



A Model to Evaluate the Benefits of Applying BPR Methodology

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Abstract— *Although the promises from Business Process Reengineering (BPR) implementation seem impressive, there are spectacular failures. Most companies apply BPR methodology in pursuit of addressing the problems that they face, but a great disappointment came as the problems remained and only a slight change happened that was not enough to reach the desired results.*

As numerous studies emerged proposing different techniques to apply BPR methodology, various other studies reported reasons behind failures of the BPR implementation. However, evaluating the benefits of applying BPR is slightly disregarded by most of the researchers. Therefore, this paper aims to propose a model for evaluating the benefits of applying BPR methodology, mainly, evaluating the benefits of the already developed “To-Be” model.

The suggested model is constructed from four dimensions, which are ‘achieving organization strategy’, ‘stakeholders’, ‘measuring the performance of business processes’, and ‘organization restructure’. Those dimensions have been integrated together to determine the benefits of applying BPR to the organizations, and consequently enhance the improvement of applying BPR methodology.

Keywords— *Business process reengineering, performance indicators, evaluation, model, As-Is, To-Be*

I. INTRODUCTION

Hammer and Champy have been defined a business process as a collection of activities that takes one or more types of input to produce an output that is of value to the customer [1], and this definition reveals that one of the objectives for business process is “adding value to the customer”. Furthermore, Hammer and Champy defined Business Process Reengineering (BPR) as a fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance such as cost, quality, service, and speed [2]. Hence, “adding value to the customer” could be measured by cost, quality, service and speed. In addition, DFID [3] determines the objectives of BPR as moving from traditional division of labour towards the creation of integrated cross-functional work processes, such integrated work units gives flexibility and rapidly respond to customer and service demands.

The above definitions clarified that the main objective for BPR is to add value to customer and that could be achieved through improving the performance. Moreover, it has been discussed by Sankey [4] that the research in both public and private sector clarified that “what gets measured gets done” [5] and demonstrated that good systems of performance measurement can dramatically increase the quality of services provided and job satisfaction to employees. Therefore, a model to measure improvement in the performance and evaluate the other benefits of applying BPR is becoming an urgent need. However, developing this model is a complex process, as it requires consideration of many factors: performance standards and measurement techniques, performance management approach, incentives, and more [6].

The paper is organized as follows. Section 2 reviews the existing literature on the recent studies that have been centred on the context of evaluating the performance of BPR Methodology. The subsequent section presents the proposed model, which is divided into four dimensions (i.e. ‘achieving organization strategy’, ‘stakeholders’, ‘measuring the performance of business processes’, and ‘organization restructure’) that will be used to evaluate the benefits of applying BPR. The conclusion of this research is offered together with suggestions for future research directions in the final section.

II. WHY DO WE NEED A MODEL TO EVALUATE THE BENEFITS OF APPLYING BPR?

Different methodologies for applying BPR have been suggested by different authors, each methodology had different numbers of phases/stages; neither offering a consensus among the stage of reviewing and evaluating BPR, nor describing the stage of evaluation, some examples are shown in table (1).

In addition, there is no consistency among existing frameworks for the dimensions that have been postulated to evaluate the benefits of applying BPR, some examples can be:

- 1) A framework for assessing the aspects of performance for successful organizations was provided by the European Foundation for Quality Management (EFQM). The framework focused on three main factors, which were enablers, results, and innovation and learning. A set of sub-criteria was defined by using questions for assessment. Also, a list of possible areas to improve the process performance was addressed. However, some aspects such as organization restructure, and measuring the performance of business processes were ignored [3].
- 2) The framework presented by Reijers and Mansar [7] depicted that BPR is affected by four dimensions, which are customer, organization, information, and technology. In addition, it illustrated a twofold challenge for BPR,

technical challenge, resulting from the difficulty of developing a process design that makes a radical improvement of the current design; socio-culture challenge, which is due to the people that react against the changes.

Table 1 BPR implementation stages (synthesized by the author)

