# Business process reengineering in public sector organizations: Systematic literature review of critical success factors

**A.A.T.M. Amarasinghe, Ruwan Wickramarachchi**
Department of Industrial Management
University of Kelaniya
Kelaniya, Sri Lanka
amarasin_im16005@stu.kln.ac.lk , ruwan@kln.ac.lk

## Abstract

Business Process Reengineering (BPR) focuses on critically analyzing existing business processes in an organization and redesigning enhanced effectiveness and functional efficiencies. Although private sector organizations have widely adopted BPR, it has been observed that public sector organizations are less successful in utilizing this exercise to improve their processes. This paper aims to investigate and identify the critical success factors (CSFs) that impact the implementation of BPR in the public sector and develop a framework to support improving success rates. A critical review of the literature was conducted to identify CSFs and derived fifteen CSFs that influence BPR implementation in the public sector under five dimensions. According to findings, Management commitment, financial resources, organizational structure, Human resources, and IT infrastructure are the main five CSFs in public sector BPR implementation. CSFs of BPR are crucial for an organization to achieve the end goal or mission of the BPR project.

## Keywords
Business Process Reengineering, Critical success factors, BPR success

## 1. Introduction
The reengineering of business processes is concerned with fundamentally rethinking and redesigning business processes to obtain dramatic and sustaining improvements in quality, cost, service, lead times, outcomes, flexibility, and innovation (Hammer and Champy, 1993). The BPR aims to dramatically improve organizational performance by enhancing the organization's efficiency and effectiveness of processes. BPR also involves redesigning associated systems and organizational structures, which plays a major role in driving the process changes within organizations. Costing millions of dollars to redesign business process procedures, BPR often reexamines and repositions corporate strategy (Hammer, 1990). Prominent examples can be found worldwide in industries relating to business process reengineering implementation. i.e., Ford's accounts payable system reengineering process, Xerox's inefficient office systems reengineering process, IBM Credit's inefficient approval process, etc. Implementing BPR can be successful with some modifications to the methodology, clearly assessing the impact, creating a plan for related people, processes, and systems. Also, communicating changes and the impact early, reviewing the process regularly as no initial designs are perfect, etc., play a critical role in improving success rates.

Public service provides various services to the community in terms of education and learning, health and wellness, electricity, water, and local services, money, and taxes. So, the efficiency of the public service is a crucial factor, as it is the largest employer as well as a deliverer of public services in the country (Vishaka & Jehan,2020). It is vital to adapt modern solutions for processes in the public sector and deliver effective service to the citizens in the country.

The BPR concept helps identify the present situation in an organization and provides necessary solutions to overcome identified issues concerning the organizational processes. Several studies come up with the gap between improvement rates before BPR implementation and after BPR implementation for their processes (Thong, Yap and Seah, 2000; Habib and Jamal, 2013). When considering characteristics of the public sector, their processes have some special characteristics rather than the other private sector processes. Although many studies have been done on the private sector BPR implementation, there are fewer significant studies conducted focusing on the public sector. It is hard to locate any research done in an attempt to build a framework or model for BPR implementation in the public sector.

There is an identified gap that needs to be addressed to do a study about how to implement business process re-engineering concept attempts been made, in the public sector organizations. Therefore, identifying CSF that affects BPR adoption is critical in a time when the governments are examining new possibilities to reshape the governance processes. In this process, the public service has an essential role to play in ensuring that sustainability is not compromised when managing development programs. Also, the use of technology and the push towards administrative efficiency need to be in line with those of other large private sector organizations. The public sector can get a 60% success rate in BPR, and the private sector gets a 70% success rate in BPR projects (Marlen 2013). This factor shows that the public sector BPR implementation is quite more complex than the private sector.

This paper aims to investigate and identify the research relates to factors/challenges that affect business process engineering implementation using a systematic literature review (SLR) approach. The research objectives which the study addresses are to Identify the factors/characteristics that affect business process engineering implementation public sector and identify existing models/frameworks for BPR implementation in the public sector. The significance and contributions of the study are as follows. First, the study provides new insights into the understanding of BPR implantation in a public organization. Second, clarity understanding about frameworks/models that used worldwide public sector BPR implementation projects. Finally, this study helps create an understanding of the characteristics and factors that could support BPR implementation in the public sector.

