improvement, integration, resource dependence

INTRODUCTION

To advance understanding of the relationship between process management and performance, we draw from information processing theory (Galbraith, 1973, 1977; Tushman & Nadler, 1978) to view process management as a strategy for coping with information processing requirements under conditions of uncertainty. Using this perspective, we propose endpoints to process management that enable high performance while balancing complexity and cost. The validity of the propositions is explored using data from evaluations of past recipients of the Malcolm Baldrige National Quality Award. Primary data from Baldrige evaluations are desirable because award recipients provide an interesting sample of organizations with strong reputations as high-performers with excellent process management capabilities. Subsequently, we discuss our findings in light of research and practice.

BACKGROUND AND CONCEPTUAL DEVELOPMENT

Process Management and Information Processing Theory

Through an information processing lens (Galbraith, 1973, 1977; Tushman & Nadler, 1978), process management can be viewed as a mechanism for coping with uncertainty. Uncertainty builds in markets as producers lack clarity about what must be accomplished to satisfy customer needs. Unforeseen changes in the nature of demand generate exceptions from original production plans and configurations. Typically, these exceptions are sent up through decision-making hierarchy for resolution. As uncertainty increases, however, exceptions mount, and decision makers must process ever greater quantities of information in order to achieve acceptable performance (Galbraith, 1973; March & Simon, 1958). Facing limited capacity for

handling exceptions through traditional hierarchy, managers turn to process management as a coping strategy for dealing with information processing needs instilled by the environment.

At low degrees of maturity, infrastructural outcomes of process management that promote standardization and repetition reduce information processing requirements for the organization. The modest nature of resources required to manage processes toward repetitive endpoints serves to check complexity and cost. Low degrees of process maturity are therefore desirable when the work environment is relatively certain. As uncertainty increases, however, the benefits that flow from infrastructure aimed at making work more repeatable no longer reduce information processing requirements, and exceptions accumulate. Consequently, process management activities intensify to advance maturity toward endpoints that expand information processing capacity. Infrastructure that enables high degrees of process integration promotes coordination and collaboration among work units (Ford, Masterson, & Evans, 2012), which improves the organization's ability to process information. Measurement and learning infrastructure inform the organization about changes occurring in the environment and enable adaptation initiatives. As more resources are drawn to advance processes toward integrated endpoints, complexity and costs increase. However, highly refined processes position the organization to more effectively cope with turbulent contexts.

Proposition 1a: In relatively certain contexts, high performance is more likely when processes are managed to low degrees of maturity.
Proposition 1b: In relatively uncertain contexts, high performance is more likely when processes are managed to high degrees of maturity.

Factors that Influence Achievement of High Maturity Endpoints

Organismic structures have been proposed to be more capable than mechanistic structures of dealing with uncertain conditions (Tushman & Nadler, 1978). Organismic communication networks permit problem solving and synthesis of different points of view. Communication networks in mechanistic structures are less inclusive, which isolates problem solving to a subset of individuals and fosters a homogenous point of view. Because highly connected organismic networks are independent of any single individual, they are less sensitive to information overload than mechanistic hierarchical networks. Lower levels of formality and greater involvement in decision-making foster a collaborative environment in organismic structures. The more formal structure of mechanistic systems encourages a selective decision-making apparatus that is less favorable for collaboration. Because they facilitate greater information flow, organismic structures provide a favorable organizational context for process management efforts seeking to advance maturity toward integrative, responsive ideals.

Proposition 2a: Organismic structure increases the likelihood of managing processes to high degrees of maturity.
Proposition 2b: Mechanistic structure decreases the likelihood of managing processes to high degrees of maturity.

The degree to which organizations depend on entities beyond its boundaries constitutes a significant source of uncertainty (Pfeffer & Salancik, 1978; Tushman & Nadler, 1978).

Infrastructure that bridges internal and external processes is necessary to access information about potential environmental uncertainties and their consequences (Premkumar, Ramamurthy, & Saunders, 2005). Organizational processes are likely to vary in their external resource dependence. Processes that require high amounts of information from external groups such as customers, suppliers, regulators, or shareholders should generally be more dependent than processes with more inward orientations. For example, among the organizational processes specified by the Baldrige Criteria for Performance Excellence (CPE), we should expect that the process related to customers and markets to be more difficult to advance to mature states than processes that are more inwardly focused, such as those related to leadership or human resources. Bridging boundaries between organizations challenges many structural arrangements (Aldrich & Herker, 1977). When boundary spanning involves integrating internal processes with external units upon which those processes are dependent for resources, then highly mature process ideals are likely to be more difficult to attain.

Proposition 3: Greater external dependence reduces the likelihood of managing processes to high degrees of maturity.

SAMPLE AND MEASURES

Sample

Feedback documents for 11 recipients of the Malcolm Baldrige National Quality Award from the years 2000 to 2008 were made available to support the present research effort. Since the award's inception in 1988, over 80 organizations have received Baldrige awards out of approximately 1400 applicants, suggesting a blend of process management and performance in Baldrige recipients among the top six percent of all applicants. As such, the notion of Baldrige recipients as excellent process managers garners some degree of face validity. While the small sample size is not conducive to broadly generalizeable conclusions, the source of the sample and the associated data do provide an interesting opportunity to explore the validity of the propositions expressed above.