REFERENCE	BPR STAGE	REVIEWING & EVALUATING STAGE	DESCRIPTION OF REVIEWING & EVALUATING STAGE
[2]	1) ENVISION NEW PROCESSES 2) INITIATING CHANGE 3) PROCESS DIAGNOSIS 4) PROCESS REDESIGN 5) RECONSTRUCTION 6) PROCESS MONITORING	NUMBER "6"	A CHECKLIST OF KEY ISSUES SUCH AS: <ul style="list-style-type: none"> • HAVE CHANGES THROUGHOUT THE PROJECT COMPROMISE OUR ORIGINAL INTENTIONS? • HAVE WE DONE A POST-IMPLEMENTATION REVIEW? • ARE WE ACTIVELY SEEKING TO IMPROVE PERFORMANCE? • ARE WE MEASURING PERFORMANCE? • ARE WE SETTING MATURITY TARGETS?
[8]	PHASE 1: STRATEGY LINKAGE PHASE 2: CHANGE PLANNING PHASE 3: PROCESS PROBLEMS PHASE 4: SOCIAL RE-DESIGN PHASE 5: TECHNICAL RE-DESIGN PHASE 6: PROCESS RE-GENERATION PHASE 7: CONTINUOUS IMPROVEMENT	NUMBER "7"	<ul style="list-style-type: none"> • MONITOR AND EVALUATE PROCESS PERFORMANCE • ASSESS COMMUNICATION EFFICIENCY AND EFFECTIVENESS • EVALUATE CONFORMANCE TO CUSTOMER REQUIREMENTS • ASSESS COST/BENEFIT/RISKS • AUDIT REDESIGNED PROCESS • EVALUATE INDIVIDUAL AND TEAM SATISFACTION • DISSEMINATE EVALUATION RESULTS • INTEGRATE WITH CONTINUOUS IMPROVEMENT PLAN
[9]	1) UNDERSTAND BUSINESS NEEDS 2) UNDERSTAND THE PROCESS 3) MODEL AND ANALYZE PROCESS 4) REDESIGN PROCESS 5) IMPLEMENT NEW PROCESS 6) ASSESS NEW PROCESS AND METHODOLOGY 7) REVIEW NEW PROCESS	NUMBER "6"	<ul style="list-style-type: none"> • CONDUCT PROCESS DEPLOYMENT AND PERFORMANCE DATA REFLECTIONS • REVISE ORGANIZATIONAL APPROACH
[10]	1) VISIONING 2) IDENTIFYING 3) ANALYZING 4) REDESIGNING 5) EVALUATING 6) IMPLEMENTING 7) IMPROVING	NUMBER "5"	<ul style="list-style-type: none"> • EVALUATE AND SELECT A PROCESS DESIGN
MUTHU, WHITMAN AND CHERAGHICITES IN [10]	1) PREPARE FOR BPR 2) MAP & ANALYZE AS-IS PROCESS 3) DESIGN TO-BE PROCESSES 4) IMPLEMENT REENGINEERED PROCESS 5) IMPROVE CONTINUOUSLY	NUMBER "5"	<ul style="list-style-type: none"> • INITIATE ONGOING MEASUREMENT • REVIEW PERFORMANCE AGAINST TARGET
[11]	PHASE 1: BEGIN ORGANIZATIONAL CHANGE PHASE 2: BUILD THE REENGINEERING ORGANIZATION PHASE 3: IDENTIFY BPR OPPORTUNITIES PHASE 4: UNDERSTAND THE EXISTING PROCESS PHASE 5: REENGINEER THE PROCESS PHASE 6: BLUEPRINT THE NEW BUSINESS SYSTEM PHASE 7: PERFORM THE TRANSFORMATION	NONE	

- 3) Lampathak, et al. [10] proposed a framework for BPR, which consists of three pillars: organization, process, and technology. Organization is concerned with job skills structure; process focuses on core businesses processes, innovation and value-added to the customers; technology emphasis enabling information systems architecture, methods and tools for organizations. While Dodaro and Crowley [12] posits that the core processes for reengineering influenced by four factors, which are policies and regulations, management and decision support structures, people and organizations, and information technology.
- 4) Mansar, et al. [13] suggested framework, concluded that “customer” is extremely important, “information” is very important, and “organization” is slightly important that is based on the practice of their framework components. In addition, improving customer satisfaction has been found to be more important than cost reduction and revenue investment in Singaporean organizations [14].
- 5) A framework for measuring the performance of three Governments departments in Hong Kong was developed by [4]. The framework consists of four dimensions, namely, objective, customer, process and organization. Objective dimension measures the financial performance and achieving policy objectives. While customer dimension assesses that the customer service is translated into activities that meet the requirements of the customer needs. Whereas process dimension measures how the new business processes can support customer requirements and achieving objectives. Finally, organization dimension looks at better training for the staff to meet their satisfactions
- 6) The evaluation framework offered by Reijers and Mansar [7] is based on the key performance indicators of an organization, which were formulated to four dimensions, namely, time, cost, quality and flexibility.

So, the question that may be asked now is: Why are not key performance indicators (KPIs) used to evaluate the benefits of applying BPR? KPIs can help to show changes based on a specific condition, and it could be used as a reliable basis for assessing achievement. However, the indicator does not explain the change [4]. In addition, Different problems for KPIs have been presented by Lampathak, et al. [5] Such as, “KPIs not related to strategy, short-termist, backward looking, used to ‘punish’ rather than motivate and equip, and too many measurements”.

