Comparison of Business Process Reengineering Methodologies for Small Medium Enterprises

Abdullah Bagaber*, Syed Norris Hikmi Syed Abdullah, Suraya Miskon, Zainulabdeen basil mohammed
Computing Faculty, Universiti Teknologi Malaysia, Malaysia

Abstract

In these few years, small and medium enterprises (SMEs) have made rapid progress and have become the important force of most countries. With the rapid growth of SMEs, the market competition have become more intense, thus the SMEs are facing more challenges. Many small companies are still experience several problems in various areas such as fulfilling customers demand, resource utilization, customers order and customers satisfaction. Most of the BPR methodologies have been designed and implemented to gain the successful of SMEs’ project; however the failure rate was very high because of numerous methodologies which clearly do not follow the structural approach as proposed by BPR that are replete in literature. Comparison between five methodologies has been conducted in order to come up with most suitable reengineering methodology that gain the enhancement for SMEs. As a result of the comparison, the BPR stages methodology is the most suitable methodology that can be apply for SMEs since it’s complete to accomplish the business process, documented, it has successful record, applicable for all process, enabled by tools and it is easy to be implemented in all the processes of the company.

Keywords. Business Process Reengineering (BPR), Small Medium Enterprises (SMEs), Reengineering Methodology, BPR for SMEs, Reengineering methodologies for SMEs

1 Introduction

Any Company that seeks to increase its market share or obtain more profits must adapt to change in order to satisfy its customers and to be a market leader. In this respect, many changes in business methods are beginning to appear in literatures, one of which is, the business process reengineering (BPR)[1]. BPR can be defined as the “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]. According to [3], BPR is the analysis and design of workflows and processes within an organization. While taking numerous definitions into consideration, business process can be summarily defined as a “set of logically related tasks performed to achieve a defined business outcome”. In these

*Corresponding author: abajaber8@gmail.com
few years, small and medium enterprises (SMEs) have made rapid progress and have become an important economy changing force in most countries. With present trend of globalization which is aided by the rapid development of information technology, the market competition has become more and more intense. As a result, SMEs are facing more challenges in various realms of business requirements and outcomes[4]. Many small companies still experience several problems in various areas such as fulfilling customers demand, resource utilization, customers order and customers satisfaction, just to mention a few[5]. In this light, although BPR was a thought proposed in the early 90’s[6], research efforts to date makes it a modern management technique that can be employed to help enterprise to increase its competitiveness, and its ability to survive and develop[7]. It should be noted that a fundamental concept of BPR is the continuous reconsideration and revision of a business or an enterprise. This consequentially leads to the real-time improvement of the major determining elements of such business. As a condition, this change must reflect a holistic capability of the enterprise, including; cost, time, quality, service, speed and environment etc. In this manner, in order to survive the stiff market competition globalization has introduced, most SMEs need to reengineer their business processes in order to improve their profitability and to guarantee their survival[8]. The objective of this paper is to analyze and compare five different BPR methodologies with the aim of selecting the most suitable reengineering methodology that suits SMEs. It is a fact that several organizations have implemented BPR, however, a high failure rate was recorded basically because the applied methodologies clearly does not follow the criteria structural approach unique to BPR as evident in relevant literature [9, 10]. Previous studies have indicated that, 70% of BPR projects failed due to various reasons. The most reoccurring reason being the incapable of the employed methodology[9, 11] Thus, in the work, a comparison between five methodologies has been conducted in order to come up with the most suitable and appropriate business process reengineering methodology for SMEs.

1.1 SME's Overview

The option of enhancing the SMEs has become a favored strategic step of countries that intend to embark on drastic economic revolution. This is because, the major effects of this step is usually translated into increased investments, creation of more employment opportunities, trade promotion and investment in different economies. Favorably to the economies of governments, all these usually culminate into a sustainable economic development[12]. According [13], over the entire world, SMEs form the main area for economics of different countries. For example, UK employment statistic shows that SMEs constitute 99.3% of the 4.7 million business establishment. Also, while such enterprises usually consist of 50 employees, 0.6% of firms were recorded to have 50 to 249 employees. Likewise, statistics in Canada reveals that SMEs are responsible for much of the economy's growth. This is because they account for 45% of GDP, 60% of all jobs in the economy, and 75% of net employment growth. In India, SMEs provide employment to about 60 million people. While the small medium enterprises in Saudi represent 92 percentages of whole enterprises and employ around 80 percentages of the employees in Saudi[14]. It is important to note that, although, the definitions of "small" and "medium" sized enterprises differ from one country to another, SMEs have been defined against various criteria such as the number of workers employed, the volume of output or sales, the value of assets employed, and the use of energy[15, 16]. The Table 1
indicates the definition of SMEs based on number of employee for various countries [14, 17-20]

