CHAPTER-2
THE LITERATURE REVIEW
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The Literature Review

2.1. Introduction:

This chapter deals with the relevant literature in the areas of Business Process Reengineering (BPR), Information Technology (IT), Organizational Culture (OC) and their correlation whilst considered together. This literature constitutes the major theme of the current research. The review of literature is carried out in such a way that on the one hand it covers the major studies in the area of relevance and on the other hand, it explains the various concepts relating to IT, BPR and OC etc. This chapter has been categorized into five sections. Section I exemplifies the need for changing the business processes. Section II presents a wide body of literature in the topics BPR, BPR success factors and failure factors, major BPR enablers and outcome of BPR implementation. The section III discusses the literature on how IT is used as an enabler to accomplish reengineering of key business processes. BPR implementation and its impact on organizational culture have been discussed in section IV. Finally section V presents various studies in the area of organizational culture and tries to find out if any relevant work has already been done or is being done taking into account the IT interventions in reengineering in the Indian as well as global business context.

Section-I

2.2. Call for Change:

In the present business environment the factors like market growth, customer demand, product life spans, technological change, the nature of competition etc. are changing rapidly. As a result, customers, competition, and change have taken on entirely new dynamics in the business world. George, Jones & Sharbrough
(2002) posited that change is necessary to maintain a competitive edge, but is not always a smooth process. In this pace of rapid changes in the markets, shorter product life cycles and consumers’ high expectations and demands need basic changes within an organization’s structure, culture and other management processes. For this changing market situation, organizations are seeking new management strategy, adopting new cutting edge technologies which ensure them of achieving competitive advantage and enhance profitability over the competitors.

Dertorizos, Richard & Solow (1989) pointed out the concern of North American leaders from business, government and academia of declining productivity leading to the eroding morale among industry. They sensed for the first time that something is woefully wrong in the entire business process and recommended for drastic measures in the tune of entire revamp of business processes needed.

Johansson, Machugh, Pendlebury & Wheeler, (1993) demonstrated that since 1950, Western and Eastern countries have been in competition for market share. During the 1950s, Western firms increasingly enjoyed high production years. With "market-driven" philosophy Western firms began to pull away from the rest in the global competition for market share. In order to increase market share and to eventually catch up and overtake the Western firms in the global market, firms from Japan and other Pacific Rim countries began to seek "process excellence" to improve the quality of their products and their bottom line. The business focus of Western and Japanese firms from 1950 to 1990 has been explained by Johansson which is shown in Table 2.1.

Johansson, Machugh, Pendlebury & Wheeler (1993) enumerated the plight of western firms facing stiff competition from the Japanese firms. They demonstrated how Western firms were increasingly forced to shift strategy from market driven productivity with their "push-type" manufacturing to production driven control and "pull-type" operations i.e., a shift from a function focus to a process focus.
Table 2.1: Japanese vs. Western Focus

<table>
<thead>
<tr>
<th>Year</th>
<th>Japanese</th>
<th>Western</th>
</tr>
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<tr>
<td></td>
<td>System</td>
<td>Driver</td>
</tr>
<tr>
<td>1950</td>
<td>Functional focus</td>
<td>Production driven</td>
</tr>
<tr>
<td>1950's</td>
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<tr>
<td>1960's</td>
<td>Beginning of process focus</td>
<td></td>
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<tr>
<td>1973</td>
<td>Process focus</td>
<td></td>
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<tr>
<td>1978</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td></td>
<td>Market driven (Tactical focus)</td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td>Market driven (Strategic focus)</td>
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In competitive market, the change agents of business change with time. There are several such agents other than the customer which are forcing change. Among these competition, costs, technology, and shareholders are the important ones. Competition can be local, national or global. With the arrival of ever-improving communication technology, there is little difference between global and local competition. The competitor on the other side of the globe is virtually down the Street. The study conducted by Johansson, Machugh, Pendlebury & Wheeler (1993) also endorsed that the politics, economics, legislation, and regulations often make the rethinking (change) more urgent. Sheridan (1991) suggests that classical business structure (job specialization within fragmented processes according to functions or departments) is, self perpetuating and hence it is right time for change.

In this new stiff competitive environment for its products and services, Western managers have started to apply newly developed approaches to management. Many authors have suggested that business leaders should move their firms in the new directions of quality management, through continuous improvement, or even through radically to innovative change (Davenport, 1993).
Hammer & Champy (1993) suggested that call for the new competitive firm to be one that is lean, nimble, flexible, responsive, competitive, innovative, efficient, customer focused, and profitable. According to them, "If a company cannot stand shoulder to shoulder with the world’s best in a competitive category, it soon has no place to stand at all". It is obvious that today’s firms must become relentless in their attempts to delight their customers, to dominate the market in a specific niche, and to ensure profitability.

Electronic Data Interchange (EDI) has been seen as an important technology addition to the traditional business processes. Several studies have been carried out in the literature to study its relation with business outcomes. Riggins & Mukhopadhyay (1994) studied the relationship between the EDI benefits and the partner reengineering effort. They found that suppliers were usually reluctant to invest in business process redesign and thus hindered the buyers' ability to realize benefits. Two empirical studies were carried out and regression models were developed for the study. Reductions in cycle time and error rate were considered as dependent variables of the studies.

Iacovou, Benbasat & Dexter (1995) developed a model portraying the factors affecting EDI integration and adoption, and in turn the EDI impact, based on case studies. Variables in their research included capability to transact via EDI, internal and external integration, actual direct and indirect benefits received, awareness of direct and indirect benefits, financial and technological resources, and competitive pressure and imposition by partners. However, the relationship between EDI integration and EDI impact has not been empirically verified. The level of EDI integration was used as a surrogate measure to estimate the expected EDI impact.

Clark & Stoddard (1996) constructed a framework to examine the relationship between information technology and process innovations. The targets of study were grocery channels. A model was developed to explain the inconsistency of EDI
benefits. Case studies with two large manufacturers and two large retailers were conducted. In addition, a survey was done to confirm the findings in those cases. Lummus (1997) conducted a case study to examine why a midsize Midwestern supplier received minimal benefits from EDI. The author found that only few changes occurred in the procedures within the Company.

Several gurus of change from industry or academics have proposed different approaches for the initiative of quality improvement. The important quality improvement approaches are Total Quality Management (TQM), Six Sigma, ISO 9000, BPR etc. Some works on service quality (Waldman & Gopalakrishnan, 2006), on top-management commitment (Waldman D., 1993), on international comparison of total quality management (Galperin & Lituchy, 1999) and quality management in health care (Kaltsounakis, 1995) are part of a growing list of studies that include notable quality gurus as (Deming, 1986; Juran, 1986) and reengineering gurus as (Hammer & Champy, 1993; Davenport & Short, 2003).

Total Quality Management (TQM) is an integrative management philosophy for continuously improving the quality of products and processes (Anvari, Ismail & Hojjati, 2011). It has become most extensively used management acronym and is considered as the buzz word in the management practices. It has been well accepted by managers and quality practitioners as a change management quality approach. It plays a vital role in the development of management practices. TQM which is based on the quality of products and processes is the responsibility of everyone involved with the creation or consumption of the products or services offered by an organization, requiring the involvement of management, workforce, suppliers, and customers, to meet or exceed customer expectations. It offers a range of benefits to adopters of the system: customer satisfaction, employee involvement, increased productivity, opportunities for innovation, increased communication between various management levels and above all cultural change.
Many researchers asserted TQM as an approach to improve effectiveness, flexibility, and competitiveness of a business to meet customers’ requirements—

- as the source of sustainable competitive advantage for business organizations (Terziovski, Fitzpatrick & O’Neill, 2003),
- as a source of attaining excellence, creating a right first-time attitude, acquiring efficient business solutions, delighting customers and suppliers etc.(Mohanty, 1998) and
- as a source of enhancing organizational performance through continuous improvement in organization’s activities (Gouranourimi, 2012).

Despite these benefits, implementation poses a number of problems. Most TQM projects are unsuccessful as, for instance, two thirds of the initiatives in the United States failed. Improving too many processes at a time could cause a loss of focus which undermines the overall outcome. TQM works in a long-term perspective because behavioral change needs time to produce reasonable results.

Six Sigma is a set of tools and strategies for process improvement and it is developed by Motorola in 1986 (Tennant, 2001). Six Sigma seeks to improve the quality of process outputs by identifying and removing the causes of defects and minimizing variability in manufacturing and business processes. The main objective of the Six Sigma is the implementation of a measurement based strategy that focuses on process improvement and variation reduction through the application of Six Sigma improvement projects.

The ISO 9000 family addresses various aspects of quality management and contains some of ISO’s best known standards (Pokinska, Dahlgaard & Antoni, 2002). The standards provide guidance and tools for companies and organizations who want to ensure that their products and services consistently meet customer’s
requirements, and that quality is consistently improved. This standard is based on a number of quality management principles including a strong customer focus, the motivation and implication of top management, the process approach and continual improvement.

