Supporting business process redesign using cognitive maps

Kee-Young Kwahk [1], Young-Gul Kim [*]

*Graduate School of Management, Korea Advanced Institute of Science and Technology, 207-43 Cheongryangri-Dong, Dongdaemoon-Gu,
Seoul 130-012, South Korea*

Abstract

Turbulent changes and competitive pressures have forced organizations to constantly change. Business process redesign (BPR) has been widely adopted as an organizational change method in the 1990s. Although BPR projects provide the possibility of dramatic performance improvement, many organizations have encountered serious problems due to the lack of commitment to such projects and the difficulty of systematic targeting of critical processes. By identifying the cause–effect relationships within an organization, we try to address these issues. We propose a cognitive map based method, called two-phase cognitive modeling (TCM), to help organizational members identify potential organizational conflicts, capture core business activities, and suggest ways to support the necessary organizational change. To apply the method in the real world context, we developed a prototype modeling tool, called two-phase cognitive modeling facility (TCMF). Working procedures of the TCM method and TCMF features are illustrated with their application to the real BPR project of a dairy company. © 1999 Elsevier Science B.V. All rights reserved.

1. Introduction

In a world characterized by rapid and turbulent changes, the ability of an organization to correctly interpret and rapidly respond to internal and external changes is of considerable academic and practical interest. Business process redesign (BPR), also called business reengineering (BR), has been proposed as an organizational change method in the early 1990s

[6,8,21,22]. Although BPR provides the possibility of dramatic improvement in performance and has been widely promoted as an enabler of organizational change, a BPR project is considered as a high risk due to its high management complexity, enterprise-wide impact, and steeper project cost [26]. Many organizations have encountered serious problems during their BPR implementations with widely mixed results [17,37]. Regarding the challenges facing the organizational change implementations, there have been two major concerns.

First, despite the massive resource investment and enterprise-wide impact, many organizations attempt to redesign their major business processes without

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[*] Corresponding author. Tel.: +82-2-958-3614; fax: +82-2-958-3604; e-mail: domino2@unitel.co.kr
[1] E-mail: kykwahk@samsung.co.kr

thorough consideration for commitment to changes [17]. Based on Kling's [30] work, Markus [35] explains the resistance to change and implementation difficulties in terms of the conflicts among participants. Managers or change agents spend a substantial proportion of their time and energy dealing with conflict situations [16]. Such efforts are necessary because any type of change in an organization tends to generate conflicts. Their effectiveness in conflict management depends on how well they understand the underlying dynamics of the conflict [39]. Without commitment to change, a BPR project will suffer from resistance of the participants, in particular, those belonging to the process(es) to be redesigned.

Secondly, the business context has to be understood to enable the BPR team to identify the potential problem or opportunity activities before creating a new process or redesigning the existing ones [7,15,17,18,28,38]. However, it is not a trivial task to identify and capture these activities systematically. As Barua et al. [2] notes, many BPR projects have been frequently targeted toward inappropriate variables which have little or no impact on the organizational payoff. Most BPR methods tend to rely on the intuitive judgment of the analyst in capturing core business activities, by and large, based on the interviews or documents without thoroughly considering how functional units interact each other.

To address the above concerns—lack of understanding for potential organizational conflicts and improper targeting of critical processes in the initial stage of BPR, we propose a method, called two-phase cognitive modeling (TCM). The TCM method helps to support the organizational change project such as BPR, based on the analysis of cognitive maps. It is expected to facilitate consensus elicitation toward common organizational goal and core business activities among BPR managers, IS staffs, and organizational members in the initial stage of a BPR project. To apply the method in the real world context, we developed a prototype modeling tool, called two-phase cognitive modeling facility (TCMF). This system enhances applicability of the TCM method. The rest of the paper proceeds as follows. Section 2 deals with the literature review relevant to our study. Sections 3 and 4 introduce the proposed method and the prototype system, respectively. Section 5 describes the real-world application of the TCM method

with the TCMF features. Section 6 discusses implications and future directions of this research.

2. Literature review

2.1. BPR

Although many organizations have striven to achieve dramatic performance improvement through BPR, there have been unsatisfactory results. As Bashein et al. [3] notes, while some organizations have been satisfied with reengineering results, 70% of projects have ended in failure. According to Hall et al. [19], between 50 and 70% of the organizations failed to capture the expected 'dramatic' gains from BPR. While several reasons for the mixed results have been proposed by BPR experts, most of them have been concerned with human-involved problems not technology-involved problems: e.g., too much expectation to the reengineering result, lack of senior management leadership, lack of IS/business partnership, lack of commitment to changes, failure to consider politics of the BR efforts, and difficulty in cross-functional cooperation [8,17,19,22,36]. A study on potential problems in BPR by Grover et al. [17] reports that only eight among the 64 problems are related with technological competence and four of the top five most severe problems concern change management which entails human interaction such as communicating reengineering rationale to employees, politics of reengineering efforts, and commitment to new values.

One of the problems frequently occurring in BPR without considering human factors is various conflicts between functional units. These conflicts affect BPR in the form of resistance of the participants who belong to the functional area to be redesigned and come to undermine the corporate synergy. Identification of these factors is more important in the earlier stage of BPR than in the later stages because the target area is usually selected in the earlier stage and the opportunity cost may be relatively minimal. Despite the growth of interests for the human-involved issues, however, existing BPR researches have focused on modeling the cross-functional business process of an entire organization in terms of performance based measurements such as cycle time. Along