<table>
<thead>
<tr>
<th>Definition</th>
<th>Micro Enterprise</th>
<th>Small Enterprise</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>country/body</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU</td>
<td>Up to 9</td>
<td>100-99</td>
<td>100-499</td>
</tr>
<tr>
<td>US</td>
<td>-</td>
<td>500</td>
<td>-</td>
</tr>
<tr>
<td>OECD</td>
<td>Up to 19</td>
<td>Up to 99</td>
<td>100-499</td>
</tr>
<tr>
<td>Malaysia</td>
<td>-</td>
<td>Less than 75</td>
<td>75-200</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>-</td>
<td>Less than 60</td>
<td>60-100</td>
</tr>
</tbody>
</table>

1.2 BPR Overview

Different scholars have different views about the definition of BPR [18]. Many authors defined BPR as the total transformation based on an unconstrained reshaping of all businesses[19]. This transformation involves the use of technologies and management systems, as well as organizational structure and values in order to achieve quantum leaps in performance throughout the business. Another BPR author, Davenport, describes ‘business process redesign’ as: the analysis and design of workflows and processes within and between organizations. Devenport stressed that business activities must be viewed as more than a collection of individual or functional tasks which should be broken down into processes that can be designed for maximum effectiveness. And this applies to both manufacturing and service environments[3]. Venkatraman argued that BPR involves enterprise reengineering centering on the use of information technology. Based on this, the organizations should redesign their business processes in order to make full use of the information technology while avoiding the use of other strategies that constrain the application of information technology [21].

1.3 BPR METHODOLOGIES

Sequel to the discussion in the above section, the five selected methodologies which were focused upon are; i) Phases for implementing BPR in SMEs[22]. ii) Six step model methodology [23]. iii) Consolidated methodology[10]. iv) True road to successful BPR methodology[11]. v) BPR stages (BPR in health care Methodology)[24].

1.3.1 Phases for Implementing BPR in SMEs

[22] indicated four phases for implementing BPR in SMEs. The first phase is a discovery phase which entails; team selection, identifying the area of improvements, setting the scope of the project. The second phase entails preparation and assessment. The major key performance indicators of this phase is identifying the target of the project and investigating existing hurdles. Tools employed for this are usually mapping and detailed operational Flow-Chart. The third phase which is solution and developmental plan phase entails innovation and building. The main challenges of this phase include, i) the operational and action
plan of implementing the reengineering from concept to detailed design, and ii) the ability to develop and examine the integrations of processes, people and technology. In the final phase, the transformation pilot study is conducted to monitor the results and offer extensive training to the employees. In this phase, the top management refines performance goals, keep the strong commitment to the company’s vision, and break the obstacles among the departments and to maintain flexibility as the business change.

1.3.2 Six Step Model Methodology

The six step model focuses on how to create a competitive advantage through varieties of management tools such as TQM (total quality management), cross functional teams and customers’ satisfaction. The six step model methodology consist of the following steps; i) Determination of customers requirement and the goal for the processes, ii) mapping and measuring the existing processes with respect to identified requirements and goals, iii) analysing and modify the existing processes, iv) benchmarking comparable processes of best-in-class companies, v) designing a reengineering processes, and vi) implementing the reengineering processes[23].

1.3.3 Consolidated Methodology

According to[10], the consolidated methodology to provide an all-inclusive structural approach for reengineering. This approach was developed from five different methodologies namely, i) Transforming Enterprise Methodology, ii) Methodology for Reengineering, iii) A Six Step Guide to Business Processes Reengineering, iv) Evolving BPR from Art to Engineering, and v) Step by Step Guide to Business Transformation. An IDEF0 model was developed to deliver a structured methodology and to simplify the understanding. Figure 1 explains the major steps of the consolidated methodology.

![Figure 1. Consolidated Methodology](image-url)
1.3.4 True Road to Successful BPR Methodology

Lien made a comparison among different methodologies and afterwards, Lien combined identified strengths of each methodology to derive a unique methodology which called, the true road to successful BPR. This is as illustrated in Figure 2. The proper methodology approach should begin from the structural thinking pattern of the problem solvers vis-à-vis the important aspect of the organization. Lien did not fail to admit that, his methodology is not a solution to all the problems. Lien indicated, criticality and evaluation of real-time situations should dictate which methodology to be used [10].

![Figure 2: True Road to Successful BPR](image-url)
1.3.5 BPR Stages (BPR in Health Care Methodology)

This methodology was primarily developed to improve the service quality and efficiency of the surgical ward of a hospital in order to minimize patient inconveniences. It indicated that reengineering should extend to the entire business network (i.e., internal and external). Respect to BPR Stages, the project started from the identification of the strategic objectives and a new representation using process mapping of how the company works. The critical processes (those which determine the competitive success of the company) were then identified. Having set the performance objectives required, these critical processes were then subjected to re-engineering. The representation of the current process, the re-engineered process and its experimentation are closely connected activities, with frequent interaction. Finally, the new process was adopted and continuously monitored and improved through a feedback process. The steps of this BPR stages are definition of company vision and objectives, identification of critical processes, definition of performance objective, identify the work organization. Create the as-Is process models, experimentation and new process start-up. Figure 3 shows the step of BPR in health care methodology[24].

