Chapter 5

BUSINESS PROCESS REENGINEERING
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5.0 INTRODUCTION

Rapid technological advancements and increased expectations of customers are the key factors that drive the organizations to look into the improvement in performance by innovation. But the fact is that something that is new and different doesn’t in itself is an innovation. Change based on the principle is progress; change without principle is chaos. Change is the order of the day. Change has become the norm. There is hesitancy for change, but with change alone can bring the opportunity and innovation. Business that is willing and able to adopt the change will be the survivors.

With an objective of improvement in the performance, business houses do innovation process. As Bernardo (2002) presented, in the 80’s the concept of Total Quality Management (TQM) was originated and in 90’s the concept of Business Process Reengineering (BPR) gained recognition as an innovation process in US companies to face the competitiveness from Japanese companies.

With the growth in size and complexity of businesses, formal processes involve multiple departments and a relatively large number of employees. As a result of their scope and complexity, such processes have the most to offer in terms of net benefits.
5.1 REENGINEERING:

In the literature there are many variations in the usage of terms for describing the concept of reengineering. All referring to process changes large and small. Some of them are:

- Business Process Improvement
- Core process redesign
- Process Innovation
- Process Transformation
- Structured analysis and improvement
- Organisational reengineering
- Organisational change ecology
- Business Process Management

Michael Hammer and Champy, 1993 (in O’Neill, 1999) described the Business process reengineering as the fundamental rethinking and radical design of the process to achieve dramatic improvement in critical, contemporary measures of performance, such as cost, quality, service and speed.

BPR is a concept that is aimed at improvement of process in a dramatrical approach. The above definition of BPR uses four keywords – fundamental, radical dramatic and process.

The term ‘fundamental’ refers what and how. What refers the performance. It refers to the key operations that an organization is required to perform to accomplish its objectives. How refers the sequence of performance. The key operations identified are to be performed in a meaningful sequence to accomplish its objectives.
The term ‘radical’ refers a school of thought that prescribes to throw away the conventional methods and innovate to improve the process performance. In other words it is a ‘clean slate’ approach i.e. sweep the slate and draw a fresh plan. However there are certain factors to be considered for the successful implementation of the BPR efforts. These factors include effective change management, systems to integrate the efforts of the teams from different functional areas, systems to make these different teams to understand each other’s requirements etc.

The term ‘dramatic’ in the definition of BPR refers a jumping result, not a continuous improvement or incremental result. There are three possible instances that an organisation undertakes reengineering:

- An organization that is in deep trouble. It needs dramatic improvement to sustain. The situations such as the high company’s costs than the business model will allow, the customers are repetitively complains about the service, the product failure rate is high etc., it needs business reengineering.
- An organization is not in trouble; is doing well. But the management has the foresightedness and can see trouble coming.
- An organization is in very good position and doing quite well. But the management sees an opportunity to do better and become the leader in the particular segment.
'Processes’ are generally identified based on the following dimensions:

- **Entities**: Processes can be identified based on the interaction between entities of an organization viz. inter functional, interpersonal, inter organizational etc.
- **Objects**: Processes can result in the manipulation of the objects. The objects may be informational or physical.
- **Activities**: Processes are also identified with the kind of activities. Activities in an organization are generally of two types - managerial and operational.

In nutshell, Reengineering can be perceived as the adjustment, alteration, or partial replacement of a process or product in order to make it to meet a new need.

While TQM concept holds an incremental and continuous improvement in performance, BPR concept holds a radical, dramatic and discontinuous improvement in performance.

### 5.2 BPR TOOLS AND TECHNIQUES

Following are some of the tools and techniques for the successful application of reengineering.

*Process Visualisation*: For a process to be reengineered the “end state” is to be visualized in prior to the defining and establishment of the systems needed to implement the new innovation. The development of the vision of a process is the key to the successful reengineering.
Process mapping/operational method study: Operational method study is one of suitable tool to reengineering. It involves the systematic investigation of the present way of doing a particular job with an aim of doing the same job in a better way at reduced cost and/or time.

