

Research Article

Total Quality Management in Business Process Reengineering

Abhishek Kumar^{A*} and Pravendra Tyagi^B^AJagannath University, Jaipur, ^BMNIT, Jaipur

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Abstract

Modern organizations are urged to improve their processes not only to meet the requirements of ISO 9001 and ISO/TS16949, but mainly due to steadily increasing competition. TQM and BPR are the most commonly used methods used by the organizations for processes improvement. Even though their implementation is very challenging, the successful implementation of both methods can lead to achieving of significant results. Based on the review of various studies and the carried out research, it is assumed, that it is possible to integrate and share TQM and BPR within one organization. The authors of the studies argue that by TQM and BPR common usage it is possible to achieve significant processes improvement. To confirm these assumptions, the interviews in four Slovak organizations were conducted. Interview concerned the process Improvement, usage of the tools and methods of quality management, with particular emphasis on the usage of TQM and BPR methodologies. The analysis was aimed to determine how organizations improve their processes and how to use these two process improvement methodologies (TQM and BPR). It was also aimed to verify whether it is possible to share TQM and BPR within one organization.

Keywords: Total Quality Management (TQM), Business Process Reengineering (BPR), integration, process improvement, survey etc.

1. Introduction

One of the fundamental requirements of quality management system in manufacturing enterprises is orientation on processes and continuous improvement, which leads to increasing of overall business performance. All processes that transform inputs into out puts throughout the product life cycle must run in a high degree of reliability so that the output of the process fully meets customer requirements. In today's extensive competitive environment it is essential for organizations to continuously improve processes; many of them use a variety of tools and methods of quality management. The improvement based on the process approach can be implemented by two widely known methods (approaches), those are Business Processes Reengineering (BPR) and Total Quality Management (TQM). Organizations can achieve significant results by implementation of TQM or BPR. However, there are many researches related to integration and the current use of these two process improvement methodologies. These studies demonstrate that shared usage of these approaches can lead to greater results than separate usage of TQM and BPR.

2. Methodology

This paper presents an empirical survey, which is based on topic-related literature and researches review concerning

TQM and BPR and their possible integration. To analyze the current status relating to this topic the analysis in four selected organizations was carried out. Three employees within each organization were interviewed, by questions prepared in advance. The samples were based on diversity of respondents, thus were represented by the production department, quality department and the person responsible for process improvement in the organization. Such structure of the sample provided a complex look at the considerations discussed. The survey was focused on international organizations (American and German), which operate in Slovakia and also in several countries and where it is expected to have a well-designed system of process improvement; and these organizations use a variety of tools and methods to improve their processes. The aim of this article is to carry out a deep analysis in order to determine whether it is possible to use TQM and BPR within one organization

3. Literature Review

In order to be competitive on the market, organizations are forced to continuously improve their processes. There are many methods and tools for improving of processes. Those are TQM and BPR. The TQM and BPR have been defined by more authors.

Landeros *et. al* (1995) The TQM is integrated management philosophy that focuses on continuous improvement of products and processes quality to achieve customer satisfaction, while taking into account the quality and responsibility of all individuals in the organization. On

*Corresponding author **Abhishek Kumar** is a M.Tech. Student and **Pravendra Tyagi** is Ph.D. Research Scholar

the other hand, reengineering is defined by Hammer and Champy (2004) Reengineering is 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. Practical experiences in the companies where reengineering of the business processes was conducted, have shown the following: the quality was improved by 84%, time to product appearance was decreased by 75%, communication was improved by 61%, development costs were reduced by 54%, changes were reduced by 48% and profit was increased by 35%. (Eric, Stefano Vic, 2008) Many authors, however, argue that by the simultaneous usage of TQM and BPR within one organization better results can be reached than when the TQM and BPR are used alone. Tomanek (2001) states that it is possible to integrate TQM and BPR, but it is necessary to ensure their mutual "separation". TQM can be used on implementation of moderate changes after radical change through reengineering. It is possible to start with TQM, continue with reengineering, then certain time with TQM, etc. Next authors which analyzed this theme were De Bruyn and Gelders (1997). They note that TQM is an enabler of reengineering. The authors Love and Gunasekaran (1997) argue that TQM is a good starter for BPR.

Allender *et. al* (1994) nothing in the TQM philosophy dictates that continuous improvements must proceed in small steps and that improvements are welcomed in either small steps or gigantic leaps. Thus, the breakthroughs envisioned by BPR are indeed consistent with TQM.

Also Harrington (1995) and Kelada (1994) dealt with this theme: "these two approaches are complementary and that reengineering has to have TQM aims at the forefront in order for it to be successful. Subsequently Grover and Malhorta (1997) state that TQM can often serve as the building block for subsequent reengineering efforts.

The authors Gonzalez, Martinez and Dale (1999) recognized that further research is needed and their analysis provides only a broad set of guidelines. Nevertheless, according to them the application or adaptation of BPR methodologies for the implementation of TQM principles seem to be possible. Based on this knowledge, the study is focused on verification whether the TQM and BPR are integrable in terms of Slovak enterprises.