![Figure 3. BPR Stages Methodology](image)

2 RESEARCH METHODOLOGY

The method employed in this work is the selection of applicable methodologies that are relevant to implement BPR in SMEs. As in the Figure 4 below, the author selects such a methodology based on it being contemporary and also based on the amount of citation to its credit. In addition, the characteristics of a chosen methodology should conform to the definition of BPR and it should be major characterised to have radical and not incremental effects. This aspect is imperative because, not all proposed BPR methodologies claimed in literature really conform to the ideal
characteristics of the BPR methodology. Another considered issue is, according to the Department of Defense (DoD)[25], in its manual on business process reengineering, it states that an effective methodology for change must be

- **Complete:** “It must provide a step that directs a business process improvement procedure from establishment to Implementation”.
- **Applicable:** “The methodology must be able to be used on any process of the business”.
- **Friendly:** “The procedure must be easy for all personnel, including nontechnical workers and managers, to learn and understand”.
- **Supported:** “The reengineering procedure must include detailed documentation, training courses and project management tools”.
- **Successful:** “The methodology should have a record of success and these cases should be available to guide the actions of the reengineering team”.
- **Documenting:** “The procedure must produce process documentation as it is used”.
- **Enabled by Tools:** “The method must be supported by automated tools that help to ease the reengineering workload and enable process documentation and measurement”.

Thus, based on these vital issues as identified above, this work arrived at the five methodologies that need to be evaluated to come up with the most applicable methodology for SMEs.

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![Figure 4. Research Methodology](image)

### 3 Result and Discussion

In Table 2 every methodology is being compared according to the characteristics as identified in [25]. The comparison tables shows the strengths and weaknesses of each methodology. The performance results as shown were extracted from the information provided by the individual researchers in their published works. Based on the comparison in Table 2, it is observed that two methods namely; four phases of BPR in SMEs and the road to successful BPR are weak in providing enough details in the steps of reengineering. Therefore it is difficult to use such methods as a guideline for reengineering processes since they are not complete with regards to
providing reengineering steps. The Six Steps and consolidated methodologies are considerably among the best methodologies since they provide a complete procedure on how to reengineer processes. However, they are poor in documentation and they don’t provide documentation of successful case studies. Therefore, the result of the comparison show that the most suitable methodology is BPR stages for health care since it fulfils all above stated characteristics. The phases of the methodology are complete to accomplish the business processes, documented, and applicable for all processes. It is also enabled by tools which are EBC to model the process and it is easy to be implemented in all the processes of the company. It is expected, based on these characteristics, to achieve a dramatic type of change that leads to significant improvements in terms of cost, time and quality of services provided by the company.

Table 2. Comparison Table (a)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Methodologies</th>
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<th>Successful</th>
<th>Supported</th>
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<td>[23]</td>
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<td>Consolidated Methodology</td>
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<tr>
<td>[11]</td>
<td>Road to Successful BPR</td>
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<td>✓</td>
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</tr>
<tr>
<td>[24]</td>
<td>BPR Stages (BPR in HCM)</td>
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</tr>
</tbody>
</table>

Table 2. Comparison Table (b)

<table>
<thead>
<tr>
<th>Reference</th>
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<th>Enable by tools</th>
<th>Applicable for SMEs</th>
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<tbody>
<tr>
<td>[22]</td>
<td>Phases of BPR in SME</td>
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<td>[23]</td>
<td>Six Step Guide</td>
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</tr>
<tr>
<td>[11]</td>
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<td>[24]</td>
<td>BPR Stages (BPR in HCM)</td>
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4 Conclusion

After identifying the area of research along with the unique problems, the paper reviewed the related literatures that relate to the subject matter followed by gathering the needed data and analyzing same. As a result, the paper covered the applicable BPR methodologies for SMEs that have been examined and evaluated based on various characteristics. The result of the comparison show that the most suitable methodology for SMEs which is BPR stages for HC since it matches the
BPR definition and also matches all the characteristics with respect to the comparison made. Its phases are complete to accomplish the process reengineering, supported, documented, and applicable for all process. It is also enabled by tools and it has a successful record. When adopted, it is has the capability of introducing a dramatic type of change that leads to significant improvements in terms of reducing cost, shortened time and enhancing the quality of services provided by SMEs. The future work suggested is to generalize the comparison upon all the existing BPR methodologies to enlarge the scope of the study. Furthermore, since this study has shown the BPR stages method as the best methodology for SME, to generalize this statement, the researcher suggests applying this methodology in more case studies to prove its success in reengineering the small organization’s business processes.

References