Change Management: It refers the management of organizational Change and is an important tool for successful reengineering. This refers the human side of reengineering. Generally there will be resistance from employees to change as if it affects their level of performance. So change management is to be effectively used to overcome the resistance that arises because of reengineering.

Benchmarking: Benchmarking is an essential and integral part of reengineering. It allows the visualization of the best processes that are in use in other organizations.

Process and customer focus: Sometimes the primary objective of reengineering is solely to redesign the processes to improve the customer satisfaction. This provides a lead to improve the process to improve the quality and/or minimise the costs.

5.3 TENETS OF BPR

Tenet 1: Customer is the main focus and his requirements are to be given top priority in process redesign. This is a must to stay in the competition.

Tenet 2: Emphasis should be on horizontal process management. Ideas and suggestions of cross-functional teams constituted
horizontally should be considered and slowly, and top to down vertical command management should decline.

Tenet 3: Dramatic improvements in cycle times process costs and customer satisfaction are key indices of the successes of most process reengineering projects. Sometimes a project may be directed towards only one of these indices.

Tenet 4: The people who directly support the business process should be given a central role in analyzing and redesigning the process.

Tenet 5: Senior management must be involved throughout the project.

Tenet 6: Process reengineering seeks to optimize the performance of the process in relation to other organizations.

Tenet 7: Communication and trust are pivotal to the success of the process-reengineering project.

Tenet 8: The psychological and emotional barriers to change must be accounted for and carefully managed throughout the process-reengineering project.

5.4 THE ROLE OF TECHNOLOGY IN REENGINEERING:

The central theme of reengineering is technology. From the pages of the history it is a known that the technological advances such as the steam engine, IC engines, the telephone, the transistor, the computer, the internet, and the optic fibre cable made possible the radical changes in production and business processes.

In particular Information Technology (IT) that encompasses the computer work stations that are linked to inter and intra networks
enabled both production and business processes to get automated and fundamentally got restructured in the activities such as information collection, storage, processing, and retrieval and reporting. However technology in itself does not provide the complete solution.

The companies with different functional areas within the organisation are to be more cautious while using IT strategy for reengineering which otherwise may experience typically disastrous results. In such cases IT systems that are incompatible with each other results in great loss.

In India, the IT intensive sectors such as banking, insurance, travel reservation etc. are using the latest IT solutions, of course reportedly to the minimal extent. Many companies are establishing new computer systems have achieved the automation of existing processes. However these companies may look at reengineer the existing IT hardware using latest IT solutions. A reengineering option is discussed in the following sections.

5.5 REENGINEERING IN COMPUTER HARDWARE:

In IT intensive sectors such as banking, insurance, railways etc, traditional personal computers (PCs) - spread over various divisions as stand alone systems or LAN clients - contain own hard disk and using its own operating system. As the size of computer network grows in terms of workstations, the costs of hardware, maintenance and
support will become the issues and also impact the budget and daily operations.

Sometimes the components of existing computers may not support to run the new software. Then replacing the entire workstation is an option; but an expensive one. As an alternative, reengineering the process of computing with thin client technology is economical.

### 5.5.1 Thin Client Network

Thin client is a generic term for a group of emerging technologies that reduces costs of hardware, maintenance and support. Also this helps in saving the bandwidth, reducing downtime and improving network security.

Thin client card, is PC networking solution to computer maintenance problems. It will make the maintenance department free from regular upgradations and maintenance related issues. Also it makes possible to run latest software on old PCs (P-1/P-II/P-III/P-IV/celeron/AMD). Thin client solution shows dramatic experience in the “cost saving” and “Performance enhancement”.

Thin client solution uses Client-server implementation. Client-server environment consists clients that depend on the centralized server to perform all operations, while in the non-client/server environment the clients do not depend on the server unless it needs to share the common services such as printing facility, data sharing etc. Combination of these two kinds of client-server environments is the
practical approach to reduce the Total Cost of Ownership (TCO) of network.

Thin client network typically contains the following:

- Each PC in thin client network needs one thin client card. Thin client card is a pre-configured LAN card. It fits into the PCI slot of the computer’s mother board.

- One or more computers depending on the requirement with higher specifications are required to act as servers. These are more powerful than the client.