In order to survive in the competitive business environment, organizations are continuously seeking for innovative ways to operate their business. Management approaches such as Business Process Reengineering (BPR) are adopted by many organizations in order to achieve a dramatic increase in performance and cost reduction. BPR is an approach where processes are re-structured, re-designed and re-engineered so as to maximize an organization’s potential (Kontio, 2007). It is being presented as a new elixir of success to Western managers. Many organizations that were late in realizing the power and importance of business process management have to undergo reengineering initiatives to ensure that they are still relevant to the marketplace. Earl & Khan (1994) examined it from four different perspectives as a phenomenon in Western business, as an emergent management technology, as a potential laboratory, and as a new idea or an old one dressed up. They stated that there are new concepts in BPR but at the same time some older elements are also present. BPR has value to offer; the biggest challenge to managers is implementing it adequately.

BPR is mainly adopted by those organizations which have either discovered some breakthrough methodology to revolutionize its processes to give it more productivity and efficiency or has failed to keep up to date with the changing technologies due to lack of its continuous innovation and is faced with a “change or die” situation. While implementing BPR, the entire process needs to be changed or restructured. Whitman & Gibson (1997) studied for discovering why companies use BPR. According to their importance, these reasons are:

- For improving the inefficient business processes;
- To be the industrial leader;
- Properly reorganize business functions;
- Improving current industry position;
- To be among the industry leaders; and
- Significantly turn the company’s position.

Jain, Chandrasekaran & Gunasekaran (2009) studied the growing role of BPR with reference to perspective of employers. In their findings it is indicated a strong support from the employers is necessary for BPR program. In that study, out of the 19 BPR topics on which information was collected from the employers, 63 percent were rated as “extremely important” and “very important”. The two maximum rated areas of BPR were ability to research and collect process related data (3.8), and ability to use graphical methods to map the reengineered processes (3.5).

Hammer (1990) introduced reengineering in his work, “Reengineering Work: Don’t Automate, Obliterate”. Through it, he pointed out the general lines and principles of this methodology and discussed its advantages through the application in U.S. companies such as Ford Motor and Mutual Benefit Life. Similarly, Ascari, Rock & Dutta (1995); Clark & Stoddard (1996) highlighted that BPR aims to achieve performance breakthroughs by applying innovative ways of doing business. They also mentioned to manage radical change effectively includes communication is crucial to show support to the process change project and effective leadership to coordinate deployment of the resources to accomplish the strategic objectives.

Further, to identify the critical success factors of BPR in an organization, it is necessary to understand the organization itself, since the factors may differ regarding the type of organization, including private or public. Evans (1993) stated that a clear and committed approach to BPR is necessary, but a possible danger identified in the literature is that those involved in the BPR project will confuse motion with progress and change about in random directions hoping that any recommended changes can be successfully implemented as a matter of course. The continuing demand for business process improvements has resulted in a
proliferation of consultants, methodologies, techniques, and tools for conducting BPR projects (Kettinger, Teng & Guha, 1997).

Ranganathan & Dhaliwal (2001) carried out a study on BPR practices in Singapore. The finding of that study was that an increasing number of manufacturing firms in Singapore had started implementing BPR projects (approximately 50 per cent) and were also likely to take up BPR projects in the next three years (approximately 30 per cent). They concluded that BPR was becoming important in Singapore for the future in order to survive in the tight competition and changing environment.

Aremu & Ayanda (2008) stated that BPR has become useful weapon for any corporate organizations that is seeking for improvement in their current organizational performance and intends achieve cost leadership strategy in its operating industry and environment. Chiarini (2011) studied Japanese total quality control, TQM, Deming's system of profound knowledge, BPR, Lean and Six Sigma. It is reported that inside the six systems there are nine common factors. They are results and benefits; management style; deployment of the system; employee management, deployment and participation; voice of the customer; tools, techniques and IT; optimization of the system; day-by-day check and control of the results and review of the system.

Section-II

2.3. Business Process and Business Process Reengineering (BPR):

BPR is also known as ‘new industrial engineering’ in contrast to the old Taylorism industrial engineering based on task decomposition and specialization. BPR could involve a change in the way the process is organized, the role of participants involved in the process, elimination of steps in the process or a change in their temporal sequence. In its purest sense BPR initiative should start with a “clean slate” (Grover, 1994).
The term “process” in BPR also has some specific connotations. Processes may be simple one or two step methods for accomplishing a task or may have hundreds of individual sub-processes that each requires several steps. For the purposes of BPR, we define processes as having a starting and ending point, interfaces between prior and after processes, organizational units with both a process owner and a customer. Hammer & Champy (1993) define a process as a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer. A process is a specific ordering of work activities across time and space, with a beginning, an end, and clearly identified inputs and outputs: a structure for action. The radical changes are the main characteristics of BPR to alter organizational structures from duty orientation to business process approach. Therefore reengineering is one of the important necessities for companies to strengthen their situation in market.

Hammer & Champy (1993) identified three kinds of companies that undertake reengineering:

- Companies that find themselves in deep trouble. They have no choice. If a company’s costs are an order of magnitude higher than the competition’s or than its business model will allow; if its customer service is so abysmal that customers openly rail against it; if its product failure rate is higher than the competition’s; if, in other words, it needs order-of-magnitude improvement, that company clearly needs business reengineering.

- Companies that are not in trouble but whose management can see trouble coming.

- Companies that are in peak condition and see an opportunity to develop a lead over their competitors.

Alsaigh (2010) grouped the BPR project into three classes as listed below.
- Externally initiated project: E-governance and e-commerce are examples where the initiation for BPR may come from outside the organization. In fact, the main reason for initiating BPR projects in these cases is to allow the organization and its processes to be able to work with the new requirements in the new environment that has been imposed externally on the organization. In this type of BPR projects, the life cycle of the project starts by gathering the requirements from the external party, rather than investigating the current business processes for weaknesses. Next, the BPR team starts investigating the applicability of the current business processes for the new environment, and thereby determines the required modifications in these processes.

- Internally initiated project: The internal systems, where the need for BPR comes from initiatives inside the organization. Like externally initiated BPR projects, the BPR life cycle starts with investigating the expected changes in requirements due to the new organizational systems, rather than examining the current business processes for potential to increase performance or reduce cost. After determining these requirements, the BPR team will need to redesign the affected processes to fit the changes.

- Traditionally initiated project: Though new types of BPR have emerged, these BPR projects are initiated by the same factors such as increase performance and decrease cost. Project team members in this type of BPR start the life cycle identifying and analyzing the current business processes in order to find ways to increase performance or decrease cost. So they need to redesign these processes accordingly.

In the words of Sharma (2006), BPR implies transformed processes that together form a component of a larger system aimed at enabling organization to empower themselves with contemporary technologies business solution and innovations.
Crowe, Fong, Bauman & Zayas-Castro (2002) defined BPR as the total transformation of a business, an unconstrained reshaping of all businesses, technologies and management systems, as well as organizational structure and values, to achieve quantum leaps in performance throughout the business. The studies by Mansar & Reijers (2007); Sia & Neo (2008); Abdolvand, Albadvi & Ferdowski, 2008) endorsed the concept BPR as a systems independent analytical process to track information flows in and between electronic systems, manual systems and unofficial systems with a view to reorganizing them to maximize benefits from new technologies and processes whilst eliminating redundant practices.

The above definitions are giving out common concepts of business processes, radical redesign and dramatic improvements. And it is clear from the definitions that the primary target of BPR is business processes and that the goal is business process based organizational innovation and transformation. These definitions also advance the view that organizations can be well managed and that performance can be dramatically improved through identifying strategic business processes, radically redesigning them and supporting them with technological and other organizational enablers (Davenport, 1993; Hammer & Champy, 1993).

From the beginning BPR has been adopted by many organizations rapidly and BPR discourses have grown exponentially. In the literature of BPR, in addition to the success stories, it shows that many BPR projects have failed to achieve the expected results, because primarily it was difficult to meet the demand of radical redesign that reengineering should begin with a ‘clean slate’ and challenge the status quo (Wang, 2008). The main criticism against the BPR approach has been its central focus on efficiency and technology, and disregard for the human dimension; that is, BPR is accused of dehumanizing the workplace through increasing managerial and IT based system control and serving as a tool for major workforce reduction (Wang, 2008).
Davenport (1995) mentioned that “the rock that reengineering has foundered on is simple: people. Reengineering treated the people inside companies as if they were just so many bits and bytes, interchangeable parts to be reengineered. But no one wants to “be reengineered”. Clark & Stoddard (1996) highlighted that human resistance to BPR could lead to unsuccessful BPR projects. If the change has not been handled and managed carefully, people would resist it, even it is a top-down approach, i.e. driven from the top.

Despite these criticisms, BPR is still towards a more comprehensive process management style around process improvement approaches ranging from continuous improvement to radical transformation.