4. Survey Results Discussion

The study further presents the results of the survey, which was focused on the verification of the level of usage of TQM and BPR in improvement processes, besides, it the analysis other types of process improvement in organizations was carried out. The survey was conducted through interviews in four Slovak organizations. Respondents were asked the following questions:

1. Are the TQM principles implemented in your organization?

From the answers to question it can be concluded that each of the organizations surveyed has some experience in the field of TQM. In two organizations all respondents

confirmed that they implemented TQM principles, the other two were currently implementing the TQM.

2. What level of the TQM have you reached?

Having summarized the first question, respondents were asked to rate the TQM level in the organization. Since that in two organizations the answers differed, respondents were asked additional questions.

3. Which of the TQM tools and methods are used in the organization?

Having analyzed the answers to the question regarding tools and methods of TQM it was found out, that in all the four organizations team work is daily used; tools of lean production are also widely used -as indicated by all respondents surveyed. On the contrary, none of the respondents marked a QFD method.

4. Is reengineering used by the organization?

In contrast to the TQM, reengineering is less used in the organizations. In the organization A it is only used in some parts of the production, the organizations Band C have just got started with BPR. The organization D does not even plan to implement reengineering, as confirmed by two respondents.

5. What level of reengineering have organization achieved?

All the three organizations, which either implement reengineering or have started with the BPR, reached the first level of reengineering –Work Process Reengineering (Fig. 5). Level WPR means that reengineering affects only certain parts of the organization, thus it does not go beyond a certain department.

6. Which of reengineering tools and methods are used in the organization?

The reengineering tools and methods which are used in each of the surveyed organizations are processes standardization, information technology and process performance measurement. Even organization D, which has not yet started with reengineering, use these tools and methods.

7. Which methods are considered as most used during process improvement in organization?

Improving their processes, organizations use a variety of tools and methods. In the organization A process improvement is carried out through rationalization proposals. In organization B 5S, FMEA, Score Card, mind maps, brain storming, clock opportunities are used for process improvement. The respondents from the organization C indicated, that they use 5S, FMEA, Mockup, VSM, standardized work methods; and finally in the organization D simulation tools such as Ishikawa diagram, brain storming, 5 Why analysis, Pareto analysis,

FMEA are core improvement techniques. However, if we take into account only consistent methodologies, the most widely used are Six Sigma, Lean and Kaizen.

8. *What kind of problems are you used to solve by these methods?*

By Replies to question 8 the most common range of issues to be solved are products quality improvement and also productivity increasing.

9. *What is the average duration of the improvement project?*

Subsequently, respondents were asked what the average duration of the improvement project was. In three organizations the average period was approximately 6 months. In the organization B average improvement project duration was set to 4 months (Fig. 9).

10. *What importance degree does the organization ascribe to the targets?*

This question determined the degree of importance to the objectives of the organizations on the basis of objective records. Significance was set in the range of 1 to 3 (small importance -1, medium importance-2, and major importance-3). From the answers to the question it can be concluded, that the organizations attach utmost importance to increasing of sales, increasing of product quality, reducing costs, increasing of processes efficiency and deliveries on time.

11. *Which of the options does more fit for the organization?*

The aim of this question was to determine whether organizations use to improve processes rather elements of TQM or reengineering elements (elements see Table 1). The summarized responses of the individual organizations can be found in Table 2.

12. *Which of the statements is for the organization more distinctive-"organization uses a fast step-on year improvement (10-15%) with a high risk of failure" or "organization uses continuous improvement year on year improvement with low risk of failure"?*

Finally, on the question 12 there was a clear response of all the four organizations, that the processes improvement was carried out continuously on-year with low risk of failure.

5. Research Contributions

The survey results were used for subsequent solution of the PhD. thesis, which concerned the integration of two approaches to process improvement- TQM and BPR. Based on the information gathered in the survey, the research results were used for definition of the methodology of integration of TQM and BPR.

Conclusions

The survey was realized in four organizations through structured interviews, and was tasked to verify the status of process improvement, particularly the use of TQM and reengineering. Having analyzed the respondents' answers, it can be concluded, that organizations use TQM to a greater extent than reengineering. As for the reached levels of both methodologies, TQM is more deeply used than reengineering, which is used in organizations only at the first level (WPR). The most used improvement methods in the surveyed organizations are Six Sigma, Lean and Kaizen. The organizations most commonly use these methods to solve problems with quality and productivity. As for an average duration of projects, improvement projects last in the organization from 4 up to 6 months. In view of the answer to the question about the importance of goals for the organizations it can be concluded, that organizations attach importance to increasing of sales, increasing of product quality, reducing of costs, increasing of process performance and on time deliveries to customers. The organizations use elements of TQM as well as BPR for improvement. In most cases, organizations use "soft" elements of TQM, but if necessary, they use the "hard" elements of reengineering. Likewise the answer to the last question indicates that organizations are afraid to take risks, and they are more inclined to TQM as to reengineering. The previous findings assume that Organizations are capable of using of both process improvement methods simultaneously.

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