8-15-1997

Developing Sustained Competitive Advantage: Business Process Reengineering versus Management of Information as a Resource

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Abstract

Information Technology induced Business Process Reengineering is being offered as a solution to organizations to achieve competitive advantage in an intensely competitive environment. However, just radical changes in business processes will not help an organization sustain competitive advantage as successful business process reengineering projects can be cloned by competing organizations, thereby negating the competitive advantage developed by any one organization. Instead, if an organization were to design and implement information systems for strategic management of information as a resource, then use of such systems can lead to sustainable competitive advantage. This paper presents the case for the use of an information system designed from the resource based perspective as a source of sustainable competitive advantage over business process reengineering.

Introduction

Competitive business environment leading to diminishing profits in the eighties forced companies to rethink their strategies for developing competitive advantage. With the emergence of business process reengineering - BPR (Davenport and Short, 1990; Hammer, 1990) it seemed that a solution for surviving and developing competitive advantage in these turbulent times had arrived. Early successful BPR applications opened the floodgates for an abundance of literature on concepts, methods, technology and strategies for BPR. However, with the initial euphoria of BPR success still in the air, there is very little literature that is critical of business process reengineering, especially of its ability to generate sustainable competitive advantage. This lacuna in literature could also be attributed to the fact that there has been no effort to understand the epistemological and ontological aspects of BPR.

This paper, while acknowledging that BPR is essential to bring to date obsolete organizational procedures and practices, highlights BPR's inability to generate sustainable competitive advantage. The support for the argument is drawn from the literature on the resource based view of the firm (Barney, 1991; Conner, 1991). An alternate option of using information systems (IS) developed from a resource based perspective for strategic management of information is presented for developing sustainable competitive advantage.

The paper is organized in two parts. The first part briefly reviews the BPR literature and critically evaluates its potential for developing sustainable competitive advantage. The second part presents the thesis of this paper through a framework developed for understanding information systems design for sustainable competitive advantage from the resource based view.

BPR as a source of sustainable competitive advantage

A business process is a set of logically related tasks that use the resources of an organization to achieve a defined business outcome (Davenport and Short, 1990). BPR is the radical redesign of business processes to achieve dramatic improvements in critical measures of performance (Hammer and Champy, 1993). Thus BPR espouses radical changes in existing obsolete organizational tasks rather than using contemporary technology to speed up existing tasks to improve performance. Information technology (IT) is a critical and a widely used component in BPR, but it is also acknowledged that it is not necessary for BPR (Teng et al, 1994). However for successful efforts in BPR, an IT induced BPR is advocated where IT plays the lead rather than a supportive role (Venkatraman, 1991). There are various other published literature which talk

about top management support (Grover, 1994), emphasis of sociotechnical approaches to change (Grover, 1995), change management (Stoddard and Jarvenppa, 1995), integration of Total Quality Management and BPR (Davenport, 1993) and alignment of process, strategy, IS and change management (Earl et al, 1995) as keys to successful BPR.

The common theme running through the BPR literature is the concept of radical change in processes by using contemporary technology and business practices. Thus BPR involves the use of state of art technology, documentable strategies, practices and procedures, and training of personnel to handle change. There is no gainsaying the fact that this exercise would increase the productivity of an organization that had undergone BPR. However, competing organizations too could initiate BPR and hence increase their productivity. Moreover competing organizations could wait for an organization to implement a successful BPR and then clone the BPR exercise. This might be a better strategy as the following organizations can learn from the first mover's mistakes, and pick and choose only the successful components. Also, given the contemporary technological capabilities, the first mover's advantage will not be for long. Cloning of BPR should not be difficult to achieve because technology is readily available in the market for all competing organizations, and documented practices and procedures can be easily copied across organizations. Moreover professional help is available to organizations needing guidance in training personnel to cope with change. Thus the current focus of BPR cannot provide an organization with sustainable competitive advantage and at best can establish competitive parity.

There is only one significant work in the BPR literature which suggests that a key aspect of success in processes improvement is effective management of information about process performance (Davenport and Beers, 1995), especially through its emphasis of management of ideas for continuous improvement. Unfortunately there is no further work in this area.

In the next section the use of IS designed from the resource based perspective is presented as a source for developing sustainable competitive advantage over BPR.

Resource-based IS design as a source for sustainable competitive advantage

The resource based view focuses on an organization's strengths by leveraging its inimitable and imperfectly substitutable attributes or resources as sources of profit, performance and competitive advantage (Barney, 1991). The characteristics needed of a resource to make it inimitable are resource heterogeneity and resource immobility (Barney, 1991; Mata et al, 1995). A resource is said to be heterogeneous if it is not spread evenly across a population of organizations and immobile if costs outweigh benefits, if one organization were to copy or use another's resource. In addition to inimitability, the resource should be imperfectly substitutable with another resource by competing organizations.