2.3.1. Phases of Business Process Reengineering (BPR) Implementation:

BPR is a discrete, onetime event and implementation of it is very important to the future of the organization. In BPR, the existing processes are redesigned with some innovative ideas. Prosci (2006) states that good reengineering projects design and implementation solutions are those that are customer focused, capitalize on best practices and learning from others, are designed for the future, and produce significant bottom-line improvements for the business.

Davenport & Short (1990) has given a five step approach to BPR which is as follows:

- Build up the Business Vision and Process Objectives: BPR is drive by a business vision, which implies specific business objectives such as cost reduction, time reduction or output quality improvement.

- Recognize the Processes to be redesigned: The majority of the firms use an approach, which focuses on the most important processes, or those that conflict most with the business vision. A less number of firms use the exhaustive approach that attempts to identify all the processes within an organization and then prioritize them in order of redesign urgency.
• Understand and Measure the Existing Processes: To understand and measure the present processes, it is important to avoid the repetition of old mistakes and for providing a baseline for future improvements.

• Recognize IT Levers: Awareness of IT capabilities should influence process design.

• Plan and Build a Prototype of the New Process: The actual design should not be viewed as the end of the BPR process. In contrast, it should be viewed as an example, with successive iterations. The symbol of example aligns the BPR approach with quick delivery of results, and the participation and satisfaction of customers.

Janson (1993), identified three phases in BPR: rethink (paradigms, vision and critical success factors), redesign (process analysis, whole jobs and one-stop service), and retool (empower people, distributed access and user design). He assumes that the fourth step (continuous improvement) is not necessary because ‘the entire reengineering process is ongoing in nature’.

In similar manner, Wu & Du (2010) stated that there are four basic phases for BPR implementation. The first phase involves conducting need analysis to determine whether the organization to conduct BPR or not. In the second phase, organizations decided to engage with BPR need to make preliminary preparation in order to reconstruct concepts. This phase includes making reengineering objectives clear, forming of redesign team; establishing organizations vision; good communication with employees; and establishing the appropriate organizational culture. In the third phase, redesign team formed at the second phase begin reengineering of process. At the final phase, newly design process piloted to test its performance and if necessary, revision and improvement made, in order to implement the process at organization wide. In order to ensure the success of BPR implementation, this phase also includes reforming the original organizational
structure, staffing, performance evaluation, and technological alignment of the newly designed process. The complete process of BPR phases is shown by Ramachandran (2001) as in the following Figure 2.1. The model given in the diagram is based on the basic model proposed by Cross, Kelvin, Feather, John & Richard (1994) for implementing business process reengineering in an organization. According to them there are three phases of BPR implementation i.e. analysis phase, design phase and implementation phase.

Figure 2.1: Implementation Steps of Business Process Reengineering in an Organization

The analysis phase is developed with the in-depth understanding of markets and customer necessities. In this phase, decisions are made about which processes are
candidates for reengineering and where decisions need to be paying attention first. Specifications of design are developed from the customer requirement analysis, current process review and baseline analysis are done in this stage. Design specifications are the initial rough blueprint for reengineering design (Cross, Kelvin, Feather, John & Richard, 1994). The process of rethinking and designing the best way to serve the customer is developed in the design phase. There are six types of design principles that have to be useful for successful reengineering design. These are

- Service quality: The quality of service provides guidance for design of the process as they relate to customer associates.

- Workflow: Workflow principles are basically related to the nature of managing the flow of work.

- Workspace: Workspace principles address the ergonomic factors and layout options.

- Continuous Improvement: It helps in ensuring that a process can be self sustaining by implementing continuous improvement and learning.

- Workforce: Workforce is based on the premise that any workflow requires manpower as an integral part of it.

- Information Technology: Information Technology principles provide guideline for ensuring that technology is viewed as an enabling option to improve the value added workflow.

From the design principles, specifications and options developed in the analysis phase an outline of the process to be reengineered is developed. The design is validated through business modeling and interviews. The whole organization has to apply and institutionalize the new design into its daily operations in the implementation phase. There are two components in the implementation phase:
planning and executing the logistic of converting on a large scale to the new mode of operation and managing the transition.

The implementation of BPR needs people who have different roles in it. The selection of people who will be responsible for reengineering is a critical success factor in it. Ramachandran (2001) opined that the roles played by people in BPR are as

- **Leader:** The leader is a senior administrative who authorizes and motivates the overall reengineering efforts. Leaders have to define the customer and business objectives which an organization needs to achieve in order to be successful BPR implementation.

- **Process Owner:** The Process Owner is the person responsible for engineering the business process and for overseeing the cross functional performance of the business process. The main function of the process owner are provides direction to the Process Design Team, implements the new policies, standards and procedures required for the new business process.

- **Reengineering Team:** Reengineering Team is a group of individuals who are dedicated to reengineering of the particular process. This group of people is directly involved in implementation BPR initiative.

- **Steering Committee:** Steering Committee is a strategy team consisting of senior managers who will make the strategy for reengineering in the company and monitors reengineering efforts.

- **Reengineering ‘Czar’:** This is the individual who are responsible for developing reengineering tools and techniques within the organizations and achieving synergy across various reengineering efforts that are going on the organization. It has two important functions: a) enabling
and supporting the process owners and reengineering teams and b) coordinating all the ongoing reengineering activities in the organization.

2.3.2. Business Process Reengineering Success Factors and Failure Factors:
BPR is a dramatic change that represents the decoration of organizational structures, management systems, employee responsibilities and empowerment, performance measurements, incentive systems, skills development, and the use of information technology. One successful BPR effort of an organization can result in reductions in operating cost or cycle time, better collaboration, greater flexibility, improvements in quality and increased efficiency (Sibhato & Shing, 2012). Although BPR provides magical improvement in business, most of the BPR projects could not succeed because of many reasons. Magutu, Nyamwange & Kaptoge (2010) highlighted the probable reasons why a company may have succeeded or failed to reach competitive advantage by implementing BPR. The findings point out that those organizations seeking to undertake BPR initiatives should first understand the need for changing the organization. Then they will need to ensure that they adopt the key success factors for BPR implementation.

For successful implementation of BPR involves defining and deployment of several critical success factors. In the literature for successful BPR implementation various researchers have defined different critical success factors which are based on an inclusive review of the literature, viewpoints of the academics and interviews. For example, Al-Mashari & Zairi (1999) have analyzed the literature on both the “soft and hard factors” that cause success and failure in relation to BPR. According to them the critical success factors for BPR implementation includes change management, competency and support in management, information infrastructure, and project planning and management system. Ascari, Rock & Dutta (1995) listed the success factors of BPR implementation as culture, processes, structure, and technology.
A brief description of critical success factors of BPR implementation program is presented below:

1. Change management system and Culture: Change management plays an important role in the organization that determines the strategic way of the organization. According to (Carr, 1993), change management involves all human and social related changes and cultural adjustment techniques needed by management to facilitate the insertion of newly designed processes and structures into working practice and to deal effectively with resistance. Change of reward systems, communication, empowerment, people involvement, training and education, creating a culture for change, and stimulating receptivity of the organization to change are the most important factors related to change management and culture (Al-Mashari & Zairi, 1999). Organizational culture is a determining factor in successful BPR implementation (Hammer & Champy, 1993). Training and education plays an important role in BPR implementation. Since BPR changes the organizational processes, employees should have adequate skills to do the new work. Through a proper training program, employees will have an in-depth comprehending of their new tasks.

2. Collaborative working environment: In the literature, it is observed that collaborative working environment is considered to be one of the most important success factors of BPR implementation. In an organization, employees usually work together to achieve a common goal. A friendly interaction among the members of a group is the main feature of any dynamic work environment. Collaborative climate reduces resistance to change and simplifies BPR implementation (Salimifard, Abbaszadeh & Ghorbanpur, 2010; Abdolvand, Albadvi & Ferdowski, 2008). According to Andrews & Stalick (1994) in a newly reengineered organization, people frequently share common goals and thus they become more capable of
working cooperatively without competing against each other. Tatsiopoulos & Panayiotou (2000) advocated that employees should work together in the same department or bureau at the same time and interacting in a friendly way with each other. Green & Rosemann (2000) and Marir & Mansar (2004) stated that cooperative environment with a friendly interaction, in which employees work in teams, has better chance of performing well than its absence.

3. IT infrastructure: IT infrastructure is one of the most important success factors of BPR implementation. To achieve the expected results of BPR implementation, appropriate IT infrastructure is needed to be used. In most of the BPR projects, implementation starts from IT department. Motwani, Subramanian & Gopalakrishna (2005); Shin & Jemella (2002) highlighted that successful application of IT in BPR implementation contributes a lot for profitable BPR project and enhanced employee performance. Many authors viewed that IT is a natural partner of BPR and plays a critical and central role in BPR projects. Branchau & Wetherbee (1996); Malhotra (1996) identified factors related to IT infrastructure have been increasingly considered as a vital component of successful BPR efforts. IT not only speeds up the process to be carried out but also integrate processes and reduces errors and hence improves productivity. Generally business process reengineering efforts are technology driven, with the role of IT changing from producing data to integrating new technologies and assisting people as independent information gatherers.