## 2. Literature Review

Many organizations are continuously investigating ways to achieve lower operations costs in the current business environment but higher efficiencies. Business process reengineering (BPR) is identified as one of the most important solutions for organizational improvements in all performance measures of business processes(Farhan and Shehata, 2018). Important management concept, Business process engineering (BPR) concept had been introduced by MIT professor Michael Hammer and Babson College professor Thomas Davenport in the mid-1990s. The reengineering of business processes is concerned with "fundamentally rethinking and redesigning business processes to obtain dramatic and sustaining improvements in quality, cost, service, lead-times, outcomes, flexibility and innovation" (Hammer and Champy, 1993). They have conducted several studies related to business process reengineering (BPR) implementation in organizations worldwide based on practical scenarios and case studies.

### 2.1 Difference Between the Public Sector and Private Sector

For applying the BPR concept for public organizations, the researchers tend to find the key differences between the public and private sectors and how these differences affect these two sectors' business process change based on case studies. In terms of features related to the public sector, their processes have some special characteristics rather than the other private sector processes (Jurisch *et al.*, 2012). Various authors attempt to analyze and incorporate unique features of public and private sector organizations and their impact on the business process reengineering implementations. Most of these comparisons are based on case studies of BPR implementation and the author's personal experience of BPR implications of these two sectors. The success factors in the public sector largely conform to the ones in the private sector, and correspondingly, the majority of literature focuses on BPR in the private sector, and the majority of process designs and frameworks were developed for the private sector.

As far as the BPR implementation in the public sector is concerned, it should be first recalled that public organizations differ from private ones in several ways. A study conducted about Key differences in the private sector and public sector business process change in 2013, identify the main differences between these two sectors when business processes change under eight (8) dimensions. Those dimensions, namely "Process scope definition, intended versus achieved improvements, Decision to change, Change management, Project management, Management of resources, Interdepartmental integration and volatility". This research-based is on 128 case studies reported 1993-2011 time period. Also, the authors identify the unique characteristics of these two sectors when BPC implementation and discuss how both sectors could learn from each other. In 2012, Success factors and challenges of Public Sector BPR Implementations were studied. The concept of "Business Process Reengineering (BPR) has proven to be a powerful and elaborate tool". Yet, BPR projects still constitute complex and challenging endeavors, and also 60% and 80% of reengineering efforts fail to achieve their goals. The study focused on literature about business processes, business process changes methods, and differences between the private and public sectors. Authors analyze the success factors in five (5) dimensions and their subdimensions: "project scope, top-level management commitment, resources, project management & change management". We can identify differences in these two sectors when implementing BPR under six (6) dimensions in terms of functions and intentions, processes, organizational structure, economic & political feasibility, and expectations from BPR. Finally, the authors recommend five (5) propositions for Public Sector BPR

for future researches relative to public sector BPR implementations as follows (Jurisch *et al.*, 2012).

1. Public organizations are less likely to initiate BPR efforts.
2. Public and private organizations derive differing benefits from BPR projects.
3. BPR efforts need to be initiated top-down to guarantee economic and political support and feasibility.
4. A small-scale approach to BPR will increase the success rates of BPR endeavors in the public sector.
5. Sharing of knowledge and experiences via trans-institutional knowledge management platforms would positively impact BPR implementation in public administrations.

## 2.2 Critical Success Factors of BPR Implementation

To determine the critical success factors of BPR in an organization, it is necessary to understand the organization itself, as the factors may vary depending on the type of organization, including private or public.

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In 2000, Thong and seah studied Business Process re-engineering in the Public Sector related to the Case of the Housing Development Board in Singapore. This study has examined the BPR implementation of a large public organization and introduced BPR lessons from this single case study. Simulation can be a very advantageous technology for BPR in both private and public sectors (Thong, Yap and Seah, 2000).

Another research conducted in Ireland considered the role of business process redesign in creating citizen-centered E-government. The study details how fifty (50) authorities coordinated and built a single portal to e-government services. This research came up with a dynamic E-forms model for "publication and distribution of forms, citizen identification and data security, and completion and submission of forms by citizens". This case provides evidence that the "infrastructure will be developed focus on the core process"(Hughes, Scott and Golden, 2006).