Measuring Process Maturity

Data for this investigation came from the "feedback reports" generated for each organization as part of the Baldrige evaluation process (National Institute of Standards and Technology, 2011). The feedback report identifies organizational strengths and opportunities for improvement (OFIs) as seen through the eyes of the examiners. The focus of this investigation was on the information contained in the OFIs appearing in the feedback reports. Because of the maturity model framework employed in the evaluation, OFIs identified by Baldrige examiners should be effective measures of process maturity. Processes found to be repeatable, consistently deployed, and highly integrated should not be the subject of OFIs. On the other hand, processes that have been managed to endpoints less than the integrated, responsive ideal should be viewed as problematic by examiners and the subject of OFIs. Thus, the quantity of Baldrige OFIs and their nature provide a basis for measuring the extent to which organizations in the study sample have managed their processes to the highly refined, integrated ideal.

RESULTS

OFIs were sorted by sample organization from highest to lowest count. OFIs were a routine occurrence across all organizations in the sample. In the six process CPE categories, 476 total OFIs were observed for an average of 43.3 per organization. The majority of OFIs were of the "approach" variety. Approximately 70% of all process OFIs involved lack of a repeatable approach. This means that examiners were commonly noting the presence of relatively immature processes. According to the information processing perspective, we should expect high-performers to operate highly refined, integrated processes only in uncertain environments. However, demographic backgrounds of the sample organizations suggested generally mature industry contexts and stable internal settings. Managing processes to higher levels of maturity would constitute a mismatch with the environment, and would likely lead to lower performance. These results offer provisional support for Propositions 1a and 1b.

A review of demographic characteristics reveals that four organizations shared several common traits, including relatively young age, small size, and for-profit sector affiliation. The remaining seven organizations were generally older, larger, and included three public sector organizations and four private sector non-profit organizations. Young, small firms operating in for-profit sectors are likely to be structured along more organismic lines than older, larger firms operating in public or non-profit sectors, the latter of which are more likely to possess relatively mechanistic structure (Burns & Stalker, 1961). The organismic group exhibited higher mean OFI counts than the mechanistic group. While small sample size makes statistical inference difficult, the difference in integration OFIs was significant at the .05 level. The data indicate that members of the organismic group managed their processes to a lower degree of maturity than the mechanistic group. These findings do not support Propositions 2a and 2b, and suggest that organizations with mechanistic structure were associated with more mature processes.

Finally, OFI counts were sorted by Baldrige Criteria for Performance Excellence (CPE) category (National Institute of Standards and Technology, 2011). Among the six process categories, measurement, information, and analysis, customer focus, and operations focus exhibited the highest OFI counts on a raw and normalized basis. These three CPE categories relate to what Flynn, Schroeder, and Sakakibara (1995) termed core quality practices (Ford, 2011). Core quality practices directly influence technical aspects of the organization, and include activities linked to market and product development, information management, and process control and improvement. Organizational processes that house these core activities are central to value creation, and must be well connected to outside sources in order to achieve highly refined, integrated states. However, achieving high levels of integration is likely to be difficult because the resources necessary to advance process maturity are beyond the boundaries of the organization and are thus difficult to control. The remaining three CPE process categories can be seen as less demanding in this regard. Leadership, strategic planning, and human resource processes tend to be more inwardly focused. They require less connection to outside resource providers in order to achieve mature, integrated states. These CPE categories are related to what Flynn et al. (1995) termed infrastructure quality practices (Ford, 2011). Processes that house infrastructure quality practices may achieve high degrees of integration by using resources obtained from internal sources that are easier to control. Data here indicating more OFIs among externally oriented CPE process categories support Proposition 3.

DISCUSSION

The study's sample was interesting in that it consisted solely of Baldrige recipients. Baldrige recipients enjoy a reputation as being high-performers with excellent process management capabilities. Yet, our investigation found that this group of high-performers managed their key organizational processes to degrees of maturity that fell significantly short of the integrated ideal. While it appears at odds with what is predicted by many empirical maturity models (e.g., National Institute of Standards and Technology, 2011), this finding is explainable by information processing theory. A common feature of our sample group is that each organization appeared to operate in relatively mature industry contexts. Because they operated in stable environments, the sample organizations did not require extraordinary information processing capacity in order to be effective. Instead, they were able to achieve high performance by managing their processes to only modest degrees of maturity.

A significant theoretical implication of this study is that it questions positions often taken by scholars about the merits of highly managed, integrated processes in uncertain environments. It is often held that processes that have been managed to mature endpoints are undesirable in uncertain environments because such processes are rigid and less responsive to change (e.g., Benner & Tushman, 2003). However, the information processing view suggests that mature, integrated processes are vital to high performance in uncertain environments. This is because process management generates coordinative and collaborative infrastructure that helps the organization process higher amounts of information. Higher information processing capacity is necessary to effectively operate in turbulent environments (Tushman & Nadler, 1978). Concepts developed in the present study challenge the validity of viewing process management as an impediment to change. Uncertain environments may require more intense levels of process management in order for organizations to be sufficiently adaptive. Research that further investigates this stream of thought and clarifies the competing theoretical perspectives is essential.

From a practical standpoint, this study serves as a check on the "more process management is better" camp. Empirical frameworks often prescribe refined, well integrated processes as vital to high performance (e.g., Hammer, 2007: National Institute of Standards and Technology, 2011). The information processing perspective suggests mature process endpoints facilitate high performance when environments are uncertain. In relatively stable environments, however, highly integrated processes provide information processing capacity that organizations may not utilize, leading to unnecessary complexity and cost. Limiting process management efforts to modest degrees of maturity—endpoints that lower information processing requirements through process repeatability—are likely to serve organizations well in stable environments. Managers should exercise prudence when employing process management frameworks to guide internal improvement efforts. Normative frameworks that account for important contingencies, such as degree of environmental uncertainty, may offer more utility than those that simply prescribe intense process management as the panacea for high performance.

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