4. Organizational structure: For implementation of BPR, organizations first have to understand its own structure and then it must ensure that the vision is accomplished in time and as initially envisioned (Berrington & Oblich, 1995). A flexible organizational structure enables BPR to encourage creativity and innovativeness in the organization. Therefore having a less
bureaucratic and more participative structure is essential for successful BPR implementation. A number of researchers highlighted that designing and implementing an adequate organizational human resources infrastructure is important for a successful BPR implementation (Zairi & Sinclair, 1995). Talwar (1993) opined that with a major structural change in the form of new jobs and responsibilities, it becomes a prerequisite for successful implementation to have formal and clear descriptions of all jobs and responsibilities that the new designed processes bring along with them.

5. Adequate financial resources: An adequate financial resource is an important success factor of BPR implementation. Without adequate financial resources, it cannot be even thought. Allocation of budget to BPR program is a long term investment for achieving favorable results. BPR implementation is a costly process. That is why organizations should have adequate financial resources for implementing changes and facing with unpredictable situations (Salimifard, Abbaszadeh & Ghorbanpur, 2010) (Ahmad, Francis & Zairi, 2007). The implementation of business process reengineering in an organization is not an easy task. Many researchers indicated that there are some failure factors in implementation of BPR in the organizations. For example, Al-Mashari & Zairi (1999) highlighted that financial and human resources deficiency with poor IT infrastructure hampers the growth of BPR projects. Hammer & Champy, (1993) have identified factors like failure to have a process perspective, fixed process which is not flexible enough to be responsive to needs and requirements, not involving employees in decision making, assigning someone who is not aware of BPR, technology limitation, designing a project but with weak team and tricky communication.

The main failure factors of BPR implementation is discussed in short as follows:

1. Problems in communication and organizational resistance: Before going to start a BPR program, it is important to ensure about the communication.
Because communication and commitment building are important aspects of BPR, and the ease with which management can communicate through all levels of the organization during a BPR effort. Davenport (1993) viewed that inadequate communication between BPR teams and other personnel relating to the need for change and the hiding of uncertainties in communication can result in a lack of motivation and reward. When an organization implemented BPR, then employee may be afraid of losing their job because BPR eliminates unnecessary jobs and tasks. Resistance by employee is also caused by the team oriented approach, lack of ability to be adjusted to new technologies and process, and vested interests and territorial disputes. Aggarawal (1997) found that the resistance is especially high among employees who are directly affected by changes. Actually if no resistance is detected, it can be said that the BPR effort is not being done.

2. Lack of Resources: Lack of resources is another failure factor of BPR implementation. According to Bashein, Markus & Riley (1994), a company that is financially unhealthy is unlikely to succeed at BPR effort. A company may have too many dissimilar businesses or be too leveraged to be able to commit the significant financial resources required by BPR.

3. Unrealistic Expectations: Unrealistic Expectations is another failure factor of BPR implementation. Top management expectations may not be realistic, some time they may want concrete evidence of success within a few months, when the design and implementation of a project may take more than a year. Rigby (1993) in his attempt found that the BPR is a way to solve all organizational problems is unrealistic.

4. Narrowly Defined Process: Many BPR implementation program fail because their process is not defined properly. Hall & Wade (1993) defined process redesign may cause BPR failure since redesigned processes cannot
mesh with related processes. As a result of a carefully redesigned process, a company can achieve dramatic improvements within individual processes, only to watch overall performance decline.

5. Problems related to IT infrastructure: At the initial stage of BPR implementation, people may have not proper knowledge about IT. Lack of IT staff credibility and involvement in reengineering teams is a big problem of the BPR project. In many cases, IT was the biggest difficulty to rapid and radical change because radical change required information system redesign. IT is clearly an enabler of reengineering. In many cases redesigned processes cannot be implemented until employees can access new sources or domains of information. A careful monitoring of technology, planning and forecasting is necessary for the success of BPR programs.

6. Inadequate focus and objectives: One major problems of BPR implementation is relating to goals and objectives of the project. Reengineering programs should concentrate on understanding the existing process. The output goals must be stated in clear and quantitative terms. Reengineering could provide executives with more accurate estimates of the required number of employees to run a particular process more effectively. There must be a clear strategic focus and efforts must be made to avoid too narrow a technical focus and also to avoid a cost-cutting focus (Bashein, Markus & Riley, 1994).

2.3.3. BPR Tools and Techniques:

When an organization is undertaking a BPR project, it can necessitate managing a huge amount of information about the processes, and systems. The use of a good BPR tool and techniques is very important in any BPR project. There are some basic
tools and techniques which are usually used in business processes reengineering. The commonly used BPR tools and techniques are discussed below:

- **Visualization of Process**: In BPR implementation, visualization of the process is very important. The key to successful reengineering lies in the development of a vision of the process. The proper identification of process gaps and evaluation of effectiveness of current processes by making use of appropriate software tools to visualize and analyze them is also important (Guha, Kettinger & Teng, 1993).

- **Change Management**: In BPR, several researchers focus on the importance of human side, particularly in the management of organizational change. Bruss & Roos (1993) stated that the management of change is the largest task in business processes reengineering.

- **Operational method study**: The tools of operational method studies are ideally suited to the reengineering task, but that they are often neglected.

- **Benchmarking**: Benchmarking is an integral part of business processes reengineering, since it allows the visualization and development of processes which are known to be in operation in other organizations (Harrison & Pratt, 1993; Furey & Diorio, 1994).

- **Process and customer focus**: The primary aim of BPR is to redesign processes with regard to improving performance from the customer’s perspective (Chang, 1994). This provides a strong link with the process improvement methodologies suggested by various authors from the quality field (Harrington, 1991). In some cases, the terminology is almost identical to that used by quality practitioners in the improvement of processes (Chang, 1994).
In addition, many researchers are with the opinion that BPR implementation need to incorporate a mixture of tools, although the nature of the mix depends on the application, whether it be hard (technological) or soft (management of people). While the exact methodologies to be used are the source of some discussion, it can be seen that BPR, as a strategic, cross-functional activity, must be integrated with other aspects of management if it is to succeed.

### 2.3.4. Major BPR Enablers:

An enabler is a mediator that allows organizations to break their old rules and create new reengineered processes (Hammer & Champy, 1993). According to Olalla (2000), BPR is a method which requires change in existing processes and designation of radically new ones and it is expected that some convinced factors make this change possible. These factors are known as enablers and may be defined as elements that act as vehicles for processes to change.

Love & Gunasekaran (1997) examined and found that there are four important enablers of BPR - IT, total quality management, human resources, and organization. The organizational enablers are categories in to two parts i.e., structural and cultural. Structural enablers are used to demand a change in human resources management, mostly in training areas and reward systems. Moreover, Marchand & Stanford (1995) proposed that organizations undertaking BPR must look at six dimensions of its organization namely culture, configuration and coordination which represent the firm’s dynamics and people and information technology which represent the resources to be redeployed in the engineering effort. According to Davenport (1993) Reengineering initiatives are affected by redesigned structures that are more appropriate for empowered employees, workgroups or teams, and employees working within the “virtual” designs of some organizations. Hence, organizational issues structural and cultural as well as human resource issues that comes with these changes; assume significance. Love & Gunasekaran (1997) states that among many structural changes that can facilitate
process reengineering; the most effective is the organizing of functional tasks into group based units or teams. Teams perform better as they integrate cross functional skills in single work units. Moreover, teams give opportunities for small talk, development of friendships, social interaction and empathic reactions from other employees.

Information technology (IT): IT plays a vital role in the business process reengineering initiatives. Several BPR researchers Hammer & Champy (1993); Davenport & Short (1990) stated that the information technology as a crucial component of BPR. Scott- Morton (1991) pointed out that the IT plays an important role to promote changes in organizations, mostly changes in the nature of the work, the integration of business functions, and the transformation of competitive forces. Kumar & Bhatia (2012) stated that IT is considered by some as a major enabler of BPR for new forms of working and collaborating within an organization and across organizational borders.

Hammer (1990) and Chan (2000) stated that IT is not only a key enabler of change, but also an initiator and a facilitator. The IT should be viewed as more than an automating or mechanizing force, it can fundamentally reshape the way business is done (Broadbent, Peter & Don, 1999). It is considered as both a strategic catalyst and enabler of process reengineering. Information Technology that is commonly used in BPR programs includes workflow, automation, ERP, database and related technologies etc. (Ahadi, 2004). Ranganathan & Dhaliwal (2001) highlighted that there are some categories of information technologies that are frequently used in BPR implementation programs such as: Databases and related technologies, Networking and communication, Electronic data interchange (EDI), Workflow automation and GroupWare, Internet web based technology, Enterprise system and enterprise resource planning (ERP), Multimedia and interactive computing. According to Grover (1994) document management, database and communication
networks are technologies that enable employees to function and be successful. It plays an important role for successful implementation of BPR.