The second question could be: Why is not balanced scorecard (BSC) methodology used to evaluate the benefits of applying BPR? Although BSC is developed to link the organizations strategic to the essential activities to achieve desired results [15], a criticism for BSC has been stated by Lampathak, et al. [5] that “BSC is by definition “balanced” – if an organization wishes to achieve quick business growth, then the inherent “balance” is of less value rather than an unbalanced focus on performance activities that grow the business”.

III. A PROPOSED MODEL TO EVALUATE THE BENEFITS OF APPLYING BPR METHODOLOGY

This section sets forth the proposed model for evaluating the benefits of applying BPR methodology. The model encompasses 4 dimensions, as shown in Fig. 1. These dimensions will be presented in the following three subsections. They are here termed as 1) ‘achieving organization strategy’, 2) ‘stakeholders’, which are agreed upon by most theoretical models and empirical studies, 3) ‘measuring the performance of business processes’, which is not commonly used in the previous studies, and 4) ‘organization restructure’, which is slightly disregarded by the researchers.

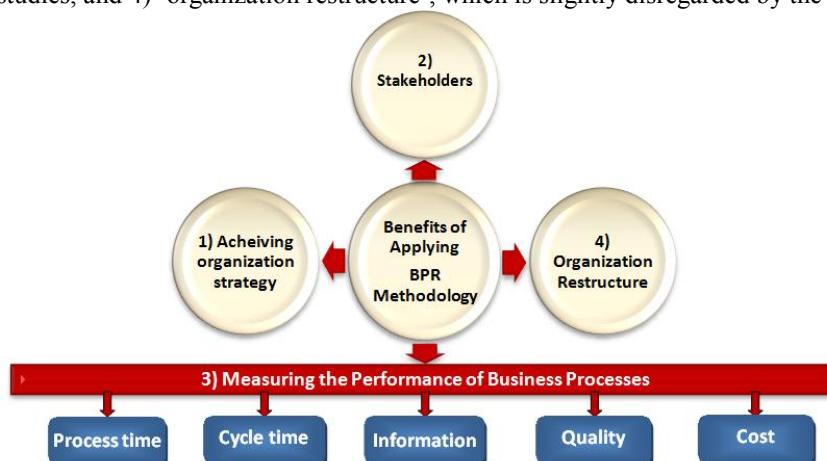


Fig. 1: A proposed model to evaluate the benefits of applying BPR methodology (Synthesized by the author)

A. Achieving organization strategy

It has been stated by Lampathak, et al. [5] that “Less than 10% of strategies effectively formulated are effectively executed”, as there are many obstacles to implement the organization’s strategy, which are vision, people, management and resource. Hence, it should be taken into account that the problem is not just to measure achieving the strategic objectives, but to translate strategic objectives into operational objectives, and then to measure them. Some aspects should be considered when the operational objectives are established to measure a performance, which are Specific, Measurable, Acceptable, Realistic to achieve and Time bound with a deadline (SMART). Some organizations choose to set objectives that indicate a percentage of improvement expected over their baseline, while others choose objectives that reflect their desired performance, regardless of their baseline performance [16].

Balanced scorecard (BSC) is a range of measures that give a broader picture of different aspects of performance. This is based on identifying a number of different dimensions of performance which needs to be measured; these dimensions covered internal processes, customer perspectives, organization innovation and improvement, and financial results [4]. The BSC has been reviewed as one of the most influential ideas of the past 75 years by the Harvard Business Review [15]. Fig. 2 depicts that how BSC is used to translate vision and strategy [5] into four perspectives, which will be used to measure the achievement of organization strategy.

