

A life cycle evaluation of change in an engineering organization: A case study

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Abstract

The change process is explored and a life cycle model of change is analyzed to see how a large public client organization perceives and reacts to change. Various parameters that occur over the change cycle that relate to initial instability, anxiety, awareness, acceptance of change, tasking and managing, integration, and implementation are evaluated through a quantitative questionnaire circulated to engineers of this organization. Among the findings are that whereas general desire for change is high through a high commitment to change, the upper leadership does not appropriately follow through with the change process, leaving the middle and lower-level engineers to carry a burden for which they are ill-prepared. The level of communication is insufficient. Statistical tests reveal that general direction and leadership is lacking even though the middle-level managers are responsive for change and commitment to change is high among all groups. There were significant differences in the response for parameters evaluated within specific stages of the change life cycle between the various seniority levels of engineers. Engineers mostly agree that there is no incentive to implement changes; many agree that there is little help available for transitional services. Many other deficiencies are noted in this large public client organization. Among other, it is recommended for senior managers to understand that employees are an essential partner. The organizational change (OC) model used provides a workable approach for analyzing the process of change. This case study helps practicing managers understand their responsibilities in managing change. The inability to change proactively affects the efficiency and success of public organizations involved in project management. © 2005 Elsevier Ltd and IPMA. All rights reserved.

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1. Background

The management of change is a fundamental tenet of organizational development and modern organizational management. It is necessary to change at the cultural, technological, and organizational levels for an organization to remain competitive and efficient in its operations and services. Change is too pervasive to ignore.

The modern thinking on change accepts change for its beneficial effects, rather than rejecting or contradicting it. Change agents are no longer seen as “trouble makers” as

in earlier times [2]. Moreover, change is no longer just the prerogative of senior management, but must be taken up by all responsible members of the organization. Thus, organizational leadership, where responsible members are permitted to take initiative, replaces visionary leadership of top managers. A sense of freedom is nurtured in contrast to supervision and the exercise of control. Organizational designs and objectives remain flexible rather than rigid, and strong cultures give way to flexible cultures [12].

The methods to initiate change in engineering organizations are generalized as twofold: (1) TQM, and (2) Re-engineering. TQM, though originally for improving engineering quality and performance, really amounts to a method for changing the organization for the better. TQM is a rather incremental and continuous process when managed

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Nomenclature

CE III Civil Engineer Rank III
 CE IV Civil Engineer Rank IV
 CE V Civil Engineer Rank V

CE VI Civil Engineer Rank VI
 [The seniority in rank is as follows: CE VI > CE V >
 CE IV > CE III]

properly. Reengineering, on the other hand, is considered radical and often just a one-time project till the next discrete phase. Consequently, incremental change carries lower risk than radical change because the quantum of change is lesser.

Argyris [3] believed that creative thinking was the foundation of organizational change. That dictum is probably a permanent necessity in all change. If organizations can't have creative thinking, they can't have effective change, and as the former CEO of General Electric, Jack Welch, observed, "If the rate of change on the outside exceeds the rate of change on the inside, the end is near" [11]. This, then, is how important change management is in modern organizations, especially large, public ones.

Nalder [9] and Schein [10] emphasized the value of systematic data collection and analysis in the matter of effecting successful change. This study applies their approach in collecting data for this study, and subsequently makes recommendations based on the results obtained.

2. Aims

The aim of this case study is to understand how change is effected in the State Department of Engineering and Construction (SDEC) – a large public construction and contract management organization. This case study was a funded research that aimed very specifically to study only SDEC. Through use of statistics, relationship analysis, and statistical inference, the researchers aim to verify the significance of observations made for the 'change management process' and subsequently interpret the study's results. The magnitude of the change that is effected is aimed to be estimated, whether that magnitude of change is adequate or not, and whether it is conducted appropriately and effectively. Specifically, this study seeks to understand what is going on inside the organization and to discover the climate for change, with an aim at recommending appropriate intervention strategies and guidelines for organizational development, such that better use may be made of the human resources, specifically engineers.

3. Motivation for the study

The large public agency researched here operates in the public limelight, consumes large amounts of taxpayer monies, and its operations and performance are of interest to the public. The total contract value of projects at this agency is normally in the vicinity of US\$1.5 billion. The organization has multiple political and social forces pulling in various directions.

At the time of the study, executives were partially committed to organizational change. For instance, the agency had plans to buy new computers and connections, revamp organizational structure, and streamline the procedures manual. SDEC had exhibited an interest in changing, and so the study was particularly timely, needed, and relevant. The study was all the more significant since it involved a large public organization consuming immense taxpayer money at a time of budget shortfalls. The study was a very practical, hands-on approach to managing the entwined problem of change, and then giving practical recommendations for implementation.

4. Literature search

In general, change in construction organizations is an under-researched area. Change models for construction come from fields of general management and project management. The change model of Fig. 1, modified from Adams et al. [2], was applied in this study. This model was adopted for its ability to track change from inception to implementation. Various change models exist in management science, such as the dual-motor constructive process model of organizational change that models change along lines of a dialectic motor that captures forces for promoting and opposing change. There are numerous theories of organizations, and the organization of theories often show evidence of diverse and polarized theories [4]. For a practical study, such as this one, it is meaningful to take one applicable change model and apply it fully. The Organizational Development network, for instance, lists seven data diagnosis models for measuring organizational change [1]:

- Weisbord Six-Box Model.
- Burke–Litwin Model of Organizational Performance and Change.
- McKinsey 7-S Framework.
- Tichy Strategic Alignment Process.
- Gelinias–James Elements of Organizations Model.
- 6 Levers of Organization Change Model.

These models are broad based: for example, the Burke–Litwin model uses broad management parameters such as leadership, motivation, and feedback to measure climate and culture, transformational and transactional forces. The other models are valid for strategic management or specifically geared toward personnel management. There are literally dozens of organizational development (OD) models in literature spread across management science, construc-

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