**Organizational culture:** Cultural enablers comprise person’s norms, values, and beliefs about how things should be done. Process reengineering involves changes that simultaneously demand sharing, innovating, and giving new ideas. All this must be instilled gradually by the management so that at the time of redesigning the processes, employees could participate and accept it willingly. Some of the trends in organizational culture are greater empowerment and participation in decision making etc. Love & Gunasekaran (1997) opined that the employees involved in the BPR process become decision makers through greater empowerment and consequently taking responsibility for the functional and operational procedure of the process. In the words of Davenport (1992), communication is needed throughout the change process at all levels and for all audiences, even with those not involved directly in the reengineering project (Dixon, Arnold, Heineke, Kim & Mulligan, 1994). Furthermore, Love & Gunasekaran (1997) highlighted that the best way of implementing BPR, the organizational culture and functional diversity should be fully understood and analyzed by the top management before carrying out any structural changes. Herzog, Polajnar & Tonchia (2007) in their study stated that education and training is important for any organization to incorporate any kind of change, modification, innovation or process improvement. Education and training in relation to BPR was assessed by them.

**Strategy:** Strategy defines as a pattern or plan that integrates an organization’s major goals, policies and action sequences into a cohesive whole (Quinn, 1980). Index (1994) highlighted that successful BPR implementation is highly dependent on an effective BPR program management. Top management should be involved in strategy formulation, as well as providing a commitment for the whole process of redesign, while the IT manager should be responsible for designing and
implementing the IT strategy. The degree of alignment between the BPR strategy and the IT infrastructure strategy is indicated by including the identification of information resource needs in the BPR strategy.

An effective BPR program management includes adequate strategic alignment, effective planning and project management techniques (Guha, Kettinger & Teng, 1993). A proper planning is important for the implementation of BPR project (Berrington & Oblich, 1995; Jackson, 1997). Talwar (1993) stated that managing people have also an important role in smoothing the flow of the process redesign stages. Hinterhuber (1995) emphasized effective communication is desired between those inside and outside the organizations to take maximum benefit of BPR programs. Zairi & Sinclair (1995); Guha, Kettinger & Teng (1993) in their study highlighted that identifying and setting performance measures are also essential for the implementation of BPR project.

**Top Management Commitment and Leadership:** The role of top management or leadership in BPR is very crucial. Top Management Commitment and Leadership activity is basically needed to be focused in establishing and communicating the organizations vision, goal, plans, and values for the quality program among the employees of the organizations. They should provide the needed resources to the team, show their active support for the project, set the stage for reengineering by determining core business processes, and by defining the project scope and objectives. The management should also take care to provide adequate funding, set new standards as well as encourage others to be open to innovative approaches (Gouranourimi, 2012). Belmonte & Murray (1993) states that for the success of BPR it is important Top management are involved to support the process from the initiation of a project to its completion.

Top management can play the role of an important enabler of BPR implementation. According to Van de Ven (1986), top management support is an
imperative ingredient of an innovative organizational environment. Top management support must be obtained and sustained to successfully implement BPR. Since top management and leadership are involved in BPR their role in the project becomes very important. Top management needs to communicate to its people why the change is necessary and how it will impact everyone’s current job and future with the company.

Janson (1993) stated that top management commitment is the most important factor for a successful BPR effort. They argue that BPR never happen bottom up and a reengineered process alone will not change the way people work. Furthermore, Champy & Arnoudse (1992) identified the role, attitude, vision, and skill or knowledge of leaders as necessary for the successful BPR. Particularly, they highlighted that BPR must be more top down driven than a quality improvement plan because of its radical change requirement. (Prosci, 2006) stated that a significant change requires resources, money, and leadership, changing them simultaneously is an extraordinary task. If top management does not provide strong and consistent support, almost certainly one of these three elements i.e. money, resources, or leadership will not be present over the life of the project strictly crippling the chances for success of the BPR project. Top management need to have the skill and knowledge by which they can assign talented and capable employees in the reengineering and their performance effort. Under such situations, employees do have the authority to manage the process. Teams that do have members from relevant departments are presets (Attaran, 2000). Moreover it is also important for the top management that the frequent communication with BPR team and users. Communication should take place frequently in both directions between those in charge of the change initiatives and those affected by them (Janson, 1993). The role of top management commitment is maintaining the accuracy and reliability of all information and communications within the organization, in having faith and confidence in manager. Moreover, top
management commitment plays an important role in defining and addressing valued and performance expectations.

**Human Resources:** Human resources are also an important enabler of BPR implementation. The human factor plays a key role in the daily operations, performance and consequently in the success of organizations. When a company needs motivated employees who accept changes, propose ideas, share, and are able to vary their style of working, and then half of the effort should be centered on human resource management. Therefore, in depth training and motivation aspects must be studied.

Human Resource involves a set of processes that help to translate overall organizational objectives, plans and programs into workforce needs. For this it would be necessary for workers to gain knowledge in team work and development of new tasks and design a proper plan to be executed. And the organization must motivate its employees through incentive systems and also by allowing their involvement in the decision making process. Mansar & Reijers (2007) and Vakola & Rezgui (2000) stated that human resources architecture should be reengineered to support information sharing and hence compose better decision. In a study, Goksoy, Ozsoy & Vayvay (2012) stated that the success of BPR is closely associated to the success of human resources and human resource policies which act as an enabler for business process reengineering. The human resource enablers focus on new process skills, job motivation and human resource policies. Employee motivation through a reward system has an important role in facilitating employee efforts and smoothing new processes (Hinterhuber, 1995).

**Total Quality Management (TQM):** TQM is an enabling component that can contribute to the successful implementation of process reengineering (Love & Gunasekaran, 1997). Basically, TQM forms the foundations of process reengineering as it embraces open communications, and breaks down the barriers
which exist between management and non-management personnel. But in reality, total quality management does not affect BPR's possible results.

2.3.5. Outcomes of Business Process Reengineering (BPR):

The main purpose of BPR is to redesign and change the existing business processes to achieve dramatic improvement in organizational performance. BPR is playing a very important role in the enhancement of productivity, reduced costs and efficiency of many organizations. Many companies implemented BPR and achieved new competitive advantages in the global marketplace over the years. Ford Motor reduced its accounts payable staff by 75% after implementing BPR. Motorola, when faced with higher defect percentages and longer cycle times, simultaneously upgrading its manufacturing equipment; this decreased the total production cost by US$ 1 billion per year and reduced time by half (Ahadi, 2004; Goksoy, Ozsoy & Vayvay, 2012). General Motors Corporation implemented BPR successfully by a 3-year plan to consolidate their multiple desktop systems into one. This reengineering process involved replacing the numerous brands of desktop systems, network operating systems and application development tools into a more manageable number of vendors and technology platforms (BPR in General Motors, 2010).

Some other examples of successful BPR implementation including AT&T, Eastman Kodak, Hallmark Cards Inc. and IBM Credit are discussed in some works (Aggarawal, 1997; Ascari, Rock & Dutta, 1995). Apple iPod reengineered the way music ought to be made available to the consumers. After reengineering it brought radical changes while all other music labels were selling music via brick and mortar stores, Apple developed its iTunes software to sell music digitally. And it brought fundamental changes while Apple sold single tracks as opposed to whole albums being sold at brick and mortar shops.
Many Indian companies are also benefited by implementation of BPR program. After BPR implementation, Mahindra & Mahindra reduced cycle time by 50% for new product development from 72 months to 36, while eliminating launch delays by instituting upfront planning mechanisms, vehicle dispatch improved from 70% to 95%. Moreover, in Vendor Management, the client reduced material costs by 6% and vendor development time by 30% (Mahindra & Mahindra Website). India’s largest commercial bank, State Bank of India is also benefited substantially through the implementation of BPR program. SBI introduced single window service in its 7,466 branches for increasing customer satisfaction (Hunt, 2009). Moreover, by implementation of BPR, SBI has acquired some strategic advantages such as lower operating costs, better collaboration, and greater flexibility, reduced cycle time, increased customer satisfaction, improvement in organizational culture etc.

It has been observed that many companies have been benefited through the implementation of BPR program. However, many companies which implemented BPR could not achieve their expected result. (Hammer & Champy, 1993) in their book ‘Reengineering the Corporation’ reveals that as many as 50% to 70% of companies that make an effort to employ BPR do not achieve the dramatic results they seek. Doherty & Mistry (1996) confirm that 70% of BPR projects fall indicating the main reasons for failure as the lack of sustained management commitment and leadership, unrealistic scope and expectations and resistance to change. In a similar line of thought cautioned that “reengineering can be risky and should not be undertaken lightly” (Coulson-Thomas, 1992). He further suggested that an organization has to clarify its motives and strategy before getting involved in a BPR exercise.

Section-III

2.4. Information Technology:

Information Technology Association of America (ITAA) defined information technology as "the study, design, development, application, implementation,
support or management of computer based information system” (Proctor, 2011). Whisler (1970) defines IT as “The computer based technology of sensing, coding, transmitting, translating and transforming information”. Shah & Mehta (1998) gave a definition which reads as “Information Technology is a combination of technologies as computer networks, imaging technology, massive data storage and artificial intelligence”.