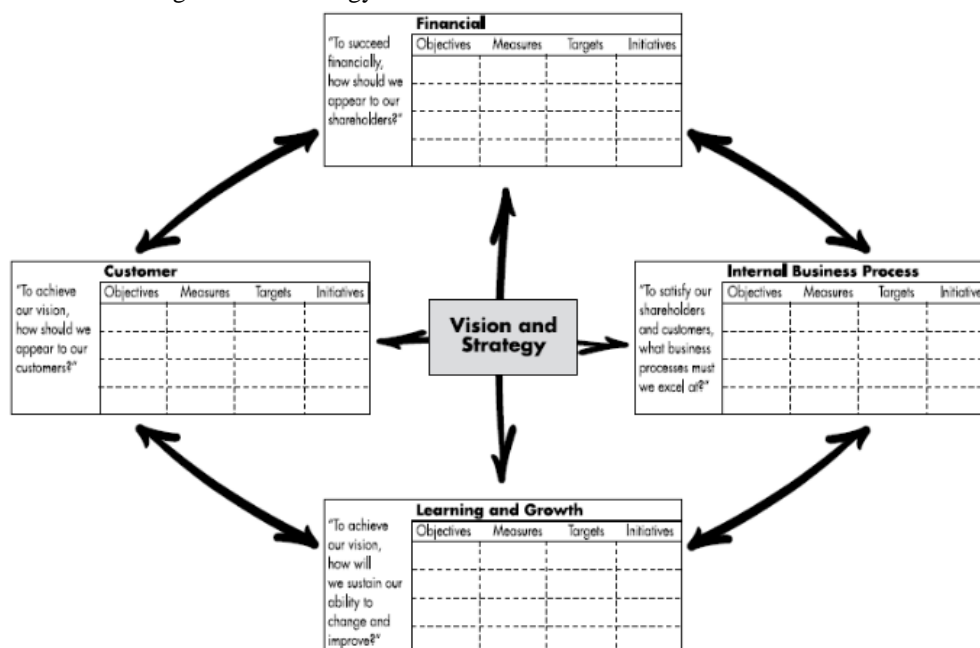


Fig. 2 Translating vision and strategy: four perspectives (Adopted from [5])

B. Stakeholders

One of the important dimensions to evaluate the benefits of applying BPR is to meet the stakeholders' needs or expectations, and many organizations and governments have difficulties to fulfil their stakeholders' requirements [2]. Different classifications for stakeholders have been provided by authors. For instance, [1] identifies stakeholders as shareholders, employee, government regulator, customer, external auditor, or labour union. A set of measurements should be developed for each type of stakeholders to determine their satisfaction of business processes. In addition, a pilot test for new processes should be conducted before the implementation [12] to measure how these processes could meet the stakeholders' expectations. One important tool that should be used to communicate stakeholders to process is documentation. The documentations have to clarify a clear description of the all the steps to complete the process, and the required forms that will be used to accomplish this process, and then disseminate evaluation results among stakeholders [8, 17 and 18].

In addition, a special attention should be given to customers and employees as concluded from the research presented in the introduction section; the main target of BPR is to add-value to customer. The questionnaires should be used to determine customer's requirements and again after implementing the "To-Be" processes to evaluate the benefits of these processes for the customers. For the employees, the organization will never reap the benefits of applying BPM methodology without reconciling their employees' opinion, as usually the employees are competing against each other for reward and promotions [17]. Hence, training is a critical prerequisite for employees to implement the BPR, as the customers' loyalty is determined by the interaction of employees with them [18]. Moreover, the training would be ineffective if the employees do not have motivation and enthusiasm to achieve the desired results.

C. Measuring the performance of business processes

Performance measurement is defined as "a process by which an organization monitors important aspects of its programs, systems, and processes" [16]. Data is collected and used to drive an organization's decisions over time, as it provides information about how an organization's current programs are working and how its resources can be allocated to optimize the programs' efficiency and effectiveness. New processes (To-Be) must be measured for time, costs, productivity and quality, then compared to the processes they replaced (As-Is) [18], as reduction in cost and cycle time are important factors to measure the success of BPR [11].

Two stages are required to measure the performance of business processes. In the first stage, five items should be determined namely, cycle time, process time, information, quality and Cost, as outlined in table (2). Table (2) will be applied two times; first, the table will be filled by "As-Is" processes data per each process, then the table will be refilled again by "To-Be" processes data. At the second stage, a comparison between "As-Is" and "To-Be" processes, related to costs and times, should be performed as given in table (3). The idea of table (2) and table (3) are constructed from [19], and then customized to the purpose of this research.

Table 2: Measuring the performance of business processes (stage 1)

PROCESS NAME	1) PROCESS TIME				2) CYCLE TIME	3) INFORMATO	4) QUALITY	5) RESOURCE COST
	WORKING TIME	WAIT TIME	EXTERNAL TIME	TRANSFER TIME			FREQUENTLY OCCURRING %	
PROCESS "X"								
PROCESS "Y"								
PROCESS "Z"								
.....								
.....								
TOTAL								

Table 3: Measuring the performance of business processes (stage 2)

