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On IT Enabling of Business Process Reengineering in Organizations

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Abstract. Business Process Reengineering (BPR) is a management approach used to improve organizational performance through restructuring production activities of the core services for the purpose of enhancing their efficiency and effectiveness. Although BPR improves the efficiency of processes, it can hardly be applied in its own and thus it needs to be complemented with other concepts from other disciplines. Information technology (IT) tools are seen as accuracy and effective enabler of BPR approach in restructuring activities. This paper focuses on analyzing on how IT can be an enabler of BPR approach to restructuring processes in an organization for the purpose of enhancing the effectiveness and efficiency of processes. It presents the roles of IT in BPR for organizations. It also presents challenges on organizations when implementing the BPR.

Introduction

The concept of reengineering traces its origins back to management theories developed as early as the nineteenth century. As practiced as well as discussed in literature reengineering of activities is performed for the purpose of "making all organizational processes the best-in-class." In the 1880's Frederick Taylor suggested that managers should use process reengineering methods to discover the best processes for performing work, and that these processes should be restructured to optimize productivity [7]. BPR is an approach for redesigning and restructuring the way work is done (focused on activity, input and output) to better support the organization's mission and reduce costs [6]. It is the main way in which organizations become more efficient, modernize and achieve high performance. It is has been observed that if individuals are motivated and working hard, yet the business processes are cumbersome and non-essential activities remain, organizational performance will be deteriorating with time. BPR is the key to transforming how people work in search for a better performance at their workplace. Even if the changes in processes are minor they can have dramatic effects on cash flow, service delivery and customer satisfaction. This shows how much important the BPR is to today's digital enabled organization visioning to have sustainability in business.

The changing economic environment has also led to an increasing need for BPR by progressive firms around the world. One study made in Europe shows that about 87% of firms surveyed were either engaged in BPR projects or indicating their intention to take up BPR projects in the next few years [13]. One of the reasons for adopting BPR is modernisation so that an organization copes with the new era. Modernization is characterized by stiff competition locally and globally. For effective business modernization, BPR has become a veritable engine of organizational survival [8]. Apart from modernization, organizations reengineer for a variety of business reasons. The business reasons may be re-inventing ways of doing work to satisfy the customers, becoming competitive, curing systematic process and behavioural problems, enhancing their capability to expand to other industries, accommodating an era of change, satisfying customers, employees, and stakeholders who want to produce different results, surviving and becoming successful in long term; and inventing "rules of the game" [1].

Different processes such as designing, planning and manufacturing are now adapting digital solutions in their performance. Thus advanced IT is seen as an amenable means for effective performance of organizations. BPR is not exceptional and organizations aiming at practicing it must start adapting IT in processes on reengineering and restructuring of their business activities. This

paper focuses on analyzing on how IT can be an enabler of BPR approach to restructuring processes for the purpose of enhancing the effectiveness and efficiency of processes. It presents the roles of IT in BPR for organizations. It then presents challenges on organizations when implementing BPR.

Concept of Business Process Reengineering

BPR is *fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical contemporary measures of performance, such as cost, quality, service, and speed* [4]. Re-engineering has four concepts: (i) *Innovative Rethinking*: This is a process that depends on creativity, inspiration and old-fashioned luck, (ii) *Process Function*: Taking a systematic perspective this is a collection of activities that take one or more kinds of input and creates an output that is of value to the customer. Typical process includes ordering of organizational structure, manufacturing, production, development, delivery and invoicing, (iii) *Radical change*: In radical change, a key business process is the transformation of organizational element; it is essential to an organization survival. The intended change leads to new ideas, technology, innovation and improvement of organizational processes. Therefore, it is important that organizations recognize the need for change and learns to manage the process effectively, (iv) *Organizational Development and Performance*: This looks at the firm's level of efficiency and way to improve its current activity level in order to meet up to standards and survive the competitive pressure. One way to judge the performance of an organization is to compare it with other unit within the company. Comparison with outsiders can highlight the best industrial practices and promote their adoption [13].

Information Technology

Information technology is a collection of hardware and software which combines together to provide tools for manipulating information or automation of a specific physical activity. IT provides facilitation and tools for an acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a microelectronics-based combination of computing and telecommunications [10]. Use of advanced IT solutions, for instance, personal computers and communications allow employees to work outside the office while still being connected to the office. Multimedia communication systems, which send and receive audio and video data, help in making decisions by using electronic mail, file transference, or video conference. Computer-aided design/manufacturing /engineering techniques allow for coordinating product design, manufacturing, and engineering activities. IT enables cost savings and improving the accuracy of exchanging data, avoiding human mistakes when complex and repetitive tasks are used, saving money as it reduces errors and the time it takes to accomplish tasks, integrating and coordinating several functions at once and improving the organizational efficiency and effectiveness by eliminating delay, administrative intermediaries, and redundant processing steps and by providing better access to information [12].

Business Process Reengineering and Information Technology

BPR activities are now being supported by IT related tools and services. The application of IT is one of the success enhanced characteristics of BPR. This characteristic differentiates BPR from other approaches of improving process restructuring such as Quick hits, Incremental improvement, and Six sigma. IT is seen as an enabler of BPR in both manufacturing and service industries. For instance, by implementing BPR, banks explored the opportunities provided by IT systems and tools to automate and improve their service and thus enhance customer satisfaction, enable e-banking, integrate branch network, etc.[8]. In manufacturing industry, IT has been used in BPR to restructure processes related to customers, suppliers, and other partners to the business process [12].