In 1996, Vishanth identified factors that may influence the successful implementation of BP & ISR in the Sri Lankan context under five (5) leading organizations. These factors can be classified in seventeen (17) different areas and most of the factors act as obstacles and eight (8) factors are more significant in terms of "work environment, IS/IT environment, management and leadership, employee attitude, education, skills and experience, risk, culture, organizational structure" (Weerakkody,1996). In 1999 the same author conducted a study for identifying critical success factors in implementing business process and Information systems reengineering in Sri Lanka. This study listed key success factors under five (5) sections in terms of "strategic context, organizational context, cultural context, external context, IS/IT Environment". Payment process and job control process reengineering project were analyzed in this research (Weerakkody, V., Bennet, and Tagg, C.,1999)

Gunawardana (2015) in their paper proposed a conceptual indicator model for creating change content & Factors influencing the redesigning of the processes. This paper argues that "visionary leadership[1]" and "government process re-engineering" will positively impact the redesigning of processes for re-aligning government agencies in Sri Lanka(Gunawardena, 2015).
"Sri Lankan public administration structure has undergone at least three distinct public reform waves"(Elapatha and Jehan, 2020). "Efficiency has been high in some Sri Lankan D&Ms[2], many others were behind and efficiencies for

[1] A visionary leader is a person who has a clear idea of how the future should look
[2] Department and Ministers

such D&Ms can be improved and most DMUs[3] in public sector organizations are off the input target levels" (Elapatha and Jehan, 2020).

(Abubakar and Palisuri, 2019) indicated IT capability act a major role in BPR implementation. Several studies have been done on BPR implementation using Information Technology. IT-supported reengineering of the public sector can bring both pros and cons. The IT-supported system for BPR requires a public-sector-specific approach(Theresa Waterbury, 2018). Thomas and Rainer come with the Enterprise resource planning installation model for the public sector in 2006(Gulledge *et al.*, 2006). It was a big step to how to use ERP systems for implementing BPR in the public sector. Muhammad & Waseef conducted qualitative research about business process reengineering initiatives in the public sector in Pakistan. The study did a deep analysis of three (3) BPR projects done in related public hospitals, education assessment authorities, and one of the provincial departments in Pakistan and study those processes closely. This study introduces the relationship between BPR & ERP(Habib and Jamal, 2013). In 2011, The current situation of information technology and administrative process management technology was analyzed. At the same time, information engineering shortages in government affairs have been reported. The necessity and feasibility of business process reengineering were also discussed. After studying the traditional management of flows, the author proposed an event diagram for a real case. During business process reengineering, RUP (Rational Unified Process) technology was used to create a software model (Xiong, Xiao and Liu, 2011).

### 2.3 Theoretical Frameworks and Models

Despite the widespread adoption of BPR, it has in many several cases have failed to deliver the results promised. BPR is considered one of the critical reasons among others, at the origin of the failures of BPR. Yet, a relative void in the literature remains the scarcity of suitable models and frameworks that address implementation issues around BPR[Al-Mashari, Irani and Zairi, 2001]. A fundamental framework for reengineering is shown below (Figure 1). An organization can add or skip a few steps based on any specific requirements. However, the sequence more or less remains the same.

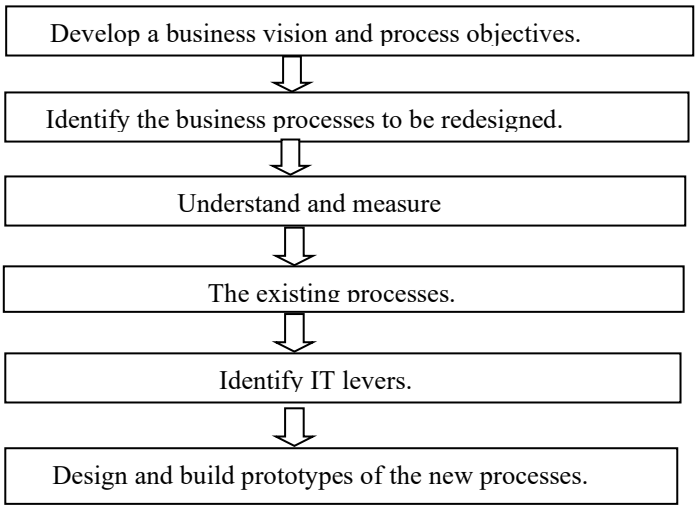


Figure 1. Devenport five-step approach

Therefore, researchers have proposed integrative models and frameworks for BPR implementation based on the davenport five-step approach.