PROCESS TIME	AS-IS	TO-BE	DIFFERENCE	% CHANGE
EXTERNAL TIME (HOURS)				
TRANSFER TIME (HOURS)				
WAIT TIME (HOURS)				
WORKING TIME (HOURS)				
CYCLE TIME	AS-IS	TO-BE	DIFFERENCE	% CHANGE
CYCLE TIME (HOURS)				
MINIMUM CYCLE TIME (HOURS)				
INFORMATION				
KNOWLEDGE AVAILABILITY TO (FAQ) %				
QUALITY				
AVERAGE FREQUENTLY OCCURRING %				
TOTAL NUMBER OF PROCESSES				
RESOURCE COSTS	AS-IS	TO-BE	DIFFERENCE	% CHANGE
ITEM 1				
ITEM 2				
ITEM 3				
.....				
TOTAL COSTS				

The result of comparison for each item (in table 3) should be compared to the objective(s) that is to be achieved for that item, for instance, information item “knowledge availability” means that creating a database for frequently asked questions (FAQ) with continuous updating of the steps to resolve the errors/problems, assuming that the objective of this item is to decrease the percentage of problems that inexperienced users face. This objective should be measured to determine if it is achieving the desired results or not.

D. Organization restructure

It has been mentioned by Lee and Dale [17] that all processes should have an owner so that he/she can review the process performance and its continuous improvement. Also, in some organizations, it has been found that the most professionals had multiple bosses, which caused a failure for implementing BPR [18]. Furthermore, there is duplication of functions that were assigned to departments, which in turn increased operational complexity and escalated costs. BPM requires a careful analysis of the organization and change in an organizational structure which could be essential. Therefore, restructuring the organization around the new business processes should be checked, to ensure that the organization structure is suitable for the new processes, which means that if changes are made to processes ensure that the corresponding changes, if necessary, are also made to the organization structure. An example for clarifying the relation between organization structure and business processes is presented in fig. 3 [2].

Sometimes employees find it difficult to accept the required change for new processes due to the diversity of their background, culture, training, skills, and knowledge [20]. So, top management should develop a strategy to deal with employees fears from change [21], as appropriate job definitions and allocation of responsibilities is an evidence for obtaining the good results of applying BPR methodology [22]. Also, these results can be used as a basis for employees’ rewards [18]. A checklist could be used for reviewing organization structure; an example of this checklist is (checklist 7, p. 50), which was presented by DFID [3].

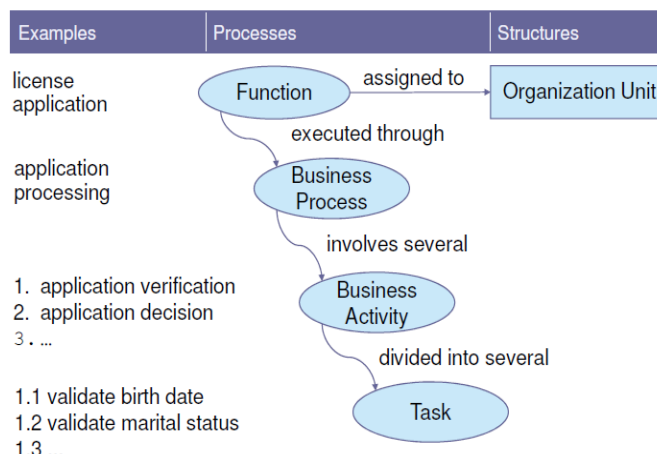


Fig. 3: Example of the relation between processes and organization structures (Adopted from [2])

IV. CONCLUSIONS AND FUTURE WORK

Many governmental and non-governmental organizations are looking forward to implement BPR methodology, imagining that applying BPR is a magic wand that will solve all the problems in their organization, such as cost reduction, increase competitiveness, stakeholders' satisfaction and productivity improvement, but they got surprised that these problems remained, and all that happened was a slight change, which did not lead to the desired results.

In addition, the researcher found that there is a shortcoming in the existing studies and literature survey (as presented in section II) for evaluating the benefits of applying BPR research. Although, there are different techniques for measuring the performance of BPR, such as BSC and KPIs, these techniques are not sufficient to see the broad picture of the whole benefits, as BSC, for example, can establish a link between an organization's strategic and measuring the results of achieving objectives, However, it could not explain the relation between benefits of applying BPR and organization restructure.

Hence, this paper aims to overcome the shortcoming of the existing research and proposes a model for evaluating the benefits of applying BPR methodology. The model encompasses 4 dimensions, they are herein termed 1) 'achieving organization strategy' and 2) 'stakeholders', which are agreed upon by most theoretical models and empirical studies, 3) 'measuring the performance of business processes', which is not commonly used in the previous studies, and 4) 'organization restructure', which is slightly disregarded by the researchers. The next phase in this research should involve the testing of this model by means of using appropriate data collection instruments that will be capable of investigating the dimensions presented above.

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