- Servers should be equipped with suitable hard disk and RAM. The clients do not need hard disk and CD drives.

- All the requisite software viz. operating system software, thin client software and all application, utility and system software, will be loaded on and run from the server. No software will be loaded in any of the clients.

There are thin clients that support wide variety of operating systems and all applications and utilities supported by these operating systems. The clients run at the speed of the server. As the clients do not posses much hardware it reduces the total cost of hardware, software upgradations and maintenance.

Thin client network can be used in all types of IT intensive organizations. However it is most suitable for the organizations with multiple locations. Such as banks, insurance companies, railways, IT sector, educational institutions, etc. Indeed an organization with five or more workstations can also use thin client solution.
Advantages of the thin client network:

- It allows running latest software on the existing (old) hardware; thereby reducing the capital cost.
- Low hardware is required at the client side. Therefore maintenance issues will be less.
- Upgradation of the hardware on the client side is minimal. However, hardware on the server side needs to be upgraded as and when required.
- If a client workstation with hard disk fails, at least 8-10 hours is required to bring it back to working condition. Disk less client needs hardly 10-15 minutes.
- Separate OS licenses are not required for client side computers.
- All users will access the OS installed on the server.
- Maintenance of database will be a simpler one.
- Data backup process can be easily centralized for the whole enterprise.
- As the data is stored in the server, UPS facility is not required on the client side. Power failure on the client side does not cause any data loss. Only server is to be supported by UPS.

On the whole, it minimizes the maintenance related issues and brings down the total cost of computing.
5.5.2 Cost Savings By Reengineering:

Cost comparison for a NEW SETUP with 20 computers:

<table>
<thead>
<tr>
<th></th>
<th>Without thin client card</th>
<th>With thin client card</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qty.</td>
<td>Cost per unit</td>
</tr>
<tr>
<td>Server system</td>
<td>1</td>
<td>40,000</td>
</tr>
<tr>
<td>Client system</td>
<td>20</td>
<td>40,000</td>
</tr>
<tr>
<td>Thin client card</td>
<td>20</td>
<td>1500</td>
</tr>
<tr>
<td>Total cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Savings (%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.1: Cost comparison for a new setup of computers without and with thin client card

Note:
- Cost of networking is assumed to be same in with and without thin client.
- Other savings: Cost of UPS facility and less number of software licenses

Cost comparison for UPGRADEATION of the present network with 20 computers:

<table>
<thead>
<tr>
<th></th>
<th>Without thin client card</th>
<th>With thin client card</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qty.</td>
<td>Cost per unit</td>
</tr>
<tr>
<td>Server system</td>
<td>1</td>
<td>40,000</td>
</tr>
<tr>
<td>Client system</td>
<td>20</td>
<td>15,000</td>
</tr>
<tr>
<td>Thin client card</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Savings (%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5.2: Cost comparison for upgradation of computers network without and with thin client card

Note:
- Cost of networking is assumed to be same in with and without thin client.
- Other savings: Cost of UPS facility and less number of software licenses
Cost comparison with replacement of the present network with 20 computers:

<table>
<thead>
<tr>
<th></th>
<th>Replacement without thin card</th>
<th>Reengineering With thin client card</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Qty.</td>
<td>Cost per unit</td>
</tr>
<tr>
<td>Server system</td>
<td>1</td>
<td>40,000</td>
</tr>
<tr>
<td>Client system</td>
<td>20</td>
<td>40,000</td>
</tr>
<tr>
<td>Thin client card</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total cost</td>
<td>8,40,000</td>
</tr>
<tr>
<td></td>
<td>Savings (%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.3: Reengineering Cost comparison for a computers network with replacement option

Note:
- Cost of networking is assumed to be same in with and without thin client.
- Other savings: Cost of UPS facility and less number of software licenses

Summary: This chapter deals with the Business Process Reengineering (BPR). It starts with the need for reengineering and discusses the concept of BPR, tools and techniques of BPR, and tenets of BPR. It also discusses the Thin-client technology by which the computer hardware networking process can be reengineered. Thin client is a generic term for a group of emerging technologies that reduces costs of hardware, maintenance and support.

This chapter also presents cost analysis for reengineering of a network of computers.