This paper proposes that knowledge is a critical organizational resource which satisfies the conditions required to make it an inimitable and imperfectly substitutable resource. While information and information technology can be easily copied across organizations, knowledge cannot be done so that easily. The argument for this can be taken up as follows. First, information can be both a product or process which is stored in organizations. This nature of information makes it susceptible to be copied easily, and bought or sold in open markets. However, knowledge exists in the intellectual capacity of organizations, which essential consists of a collection of the intellectual capacities of personnel. Knowledge takes a long time to get embedded in organizational knowledge structures. The exit of an individual will not significantly deplete organizational knowledge nor increase the knowledge of the organization into which the individual is moving. Second, knowledge exhibits a high degree of causal ambiguity rendering duplication difficult. Finally organizational knowledge is a socially complex construct as knowledge results and grows through numerous formal and informal interactions between organizational personnel sharing information pertaining to organizational functions and objectives.

Knowledge management involves leveraging the expertise of people and maximizing the use made of available information resources (Brookes, 1996). Effective knowledge management involves in ensuring

that the information generation dissipation cycle is balanced (Ramaprasad and Rai, 1996). Thus knowledge management requires a suitably designed information system. To address this issue, a framework as shown in Figure 1 was developed to logically represent IS components.

Figure 1 depicts an information system as a set of interrelated parts consisting of three principle components - the physical system, the logical system and information. The physical system consists of information technology and people; the physical entities of information systems. The logical system consists of structure, policies, procedures and practices that have been used to design the system. The logical system would reflect the organizational culture in which the information system is used. The third component of information systems is the information that it is designed to manage. This is the most important and also the least focused part in information systems design. This can be substantiated by the fact that information systems are designed to manipulate data to generate information, and that the semiotics of information generation and dissipation (Ramaprasad and Rai, 1996) are largely ignored.

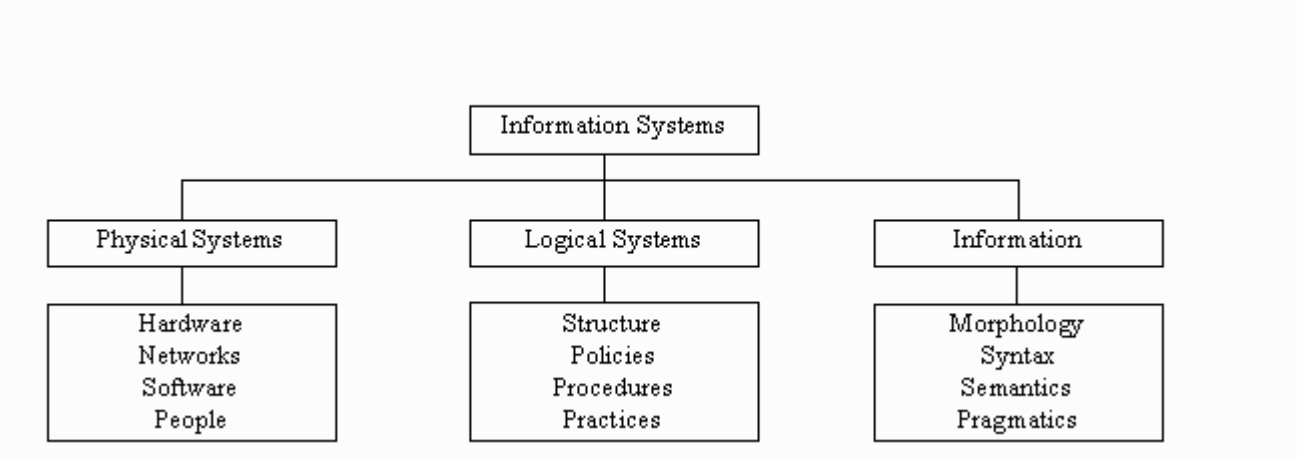

Figure 1: Information Systems Components

Semiotics is the process by which stimuli are transferred into information (information generation), or information transferred into stimuli, (information dissipation) (Ramaprasad and Rai, 1996). Stimuli are at the morphological level; they are a collection of unconnected symbols without meaning or use. At the syntactic level, the stimuli are related to each other by rules to generate data. At the semantic level meaning is attributed to the stimuli and the relationship between them is called information. At the pragmatic level the meaning of the stimuli is interpreted in a particular context. It is at this level that stimuli are related to events and actions and thus generate a higher level of information called knowledge (Ramaprasad and Rai, 1996).

It is proposed that the use of IS designed to handle information from morphological to pragmatic levels would generate sustainable competitive advantage. Such systems would leverage the expertise of organizational personnel, effectively creating a learning organization capable of adapting to the vagaries of the business environment. While all three principal components of IS are equally important, it is at the information component that inimitability and imperfectly substitutability of IS occurs, presenting an opportunity to build sustainable competitive advantage.

Conclusion

BPR is an effective tool to incorporate currency into an organization's business process, thereby increasing the productivity of all organizations adopting a successful BPR exercise. However, from a resource based perspective, BPR cannot be expected to provide an organization with sustained competitive advantage. This is because BPR is a transparent operation which can be cloned by competing organizations to achieve the same results. If the goal of an organization is to develop sustained competitive advantage, then it should look beyond BPR to an exercise which competing organizations will not be able to imitate. To achieve this the paper proposed from a resource based perspective that organizational knowledge is an inimitable and

imperfectly substitutable resource and that effective management of organizational knowledge through a suitably designed information system will result in sustainable competitive advantage. Also a framework for analyzing and designing information systems for knowledge management was presented.

References available upon request from first author.