The IT revolution has been possible because of the rapid advancement of processor and memory technologies of computer systems. According to Moore’s Law, the number of transistors integrated in a processor is getting doubled in every year. Later on, in an update article in 1975, Moore adjusted the rate to every two years to account for the growing complexity of chips. David House, an Intel executive at the time, noted that “the changes would cause computer performance to double every 18 months” (Moore, 2005).

With the help of following figure (Figure 2.2), it can be shown graphically how computer-processing power has grown over time, mainly during the last few decades.

Shelly, Cashman, Vermaat, Sebok & Quasney (2004) found that the microprocessor’s invention caused immediate and radical changes in the appearance, capability, and availability of computer. The companies like Apple have brought the revolutionary change by introducing low cost microcomputer, typewriter sized computers as powerful as many of the room-sized computers in the second half of 1970’s. In 1981 IBM released the very first PC and then it was a great boom by different companies. Shaukat (2009) examined the impact of IT on management efficiency in the context of Pakistani firms’. The study revealed that IT has no longer seen as a choice, but a necessary strategy for an organization to adopt to increase productivity and enhance its competitiveness in the global economy.
Thompson (2010) studied the impact of computer self-efficacy, infrastructure support and technical support on intention to use IT. The study revealed that infrastructure support does not have any correlation with perceived usefulness of IT and self efficacy; however self-efficacy correlates with perceived usefulness of IT.

**Information Technology in India:**

IT industry in India has played an important role in putting India on the global map. IT industry in India has been one of the most significant growth contributors for the Indian economy. The Indian Information Technology and Information Technology Enabled Services (IT-ITES) industry has been a premier growth driver of India’s economy for the past two decades. The sector contribution to the country’s GDP increased to 6.4% in 2010-11 from 4.8% in 2005-06 and is expected to account for 7% of the GDP by 2014-15 (Kumar & Bhatia, 2012).
India is regarded as the premier destination for the global sourcing of IT-ITES, accounting for almost 55% in 2010 up from 51% in 2009 of the global sourcing market. India remains an integral part of the global sourcing strategy, and registered a growth rate of twice that of other competitors in the global sourcing arena. It is estimated that India based resources account for around 69% to 70% of the offshore delivery capacities available across the leading multinational IT- BPO players.

2.4.1 Business Process Reengineering and Information Technology:
There is a strong relationship between BPR and information technology. Hammer (1990) considers IT to be the key to the implementation of BPR. He said that the use of IT is to challenge the assumptions inherent in the work processes that have existed since before the advent of modern computer and communications technology. He argues that at the heart of reengineering is the idea of discontinuous thinking. Discontinuous thinking is a way to recognize and break away from the outdated rules and fundamental assumptions that underlie operations. Usually, these rules are based on assumptions about technology, people, and organizational goals that no longer exist.

Davenport & Short (1990) argued that BPR requires taking a broader view of both IT and business activity, and of the relationships between them. IT should be viewed as more than an automating or mechanizing force but rather as a way to fundamentally reshape the way business is done. Many researchers and practitioners have increasingly considered factors related to IT infrastructure as a vital component of successful BPR efforts. Effective alignment of IT infrastructure and BPR strategy, building an effective IT infrastructure, adequate IT infrastructure investment decision, adequate measurement of IT infrastructure effectiveness, proper Information System (IS) integration, effective reengineering of legacy IS, increasing IT function competency, and effective use of software tools are a few of the most important factors that contribute to the success of BPR.
projects. This alignment of IT infrastructure and BPR strategy are needed to ensure the success of the BPR initiative. Kettinger, Teng & Guha (1997) stated that BPR and IT infrastructure strategies which are both derived from organizational strategy need to be in effective alignment to ensure the success of the BPR initiative.

McDonald (1993) found that the IT can best enhance an organization’s position by supporting a business thrust strategy which should be clear and detailed. Top management should be involved in strategy formulation, as well as providing a commitment for the whole process of redesign, while the IT manager should be responsible for designing and implementing the IT strategy. The degree of alignment between the BPR strategy and the IT infrastructure strategy is indicated by including the identification of information resource needs in the BPR strategy. Alignment is also achieved by the active involvement of management in the process of IT infrastructure planning and IT managers in business planning, and also by the degree of synchronization in formulating the two strategies. The Figure 2.3 shows the multidimensional nature of BPR (McDonald, 1993).

Davenport & Short (1990) suggested that BPR and IT have a recursive relationship. They argue that BPR and IT are interlinked and each is the key to thinking about the other. Business processes should be considered in terms of the capabilities that IT can provide. On the other hand, IT should be considered in terms of how it supports new or redesigned processes rather than other business functions. The recursive relationship between BPR and IT proposed by them has been explained in Figure 2.4.
Figure 2.3: Multidimensional View of BPR

How can IT support business process?

How can business processes be transformed using IT?

Figure 2.4: The Recursive Relationship between IT Capabilities and Business Process Redesign
The IT can be the initiator that drives process improvement, or the tool which makes process improvement possible. There is a relationship between BPR and software reengineering. For undergoing BPR, using a total clean slate was impossible and that successfully reengineered organizations had learnt to reconfigure and use existing IT for strategic impact (Caron, Jarvenpaa & Stoddard, 1994). The use of IT in order to create a basis for competitive advantage is an important issue in the BPR literature. According to the MIT 9O’s model (Scott-Morton, 1991), a prerequisite for high performance is the fit between an organization’s strategies, structure, management process, technology and individual skills and roles. According to them IT is or must be an integral part of the design and implementation phase. IT has got the potential to turn the new design of a process into work practices and consequently into business benefits. This role is closely linked with the business strategy and structure. In addition to this strategic role, IT plays an important role in the change process during the implementation phase, which also leads to business benefits.

Martinez (1995) viewed that for the success of reengineering, IT has to be implemented as a partner in reengineering and when appropriate and allow it to assume leadership also. IT has got a major role to play in Business BPR. IT and BPR are highly interdependent, with each being the key to the other. IT applications help workers to produce more in less time. The closer the result of an effort is to the ultimate goal, the more effective are the effort. The fewer the resources spread on achieving a goal, the more efficient the effort and IT does this job (Rumizen, 1998).

Gunasekaran & Nath (1997) identified the benefits of IT in BPR as reduced cycle times and the reduced number of tasks required to carry out processes. Quality improvement, as a result of the removal of inconsistent human input and substantial cost savings, were also identified as benefits of a BPR program. These benefits are reinforced with increased communication flow throughout the
organization from new technologies. Teng, Jeong & Grover (1998) expounds on the role of coordination by stating that innovative uses of IT would inevitably lead many firms to develop new, coordination-intensive structures, enabling them to coordinate their activities in ways that were not possible before. Such coordination-intensive structures may raise the organization’s capabilities and responsiveness, leading to potential strategic advantages.

The studies by Hammer (1990) and Chan (2000) indicated that one of the most important ways to facilitate effective organization redesign through process reengineering in organizations is through the use of IT as an enabler of change. In fact, some have been willing to go beyond that by saying that IT is not only a key enabler of change, but also an initiator and a facilitator. Ramesh (2003) examined that strategic advantage of the organization is represented by the ability of the IT function to affect the choices that determine the infrastructure and process of the organization to run the business faster. Mooney, Gurbaxani & Kraemer (1997) opined that BPR and organizational changes are key issues in realizing IT benefits. Vakola & Rezgui (2000) pointed out that by using IT in a radical process change or reengineering, this could speed up the process to be carried out and minimize errors, thus increasing in productivity.

Dewett & Jones (2001) examined that IT is being deployed in the firms because 1) it makes links and enabling employees through electronic communications. Through IT, employees can interact with each other and it has promoted horizontal communication, which results in increased alienation of employees and increasing their efficiency; 2) it also increases boundary spanning. An individual can access desired information in any part of the organization with the aid of IT.

Ahadi (2004) examined organizational factors (i.e. top management supports, change management, centralization of decision making, formalization of procedure, organizational culture, and customer involvement) that affect the
implementation of BPR while applying two specific IT (i.e., electronic data interchange and/or Internet technology). The study concluded that no significant relationship exists between employee resistance and integration of jobs with successful implementation of BPR.

Oz (2002) in his research found that IT contribute both to the effectiveness and efficiency of business, especially when positioned in specific business functions, such as accounting, finance, production and engineering. Taylor (2003) regarded IT as a valuable but no longer rare resource. IT and supportive implementation services are now available to any company with the money to acquire them. By themselves, technology investments can be replicated by competitors and thus provide only a temporary competitive advantage.

Ahmad, Francis & Zairi (2007) stated that BPR targets to achieve quantum improvements by rethinking and redesigning the way that business processes are carried out with the help of IT as the primary facilitator. They also pointed out some critical success factors for successful implementation of BPR as teamwork and quality culture, quality management system and satisfactory rewards, effective change management, less bureaucratic and participative, IT/IS, effective project management, and adequate financial resources.