.In 2020, Apeksha & Singla proposed a framework for Re-engineering as a strategic stance for e-governance success(Hooda and Singla, 2020). Other than that, several researchers propose specific models and conceptual frameworks for BPR implementation based on countries. In 2009 introduced the conceptual framework of BPR for the Ethiopian civil service organizations by Faculty Staff in the Ethiopian Civil Service College. Using a model built based on BPR theory, Ongaro (2004) demonstrated that the principles and practices of private sector BPR apply to

[3] Decision making units

public agencies, provided that the specificities of the public sector are taken into account. (Ongaro, 2004) In 2007, Mihyar Hesson introduced a conceptual model for BPR implementation related to single town planning study in the public sector in UAE (Mihyar,2007).(Gunawardena, 2015) introduces a conceptual indicator model based on an impact of visionary leadership and "government process re-engineering" when redesigning processes for re-aligning government agencies in Sri Lanka. He mentioned these two factors positively impact Business process re-engineering in the public sector of Sri Lanka. In 2017 there was conduct research to identify a methodological framework of business model engineering in an IOT empowered context. The author analyzes the IoT from a business perspective reengineering. Compared to the start of corporate reengineering in the 1980s, information technology coverage was remarkably improved. It provides a Great push in business design processes, which eventually leads to changes in the organization both private and public. The author of this research introduced an IoT-based business model engineering framework using a 3-dimensional approach (human, money, and things). This is a new proposed framework for building a commercial reengineering based on IoT(Yamakami, 2017).In 2017 there was an argument that the knowledge management approach can use for the business process reengineering. Knowledge management plays a central role for make government organizations functions effectively. The author argues While the development of a new model/framework of public service administration and service delivery happens, the creation of successful information and knowledge-focused organizational culture is necessary. Increased expectations and demands of citizens and those employed within the public sector in terms of easier and greater access to information are proving to be key drivers of knowledge management development in business process reengineering(Tsui, Lee and Lee, 2009).

## 3. Method

The systematic literature review (SLR) is a procedure used to identify, assess, and interpret all relevant research findings related to the implementation of BPR implementation in the public sector in Sri Lanka. A systematic literature review aims to follow a clear and explicit review process at the planning stage that guides implementation. Its goal is to help build the results retrieved and reduce researcher bias.

### 3.1 Data Collection

There are relevant articles found within databases that are related to the case of implementation of BPR. There were 81 research articles about BPR implementation and only 25 studies that were relevant to BPR implementation in the public sector. The study can be divided into two groups from the related articles, which are the theoretical framework, models, and Factors, as shown in Figure 2.

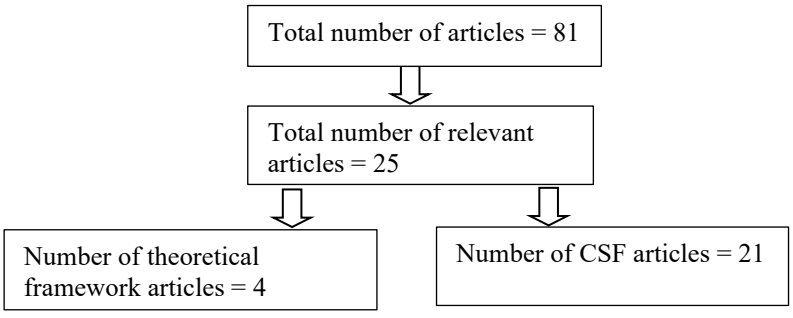


Figure 2. Data collection process

### 3.2 Searching strings and database

The database search process of the study includes Scopus, IEEE Xplore (IEEE), ScienceDirect (SD), Emerald insight (EL), Journal of Science and Technological Researches (JSTR), and Taylor & Francis, which are related to Business process reengineering (BPR) research. SLR includes all empirical research that investigates BPR implementation in organizations. The study has selected research papers that have examined the CSFs for BPR implementation. The criterion was limited to searching the title of the articles to confirm relevant articles. The keywords of searching all databases are: 'factors or determinants'; combination with 'BPR implementation in the public sector; and other related

words, such as 'implement*', 'adopt*'. The initiative resulted in 81 research papers in total, which covers the studies from 1993 to 2020.

### 3.3 Exclusion criteria and selecting of the study

The following exclusion and inclusion selection criteria were expressed to filter the relevant papers:

- I selected only the papers which have been published in peer-reviewed conferences and journals.
- I selected only the papers which have been written in English.
- I selected the papers published between 1993-2020.
- I selected the papers which are focused on BPR implementation in public organizations.

## 4. Results and Discussion

Table 1 presents the list of papers that are based on theoretical frameworks/models.

