

Do business process reengineering projects payoff? Evidence from the United States

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Abstract

This paper examines whether implementation of business process reengineering (BPR) projects improve firm performance by analyzing a comprehensive data set on large firms in the United States. The performance measures utilized in the paper are labor productivity, return on assets, and return on equity. We show that firm performance increases after the BPR projects are finalized, while it remains unaffected during execution. We also find that functionally focused BPR projects on average contribute more to performance than those with a broader cross-functional scope. This may be an indication that potential failure risk of BPR projects may increase beyond a certain level of scope.

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1. Introduction

Business process reengineering (BPR) is defined as a radical redesign of processes in order to gain significant improvements in cost, quality, and service. Firms have been reengineering various business functions for years, ranging from customer relationship management to order fulfilment, and from assembly lines to logistics. Anecdotal evidence suggests that many organizations gained benefits from BPR projects [1]. For instance, the CIGNA Corporation successfully completed a number of BPR projects and realized savings of \$100 million by improving its customer service and reducing operating expenses [2]. Similarly, reengineering the accounts payable process at the Ford Motor Company increased the speed of payments and improved company relations with suppliers [3]. Arguably, some BPR projects fail to meet expectations. A survey conducted by the Arthur D. Little consulting firm found that 85% of executives surveyed were not satisfied with the outcome of

their BPR projects [4]. Moreover, a series of studies in the early 1990s found that nearly 70% of BPR initiatives had actually failed [5] or delivered less than they had promised [6]. Such poor outcomes may be attributed to several factors, including (i) expecting too much too soon [3], (ii) undertaking projects without a comprehensive cost-benefit analysis, (iii) lack of expertise on redesigning a set of related activities [7], and (iv) lack of partnership between internal information technology (IT) department and other parts of firms [8].

BPR projects, by their nature, entail major changes in business processes that may lead to organizational instability and failure. Therefore, it is reasonable to expect BPR projects to have a significant and measurable effect on firm performance. In this paper, we empirically investigate the performance effects of BPR projects both during and after the implementation periods using a new annual data set covering the period between 1984 and 2004. We utilize labor productivity, return on assets, and return on equity as firm-level performance variables. We use a panel data regression model in order to take into account the cross-sectional and time series nature of the data. We show that

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performance variables of firms remain unaffected during the implementation period of the BPR projects, which generally creates an initial turmoil in firm operations. The firm performance, however, significantly increases after the BPR projects are successfully completed. We also find that functionally focused BPR projects contribute more to performance than those with a broader cross-functional scope, suggesting that failure risk of BPR projects may increase beyond a certain scope.

The paper is organized as follows. In the next section, we briefly survey previous studies on the topic, and then present our hypotheses in Section 3. We describe our data in Section 4 and regression variables in Section 5. We then describe our empirical methods in Section 6. Finally, we provide the regression results in Section 7 and conclude in Section 8.

2. Literature review

BPR was first described by Davenport and Short [9] and Hammer [10]. Despite the growing popularity of BPR in 1990s, different management consultants used the term as a way to promote their proprietary methods, which led to confusion and disagreements [11]. Responding to the claims made for BPR and the resulting confusion, the academic community criticized BPR for having no sound theoretical basis [12]. Deakins and Makgill [13] argues that the original literature on BPR was essentially anecdotal, lacking rigorous research to support its assertions. More recent literature suggests that the first generation of BPR, which suggests radical changes in business processes, is evolving into a modest process management, which is softened by the lessons learned from successes and failures in the course of implementations. The contemporary definition of BPR, therefore, encompasses a continuum of approaches to process transformation that may include both radical and incremental improvements, depending on the nature of the problem. In fact, many studies have been published in the literature in order to explain and promote this new approach to BPR, including Davenport et al. [14], Hammer [15], Hammer [16], Becker et al. [17], El Sawy [18], Grover and Kettinger [6], Kalakota and Robinson [19], Silver [20], and Smith and Fingar [21]. Nevertheless, even the recent literature is rife with anecdotal evidence and short on empirical evidence of performance impacts of BPR projects. This indicates that there is still a need to better measure BPR implementations through objective measures, and to relate them to organizational performance in the context of other variables that may also affect performance, which is the main focus of this paper.

The number of studies on the impact of BPR projects on firm performance is small but growing. Most studies collectively suggest that there are substantial benefits for firms that successfully implement the structural changes associated with BPR projects [22,23]. Hunter et al. [24] and Murnane et al. [25] confirm this claim by analyzing data from the banking industry per se. Devaraj and Kohli [26]

show that investments in IT can contribute to a higher level of revenue if they are supported by BPR initiatives. By studying the effect of three related innovations (IT, workplace reorganization, and new products and services) on demand for skilled labor, Bresnahan et al. [27] find that the demand for skilled labor is complementary with all the three innovations. Finally, Bertschek and Kaiser [28] find that workplace reorganization induces an increase in labor productivity that may be attributable to complementarities between IT and workplace reorganization.

3. Hypotheses

BPR projects involve large investments in physical as well as human capital. The monetary costs of a BPR project include purchasing new equipment, hiring new personnel, and training employees to handle new roles. Indeed, organizations implementing BPR projects may need to increase their training budgets by 30–50% [29]. BPR projects may also have non-pecuniary costs due to problems encountered during implementation [30]. Such problems include (i) communications barriers between functional areas [31], (ii) lack of communication between top-level managers [32] as well as between BPR teams and other employees [33], (iii) resistance from employees [34], (iv) management reluctance to commit resources to BPR projects while expecting quick results [35], and (v) failing to address employee habits during implementation [36]. All of these factors suggest the following hypothesis:

Hypothesis 1. Firms experience a drop in performance during BPR project implementation.

Once BPR projects are finalized and implementation risks are resolved, employees are likely to become more comfortable with the new process design, and hence firms may be able to operate more efficiently. Thus, we expect firm performance to surpass its previous levels after the implementation, which leads to our second hypothesis:

Hypothesis 2. Firm performance improves after the completion of BPR projects.

A third issue of interest is the effect of project scope on firm performance. The scope of BPR projects vary; some projects focus on a single business function, such as order fulfilment or accounts payable, while others may be directed towards multiple functions. The scope of BPR projects may potentially affect the level of impact on firm performance. However, studies in the literature are far from providing consistent evidence on the direction of the impact. For example, Berry et al. [37] find that BPR projects with a large scope make the highest possible impact on firm performance. On the other hand, Dean [38] finds that the application of BPR across the entire firm may not produce as much benefit as a functionally oriented project, such as switching to Just-in-Time (JIT) production system. In order to better investigate this issue empirically, we incorporate a scope variable into our analysis and suggest the following hypothesis:

Hypothesis 3. The effect of BPR projects on firm performance increases with project scope.

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