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# A survey of business process reengineering practices in Singapore

C. Ranganathan<sup>a</sup>, Jasbir S. Dhaliwal<sup>b,\*</sup>

<sup>a</sup>*University of Illinois, Chicago, IL, USA*

<sup>b</sup>*Department of Technology Management, Norwegian School of Management,  
Elias Smiths vei 15, P.O. Box 580, 1302 Sandvika, Norway*

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## Abstract

The changing economic environment has led to an increasing interest in improving organizational processes to enhance business performance. This paper presents the results of a survey of the business process reengineering (BPR) practices followed by firms in Singapore. The paper highlights the status of BPR projects, motives behind their efforts, the functional areas targeted for reengineering, roles of various organizational members in BPR programs, use of IT in BPR, and the main problems faced in the efforts of Singapore firms. The results show that about 50% of firms surveyed were engaged in BPR projects, with as many as 37% of the firms indicating their intention to take up BPR projects in the next few years. Main problems faced by the Singapore firms are the lack of human and financial resources, lack of internal IT expertise and capabilities, and lack of a champion for BPR efforts. These findings are compared to prior studies in the US and elsewhere. The paper concludes with a discussion of the implications based on the findings of the survey. © 2001 Elsevier Science B.V. All rights reserved.

**Keywords:** Business process reengineering; Information technology; Information systems implementation

## 1. Introduction

Business process reengineering (BPR) has become a popular management tool for dealing with rapid technological and business change in today's competitive environment. It refers to the "analysis and design of work flows and processes within and between organizations" [11]. Literature is replete with examples of how BPR has helped firms contain costs and achieve breakthrough performance in a variety of parameters like delivery times, customer service, and quality. For example, Motorola, when faced with higher defect percentages and longer cycle times,

redesigned its parts and tooling process, simultaneously upgrading its manufacturing equipment, this decreased the total production cost by US\$ 1 billion per year, and cut cycle time by half [21]. Through BPR, Bell Atlantic reduced the time to install new telecommunication circuits from 15 to 3 days, and cut labor costs from US\$ 88 to 6 million [35]. Hallmark replaced its sequential product development with cross-functional teams and cut its new product introduction time on cards by over 75%. Ford reduced its accounts payable staff by 75% with BPR. Other often cited examples of successful BPR programs include Cigna RE, AT&T, Pacific Bell, and the IBM Credit Corporation. More such examples are discussed in [1,2,36]. The much publicized initial success stories of BPR led to an explosive dissemination of the concept that resulted in the launch of several thousands of BPR

\* Corresponding author. Tel.: +47-6755-7424;  
fax: +47-6755-7678.  
E-mail address: jasbir.dhaliwal@bi.no (J.S. Dhaliwal).

projects. A study by CSC/Index [9] reported that 72% of the 224 firms it surveyed had initiated BPR programs. Another study by Deloitte and Touche consultants found that 85% of its 532 respondents were involved in BPR efforts. Surveys in the UK and Canada also indicated high level of interests in BPR [34,38]. Though many firms embraced BPR initiatives with great zeal, not many of them emerged successful in their efforts. Studies indicate that executives are disappointed with the results of BPR efforts [31] and that the failure rates are as high as 70% [3,5]. The initiation and diffusion of BPR, like most management concepts, follow an S-shaped curve. When the concept was introduced in the early 1990s [6,10,22], there was an explosive growth and large scale adoption. After a spate of failures, and difficulties in implementation, currently there is a phase involving disillusionment. The failures have prompted some researchers to view BPR as another passing management fad [15,32]. Some of the earlier perspectives on BPR are changing and BPR is currently being viewed as an umbrella approach to overall organizational change [16].

Despite the high failure rates and criticisms, there is an agreement that BPR, when properly done with effective use of information technology can produce significant gains in performance. This is especially true in countries like Singapore where labor costs are high. Firms need to alter their processes significantly, invest in information technology, and improve overall performance in order to combat the challenges posed by competitive environment. Singapore has been ranked as a highly competitive nation, next only to the US, and has been ranked as one of the top nations in the effective use of IT. Given this background, we undertook a survey to understand what Singaporean organizations are doing with respect to their BPR efforts.

## 2. Objectives of the study

While the literature on BPR is replete with case studies, normative frameworks and methodologies for carrying out effective BPR, there are very few descriptive studies that report the BPR practices that are being followed in the industry. Our study was an attempt to fill this gap.

## 3. Methodology and sample

Data was collected on various aspects of BPR using a questionnaire-based survey. The survey was performed in the last quarter of 1997. Data was gathered on (i) macro organizational features of the firm; (ii) status of BPR efforts and motives for undertaking BPR programs; (iii) key players and the roles played by them in BPR programs; (iv) functional areas targeted for BPR programs; (v) information technologies used for BPR efforts; and (vii) problems encountered in BPR projects.

The questionnaire was prepared using information gleaned from prior literature in the area. It was pilot tested with three senior IS executives, two process reengineering specialists, one senior IS consultant, and three faculty members in information systems management. Based on their feedback, appropriate changes were made to the questionnaire.

A database was compiled from the mailing list of the Data Processing Management Association (DPMA), Directory of top 1000 businesses and Computerworld's top 100 IT users in Singapore. All the organizations were contacted by phone and only those that had a formal IS department with senior IS positions qualified as participants in our study. This resulted in a list of 700 firms from a diverse set of industries. We felt it appropriate to address our questionnaire to the most senior IS executive in these organizations, as he/she is presumed to be well informed about BPR and IT-related issues. We mailed our survey to the executive in these 700 firms and obtained 126 usable responses, indicating a response rate of 18.1%. The demographics of the respondent organizations are shown in Figs. 1–3.

## 4. Survey findings

### 4.1. Status of BPR projects in Singapore

The data revealed that about 50.4% (64 firms) of our respondent firms had some BPR projects in place or under implementation. A total of 29.1% (37 firms) indicated that they intend to take up some BPR projects in the next 1–3 years. This indicates a high level of awareness about BPR issues among Singapore firms.

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