Table 1. List of papers on theoretical frameworks

| ID | Title | Author |
|---|---|---|
| 1 | Reengineering as a strategic stance for e-governance success - the mediating role of core competencies A mixed-method study | [Hooda and Singla, 2020] |
| 2 | Improve the efficiency of public administrations through business process reengineering and simulation | [Rinaldi *et al.*, 2015] |
| 3 | Business process reengineering in the public sector: Ranking the implementation barriers | [Ghatari, Shamsi and Vedadi, 2014] |
| 4 | Business process reengineering in UAE public sector: A naturalization and residency case study | (Hesson, 2007) |

Table 2 and Table 3 presents the distribution of critical factors. From the SLR approach, this study identified the factors which affect the implementation of BPR in public organizations under organizational/management, Economic, Social, Technological, and political dimensions.

Table 2. Distribution of CFSs of BPR implementation in public sector

| **Organizational /Management factors** | **Economic Factors** | **Social factors** | **Technological factors** | **Political factors** |
|---|---|---|---|---|
| Management commitment | financial resources | Human Resources | IT infrastructure | Regulations and policies |
| Organizational structure | | Corporate culture | Technology | |
| methodology | | Human endeavors | Education & Training | |
| Executive leadership | | Customer requirements | | |
| Organizational culture | | | | |
| Implementation plan | | | | |
| | | | | |

Table 3. Distribution ranked of CSFs

| Ranking | Factors | Definition |
|---|---|---|
| 1 | Management commitment | Direct participation by the highest-level commitment |
| 2 | financial resources | Money, company have available for spending. |
| 3 | Organizational structure | way or method by which. organizational activities are divided, organized, and coordinated |
| 4 | Human Resources | set of people who make up the workforce of an organization |
| 5 | IT infrastructure | Set of Information Technology components |
| 6 | Regulations and policies | formulated by governments to impose controls and restrictions on certain specific activities or behavior |
| 7 | methodology | Methods used in a particular activity. |
| 8 | Executive leadership | the ability of those who manage or direct employees in an organization to influence and guide these individuals |
| 9 | Organizational culture | the proper way to behave within the organization |
| 10 | Corporate culture | beliefs and practices associated with a particular corporation |
| 11 | Human endeavors | The effort made by the human resource to do the implementation |
| 12 | Implementation plan | a project management tool that facilitates the execution of a BPR plan |
| 13 | Technology | Availability and possibility to gain new technology that used to BPR |
| 14 | Education & Training | The acquisition of specific and applied knowledge and skills. |
| 15 | Customer requirements | approvals, authorizations, consents, licenses, recordation's and filings, registrations, and other acts |

## 5. Conclusion

The objective of this paper was to identify the factors of BPR implementation in the public sector and rank them in order of their appearing frequency in used researches. To increase cloud BPR adoption, it is required to understand and clarify factors that influence BPR systems implementation. We derived fifteen (15) factors from past studies and ranked them under organizational/management, Economic, Social, Technological, and political dimensions. Management commitment is the most crucial factor for BPR implementation in the public sector according to the result of the literature. Financial resources, human resources, organizational structure, IT infrastructure, and regulation and policies are the other main success factors that affect BPR's success in public sector organizations. According to the literature review organizational/management factors are the most crucial factors to the success of the BPR project. These identified factors help companies to move to the BPR implementation in the public sector. The study will evaluate the CSFs for implementing BPR through empirical research using the frameworks developed in future work. This research suggests that future research should pay attention to investigating the

importance of critical success factors. Future research will also identify other factors under internal and external that may influence BPR implementation, such as risk factors in BPR implementation.

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## 7. Biographies

**A.A.T.M Amarasinghe** is a final year undergraduate reading for B. Sc. (Honours) in Management and Information Technology in the Department of Industrial Management, University of Kelaniya, Sri Lanka. He is doing his final year undergraduate research in the area of Business process reengineering in the public sector.

**Ruwan Wickramarachchi** is a Senior Lecturer at the Department of Industrial Management, University of Kelaniya. He graduated with a BSc in Industrial Management from the University of Kelaniya and an MPhil in Management Studies (specialized in Information systems) from the University of Cambridge, United Kingdom. He earned his Ph.D. in Distributed Simulation from Sheffield Hallam University, United Kingdom. His current research interest includes application in distributed simulation, management of information technology, and project management. Currently he is also servicing as Director of the information and Communication Technology Centre, University of Kelaniya.