Albadvi, Keramati & Razmi (2007) stated that BPR has a mediating effect on the impact of IT in the organization’s performance. For IT to positively impact the performance of an organization and thus create a return on IT investment, BPR is needed for IT to reach its full potential. Eardley & Shah (2008) defined six roles that IT can play in BPR. These are constraint, catalyst, neutral, driver, enabler, and proactive. These roles vary in impact from being constraining at the negative end to being proactive at the positive end. IT driven BPR without defined business needs are not desirable and could negatively impact business strategy.
To remain competitive in today’s global economy, there is an urgent need to rethink and transform the existing business processes for improved quality and efficiency, reduced costs, and increased profitability. The use of IT in reengineering business processes and workflow has shown how IT systems can help reengineer and how you do the work and make it more efficient (Mary, 2008).

Ramirez et al. (2010) studied the impact of IT on BPR with a focus on cost rationalization BPR (doing more with less) and works restructure BPR (implementing new business processes). They observed that the relationship of IT and BPR has a positive relationship on not only the production efficiency of a company, but also the market value.

2.4.2. Role of Information Technology in Business Process Reengineering (BPR):

IT plays a very important role in the business process reengineering concept. Several BPR researchers state that IT is a crucial component of BPR. IT was originally considered as an enabler for BPR and the role of IT in process improvement has become much greater and more varied day by day (Hammer & Champy, 1993; Davenport & Short, 1990). IT can be the initiator that drives process improvement, or the tool which makes process improvement possible (Lotfollah, Ziaul, Seyed & Saeedreza, 2012). It is considered by some as a major enabler for new forms of working and collaborating within an organization and across organizational borders (Kumar & Bhatia, 2012).

Chan (2000) indicated that IT has taken new role to play in the organizations. IT with its new innovations is now viewed as a change agent and has significant strategic position in the organization rather than performing support role. It is playing roles of 1) an initiator, an agent of change and it lets people recognize a powerful solution before seeking the problem it may solve, 2) a facilitator it may serve as something to make work or a workload easier and 3) an enabler- as it offers the ability or the necessary assistance to accomplish something. It provides
rapid processing and analytical capabilities, parallel access and information capture. The Table 2.2 shows these changing views of IT over time.

Table 2.2: Changing role of IT over the years

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<th>1980’s view</th>
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<th>2000’s view</th>
<th>2010’s view</th>
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<tr>
<td>IT mission</td>
<td>Technology management</td>
<td>Corporate change</td>
<td>Corporate transformation</td>
<td>Business enabler</td>
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<tr>
<td>IT function</td>
<td>System automation</td>
<td>Corporate reengineering</td>
<td>Mobilize strategy</td>
<td>Creating new business processes</td>
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<td>IT management</td>
<td>Reactive</td>
<td>Proactive</td>
<td>Anticipatory</td>
<td>Fault tolerance</td>
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<td>IT self-image</td>
<td>Service provider</td>
<td>Facilitator</td>
<td>Catalyst</td>
<td>Enabler</td>
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<td>External control</td>
<td>Balkan states</td>
<td>Federated republic</td>
<td>Federated network</td>
<td>Federated network</td>
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<tr>
<td>Internal control</td>
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<td>Impact</td>
<td>Value</td>
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<td>Skilled generalists</td>
<td>Business technologists</td>
<td>Technologist</td>
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<td>Planned</td>
<td>Confused</td>
<td>Minefield</td>
<td>Sophisticated</td>
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<td>Automated office</td>
<td>Boundary-less office</td>
<td>Ubiquitous Computing</td>
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<td></td>
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Source: James & Smith, 2003: pp171

Section-IV

2.5. Organizational Culture (OC):

Organizational culture (OC) started to draw attention from researchers in the 1980’s (Schumacher, 1997) and interest in organizational culture has exploded in the past few decades. The rapid increase in attention paid to the subject garnered fundamental disagreements about what culture is and how it should be studied. Schein (2000) concurs that attempt to define culture are not only numerous but vary dramatically, leaving different ideas about what exactly it is. Organizational culture shapes the behaviors of the people in the organization, which can affect decision making styles (Mack, Crawford & Reed, 2004; Markus, 2004). OC is formed by combination of environmental culture and constructed culture. OC is strongly influenced by the personality traits of most senior managers and
stakeholders, who set the management style, with interpretation by managers and process experts at lower levels each wishing to make their mark on the company culture. OC is an important factor in developing an innovative organizational environment for successful BPR implementation. Cooperation, coordination, and empowerment of employees are the standard characteristics of an innovative organizational environment (Ahadi, 2004; Al-Mashari & Zairi, 1999; Jamali, Abbaszadeh, Ebrahimi & Maleki, 2011). It is the organizational culture that gives identity, provides collective commitment, builds social system stability and allows people to make sense of the organization.

Quinn & Spreitzer (1991) developed a competing values approach to measuring organizational culture which is used to provide an empirical measure for an organization’s culture. Competing values measure of culture in relation to organizational performance, culture strength and human resource practices is studied by Yeung et al. (1991). Zammuto and Krakower (1991) looked for relationships between culture and other organizational variables including centralization, moral, administrator credibility, conflict, strategic orientation and culture strength.

Organizational cultures represent the character of an organization, which directs its employees’ day to day working relationships and guides them on how to behave and communicate within the organization, as well as guiding how the company hierarchy is built (Ribiere & Sitar, 2003 ; Senior & Fleming, 2006). In similar way Chang & Lee (2007) stated that every individual is unique and is equipped with different characteristics and behavioral styles. This is also true for business organizations which have unique cultures that influence the organizational operations.

Johnson & Scholes (1999) identified six elements of OC. That is they called the “paradigm culture web”, as shown in the Figure 2.5.
Ogbor (2001) stated that within critical theory, OC can also be viewed as organizational hegemony as a tool for repression, domination and hegemonic reproduction of the elite group.

Rousseau (1990), in his critique of researchers who concentrate on one or a few attributes, proposes a multi layered model which he structured as a ring (: Layers of Culture). Rousseau's rings were organized from readily accessible [outer layers] to difficult to access [inner layers]. Rousseau's model is reproduced below.
Rousseau’s model appears to confine all the key elements of culture: "a continuum from unconscious to conscious, from interpretative to behavior, from inaccessible to accessible". But at the same time as Rousseau asserts that "the layers of culture associated with values, beliefs, and expectations constitute the primary elements in organization researcher’s conceptualizations of culture" it would appear from other critical researchers that in fact most research has concentrated on those more visible outer layers.

Hofstede, Neuijen, Ohayv & Sanders (1990) proposed a model of culture that is made up of value aid practices. The practices reflect members’ belief about symbols, heroes and myths. In an exploratory analysis, he found three factors

**Figure 2.6: Layers of Culture**
affecting the values, yet the core of OC was represented by six dimensions of organizational practices. Using the dimensions of organizational practices, he identified three distinct subcultures within one hundred and thirty one different work groups. The three subcultures represented include a professional subculture, an administrative subculture, and a customer interface subculture.

2.5.1. Types of Organizational Culture:
Several organizational researchers reveal that there is a difference in philosophical positions regarding culture within an agency. One culture can exist across an entire organization (Rainey, 2009). Organizational members receive constant messaging regarding acceptable behaviors and responses to various situations. Moreover, as Schein (2000) argues that each organization, at minimum, contains three subcultures: i) frontline personnel executing tasks; ii) the subset focused on process design, innovation, and improvement; and iii) executive personnel responsible for organizational survival and long-term effectiveness.

Quinn & Rohrbaugh (1983) proposed types of culture in a four quadrant shape as given in the Figure 2.7 where each quadrant represents an ideal type of culture. A particular organization need not be classified exclusively as having one type of culture, but can be considered as containing elements from the four culture types, yet one type may be dominant (Quinn, Spreitzer & G.M. 1991). Each culture type is measured using four items, which are aggregated to achieve a culture profile.

Denison & Spreitzer (1991) viewed that the core values of the group culture are belonging, trust and participation, which are motivated by factors of attachment, cohesiveness and membership. In similar way the group culture, the developmental culture also emphasizes on flexibility but focuses its attention on the external environment. Productivity, performance, goal fulfillment and
achievement are the important factors for the rational culture. These cultures emphasize the pursuit and attainment of well-defined objectives.

![Competing Values Culture Framework](image)

Figure 2.7: Competing Values Culture Framework, adapted from (Quinn & Rohrbaugh, 1983).