Hammer [4] considers IT as the key factor in BPR for organization that wants to witness a "radical change" in its operations. In that work it was prescribed that the use of IT to challenge the assumption inherent in the work processes that have existed since longtime before the advent of

modern computer and communications technology. Aremu and Saka [8] argued that IT is a strategic resource that facilitates major changes in competitive behaviours, marketing and customer service. Therefore, IT enables a firm to achieve competitive advantages against others in the market which fails to properly adapt IT in the BPR related processes. Davenport and Short [3] further posted that BPR requires taking a broader view of IT, business activity and of the relationships between BPR and IT. IT should be viewed as more than an automating or mechanizing force; to fundamentally reshape the way business is done. However, it should be noted that IT and BPR have recursive relationship. IT capabilities should support business processes while business should be in terms of the capabilities of IT. Davenport and Short [3] refer to this broadened, recursive view of IT and BPR as the new industrial engineering business process as it represent a new approach of coordination across the firm. It is viewed that Information technology systems are powerful tool for reducing cost of coordination.

The Role of information technology in BPR

It has been observed in both practice and literature that IT plays a very crucial roles in BPR which have been identified and classified in relation to transactional, analytical, knowledge management, geographical, informational, automatic, sequential, tracking and disintermediation roles. IT promotes changes in organizations in the nature of the work, the integration of business functions, and the transformation of competitive forces [1]. IT helps to make the changes promoted by reengineering, and it can be considered as an enabler and a fundamental capacitor of BPR [11,3,4,5]. The IT enables financial companies to process different payments and increase the volume of customers served [1]. Through the application of IT in BPR, financial company can accept customer requests at any point, eliminating multiple calls by customers, reducing call center volume; automatically updating each account as requested by the customer and eliminating duplicate data entry and potential errors. Other roles that IT can play in banking sectors include the following: (i) **Branch cash management:** The branch and ATM channel in banks must maintain sufficient cash levels to service consumer and commercial customers. There was no automated method of predicting cash requirements for these channels, and an opportunity presented itself to improve interest income by reducing cash levels. BPR developed cash tracking models for branches and ATMs. The models focus on cash requirements without significantly changing procedures [1]. (ii) **Service charge reengineering:** Prior to the reengineering initiative, refunds for service charges were manually recorded in the bank *branch* network and faxed to the back-office for processing. Processes are modified and automated to allow branches to process the request at point of contact. Automated posting features allowed customer's to be credited to their account sooner. (iii) **Retail funds transfer reengineering:** Through the application of IT, real-time processing by customers at points of contact replaced manual intervention in back-office areas for the vast majority of recurring funds transfer requests. This role of IT in BPR improved servicing time for customer transfer requests, improved tracking of requests, and finally brings operating savings. IT has the following roles in BPR of manufacturing industries: automation of activities, horizontal integration and business network design [6]. (i) **Automation (Localised exploitation):** Automation refers to the use of IT to improve the efficiency of employees in offices. For example, consider two interrelated work units- inventory control system in warehouse unit and accounts payable system in accounting unit. Each operational manager can be highly interested in automation to improve the operational efficiency of his respective unit. This is what Venkatraman [6] called "localised exploitation" of IT. Tersely, automation is use of ICT to improve the performance of a particular functional process. (ii) **Horizontal integration:** After automating the functional units, the elementary activities are rearranged again to form higher-level work process including technical linkages and interfaces of different systems and applications, which are dealt through IT and business process interdependence that redefines organizational roles and responsibilities across functional lines. In other words, it is the process of streamlining standard operational procedures and eliminating bottlenecks so that automation makes procedures more efficient [8]. This leads to eliminating functional boundaries through integrating horizontal activities

[6]. (iii) **Business network redesign:** Business networking redesign is application of IT to enhance the interface and to create strategic alliance and cooperation between the participants in the business network. Business network redesign ranges from linking the organization to its customers and suppliers through EDI to creating opportunities for unstructured tasks, for strategic alliance and for knowledge control [6].

Challenges related to adapting information technology in BPR processes

IT has changed the way we do business in today businesses [10]. BPR offers one method for managing this change while at the same time making it possible to achieve dramatic gains in business performance. However, not all BPR projects have been successful in achieving dramatic performance gains [1] despite trying to apply BPR in their business activities. In fact, [2] showed that only 30% of BPR projects achieved performance breakthrough. Reasons for failure include: (1) *Lack of sustained commitment and leadership*, (2) *Unrealistic scope and expectation*, (3) *Resistance to change*, (4) *Non-encouragement to conceptualization of business process*, and (5) *Non-detailing of rewards and recognition*. For any change, if top management does not provide strong support for BPR implementation and IT application in an organization it is likely to fail. A rule of thumb in BPR implementation is that success can only be achieved if the management are in the driving seat. One more difficult challenges of BPR implementation is resistance from implementers' belief. IT infrastructure reassessment and composition are vital factor in successful BPR implementation, the IT infrastructure and BPR are interdependent in the sense that deciding the information requirements for the new business processes determines the IT infrastructure constituents. IT infrastructure is dependent on determination of business process information needs.

Conclusion

This paper has shown that BPR significantly improves the performance of organizations whose processes. IT is very crucial in reengineering processes. We have presented that BPR is an approach for improvement of processes, although it requires big changes in organization and work style. This involves changes or increase working styles, job functions, knowledge, and organization values. In this way, BPR requires long-time dedication, resources, and effort. This paper presents roles of IT in performing BPR to enhance improvements on variables e.g. costs, quality, productivity and delivery speed.

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