2.5.2 Organizational Culture and Business Process Reengineering:

Business Process Reengineering can be seen as the drivers of organizational changes. Organizational change is most troublemaking when the change is new. Success occurs with the elapse of time (Amburgey, Kelly & Barnett, 1993). This will allow the OC in taking the time it needs to adapt itself to its new changes. Caron, Jarvenpaa & Stoddard (1994) stated that implementing BPR recommendations may require a fundamental change in organizational culture and mindset, and that this cannot be left to chance but must be carefully managed. They also argue that transparency in BPR projects is vital and must intensify as the project proceeds. Schein (2010) argued that leaders are entrepreneurs and architects of group cultures. If elements of the culture become dysfunctional and are no longer conducive to the collective objective, it is the leader’s responsibility to speed up cultural change. Caron, Jarvenpaa & Stoddard (1994) stated that organizational
change has traditionally been viewed as actions taken by organizations to alter their internal characteristics for better fit with their external environment.

It is found that the organizations use methodologies to promote successful adoption and assimilation of organizational changes (Raho et al., 1987; Fichman & Kemerer, 1997). The literature usually describes assimilation methodologies as having a number of stages that begin with some form of awareness of a potential change, through an evaluation and adoption stage to the implementation of the change.

Peppard & Fitzgerald (1997) examined the transfer of culturally grounded management techniques, namely BPR, making specific reference to the German business and cultural context. They analyzed BPR applicability to the German business environment, a business culture which is sufficiently different from the American, in order to justify that undertaking. They explored how this American concept can be best transferred to the German business environment. Their study concluded that managers and employees should give their commitment for change. The conflict free situation will reflect on the success of BPR in the long term. Germany stressed process and customer focus. Other factors like self-autonomy, empowerment, culture and organizational circumstances seemed to be important for BPR to be successfully implemented in Germany. The study identified six depth levers roles and responsibilities, measurements and incentives, organizational structure, IT, shared values and skills.

The OC is restricted when an organization is viewed as several functional units and an IT system is implemented module by module (Beretta, 2002). Business process reengineering and organizational changes are key issues in realizing IT benefits. Motwani, Mirchandani, Madan & Gunasekaran (2002) argued that OC is important for facilitating and motivating organizational learning, sharing information, and making decisions so that cultural readiness is the precondition for
promoting the change management. Al-Mashari & Zairi (1999) explained that an organization’s legacy system encapsulates existing business processes, organizational structure, and IT. Therefore, changing the system means changing ways of learning, sharing knowledge, and working. It follows that open communication, training and team motivation are essential to facilitate the organizational change. While addressing the issue of using technical change to stimulate organizational change, Markus (2004) highlighted this as a particularly risky approach. He further argues that an incremental and iterative approach to “techno change” is invariably the way forward, a convincing argument, but one which conflicts with the goals and intentions.

Fichman & Kemerer (1997) stated that assimilation represents the acquisition of skills and knowledge needed to effectively apply some organizational change. Legare (2002) stated risk taking performance reward structures, interorganizational communication exchanges, and alignment of organizational structures with horizontal processes are key factors in enabling IT success driving organizational culture.

The OC can only be understood and executed from a holistic view of the process and the use of multiple methodologies in a single project (Cao & McHugh, 2005). When it is about organizational change, specific attention needs to be given to employees, because it is people who make up organizations and it is they who are the real source of and vehicle for change; therefore, they are the ones who will either embrace or resist change (Smith, 2005).

Section-V

2.6. Business Process Reengineering, Information Technology and Organizational Culture:

Many researchers found that there is a positive relationship between IT and BPR and importantly IT plays an enabling role in BPR initiative (Teng, Jeong & Grover,
1998; Terziovski, Fitzpatrick & O’Neill, 2003; Kumar & Bhatia, 2012). To achieve dramatic advantages from performance improvements of BPR, an organization must look to its culture. For successful BPR, the enterprise must create a new culture or face the business consequences. An OC has a great influence on the way a business accomplishes a task using information technology to increase advantages on competitors and efficiency. The OC is a determining factor in successful BPR implementation (Hammer & Champy, 1993; Davenport T. H., 1993; Zairi & Sinclair, 1995).

The existing culture contains beliefs and values that are often no longer appropriate or useful in the reengineered environment. That is why, the organization must understand and conform to the new values, management processes, and the communication styles that are created by the newly redesigned processes so that a culture which upholds the change is established effectively (Bruss & Roos, 1993). Dedrick et al. (2003) recognized that IT is not simply a tool for automation but it allows BPR. In other words, though the driving force from outside the company pushes towards IT implementation, the outcome might actually be process reengineering and more efficient functionality within the organization. Gajendran & Brewer (2007) developed a framework for the analysis of OC in respect of IT implementation across an organization. They highlighted the influence of organization’s culture, manifested though the nature and extent of shared understanding, on the likely success of IT implementation.

Mansar, Marir & Reijers (2003) stated that the main elements of BPR are fundamental work process redesign, adding value to final customers, integration of cross-functional specialization, and exploitation of IT. The challenges of BPR initiatives are both technical and socio cultural. It is technically problematic to develop radical process improvements. The socio cultural challenge is in dealing with people’s reactions to the likely serious organizational changes required.
Scott-Morton (1991) stated that high performance BPR has to be based on the fit between an organization’s strategy, structure, technology, culture, management processes, and individual skills and roles, as illustrated by the MIT 90’s model which is shown in the Figure 2.8.

![Morton's Model](image)

**Figure 2.8: Morton's Model**

Leavitt (1965) developed a Diamond (Figure 2.9) known as Leavitt diamond to demonstrate the relationships between four key functions of a BPR initiative. The diamond explained how by managing the variables of IT, Strategy, People skills and Business Processes, an organization can reach a balance that is necessary for success where strategies and processes are building the ground for the enabling utilization of technologies and the redesign of the human activity system. A brief description of these four dimensions is given below.
Information Technology: Information technology is considered as the major enabler for spanning processes over functional and organizational boundaries and supporting process driven organizations. Using new technologies such as groupware along with new methods for using them and an acceptance of technological changes, information technology will be shaping the future of business.

Strategies: The strategy dimension has to cover strategies within the other areas under concern, namely organization strategy, technology strategy and human resources strategy. The determination of all strategies has to be performed with respect to the dynamic marketplaces the organization is acting on and is not focused on internalities, but the external presumptions for successful acting on markets. The strategies must be defined in a way that enables understanding and motivation of employees in order to align the work force with them.

Business Process: Business Processes can be defined on different levels within the organization. The core business processes which are satisfying customer needs to be identified and value to be added for them. It is important that processes are not
determined by internal organizational requirements, but by customer requirements, even though organizational constraints have to be taken under consideration. The shift from functional departments to inter functional processes includes a redesign of the entire organizational structure and the human activity system and implies process instead of task optimizing.

**People:** The human motion system within the organization is the most critical factor for reengineering. Whereas top management support for reengineering efforts is rather simple to ensure, the real change agents, middle management are far harder to win due to the fact that they have to identify change opportunities and perform them, while they are the group facing most threats, as BPR often is used for cutting hierarchies and reducing the work force. The other crucial factor is to align the work force with the strategies defined and to address the variable cultural and environmental contexts within the organization. Flattening hierarchies implies decision making to be moved down in the organization and empowerment of the employees taking them. For this, training and education is required besides motivation and trust from top management that people are able and willing to take responsibility.

### 2.7. Implementation scenario of Business Process Reengineering (BPR):

The importance of BPR is increasing everyday. It is an important concept in today’s business world. Now a day’s, many organizations from public, private sector and small and medium size enterprises had undergone the business process reengineering initiatives. Multi National Companies (MNC) like IBM, Ford Motor, Teco bell, AT&T, Sony, General Electric, Wall Mart, Hewllet Packard, Dec, Kraft Foods have implemented BPR successfully. Following those MNC’s, the banking sector began to adopt reengineering with a great degree of success. For example Citibank, Northwestern bank, Bank of America etc. are successfully implemented BPR. Utility companies like OTE, ELTA implemented business process
reengineering as a technique to improve services (Thyagarajan & Khatibi, 2004; Zigiaris, 2000; Aggarawal, 1997).

BPR is also being used to change the organizational structure of public services. First the government cabinet of Egypt used BPR in its processes along with many municipals in Europe. The public health sector is undergoing a major reengineering in Europe using the CORBA methodology.

2.8. Conclusion:
This chapter has presented a detailed review of the literature on BPR, Information Technology, organizational culture and the important enablers of BPR. BPR has been implemented by a wide range of business organizations in many ways to create an edge over its competitors in today’s business world. Information Technology is considered as a major enabler in most of the BPR projects. Proper planning, design and implementation helps in achieving success without which a large section of BPR project fails. With the introduction of BPR using IT as a major enabler, the OC needs to be developed to support the innovative technical changes. OC has great impact in the success of BPR project. The other important BPR enablers found in the literature are top management commitment and leadership, organization’s strategy towards BPR implementation and human resources. The top and middle level managers can play an important role in making the employees understanding the goal of BPR projects. The employees must be trained properly to cope up with the changes and rewarded to encourage working in the new environment. The literature reveals that no study has been carried out considering BPR, IT and OC as components. Therefore, it gives sufficient scope in taking up a study combining all the three major components of BPR implementation which are BPR outcome, IT, OC.
Bibliography:


