



Impacts of Decision Supporting Systems on Decision Making

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ABSTRACT

The dynamic improvement in banks and other financial provider obligated BAHRAIN COMMERCIAL FACILITIES COMPANY (BCFC) to implement the concept of Business Process Reengineering (BPR). This was to provide innovative product and services and decrease the gap between BCFC and other banks or financial service provider.

This research's object is to evaluate the impact of BPR on business performance and discover how BPR will affect (cost, quality, and time cycle) of products and services provided. Data obtained from secondary and primary sources, and analysis done through simple percentage analysis and regression analysis.

This research concludes that BPR is not risk-less, and failed to be perfectly implemented to the following reasons: lack of executive leadership, and organizational resistance.

KEYWORDS

Decision Support Systems

Knowledge-based systems

Decision Making Process

Bahrain banks

PREAMBLE

In a world progressively more motivated by the three Cs (Customer, Competition and Change), companies are paying attention for new solutions for their business problems. Lately, some of the more booming companies in the world seem to have an incredible solution, Business Process Reengineering (BPR).

1.1 Overview of BPR

An information technology takes a major function in reengineering the majority of business processes. Efficiency of processes, communications, and teamwork among responsible people will significantly increased all the way through speed, information processing capacities, and the use of computers and internet technology.

1.2 Goal of BPR

These issues dictate business enterprise of Business Process Re-engineering into the large strategy for persistent competition advantage, check costs, and distinguish products and effective price management with superior force and then faultless execution.

1.3 What to reengineer

Reference to various in the BPR territory reengineering supposed to center the attention on processes and not be restricted to thinking about the organizations, a business process is a chain of stepladder intended to create a product or a service. It comprises all the activities that carry specific outcome for a given customer, processes are currently hidden and unnamed for the reason that people consider the entity divisions more frequently than the procedure and process with which all of them are concerned. So companies that are considering a process in term of department such as marketing must switch to names those processes that they do. These names should involve all the work that engaged from start to finish.

The importance of processes not just limited to include organization diagram, they must also contain what are named process maps to provide an image of how work flows all the way through the company. Process mapping presents tools and a verified line for recognizing your exist As-Is

business processes and can be used to present a To-Be outline for reengineering your product and service functions. It is the vital link that your BPR team can concern to enhanced understanding and radically develop your business processes and performance. Recognizing and drawing the processes, choosing which ones required to be reengineered and in which arrange is the critical question. No company can take up the undesirable task of reengineering all the processes at once. Generally they make their selections based on three criteria:

Table-1: Selection Based on Three Criteria

- **Dysfunction: The worst functioning process.**
- **Importance: The main serious and powerful to customer satisfaction.**
- **Feasibility: The processes those are most likely to be successfully reengineered.**

1.4 Re-engineering Stages

- The Envision stage: the company reviews the existing strategy and business processes and based on that review business processes for improvement are targeted and IT opportunities are identified.
- The Initiation stage: project teams are assigned, performance goals, project planning and employee notification are set.
- The Diagnosis stage: documentation of processes and sub-processes takes place in terms of process attributes (activities, resources, communication, roles, IT and costs).
- The Redesign stage: new process design is developed by devising process design alternatives and through brainstorming and creativity techniques.
- The Reconstruction stage: management technique changes occur to ensure smooth migration to the new process responsibilities and human resource roles.
- The Evaluation stage: the new process is monitored to determine if goals are met and examine total quality programs.

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1.5 Research Objective

This research will investigate the impact of BPR on business performance in the financial sector and will test the relationship between (cost, quality, and time cycle) with business performance under the BPR solutions. Interviews will be conducted with key people who experienced this process and performance will be evaluated based on speed, quality of service provided, and cutting cost by utilizing the minimum required resources.

1.6 Research Structure

First, we will have a general review on previous literatures, and elements of reengineering. After discussing that part will explain our research methodology and present our research questions, hypothesis, and the research design. Some challenges of BPR were discussed before going to analyzing the results. On the final stage, we discussed the result that obtained to come to our conclusion.

LITERATURE REVIEW

The idea of reengineering sketches its origin back to management theories built-up in the early of nineteenth century. The aim of BPR is to revamp and modify the on hand business practices or process to attain remarkable development in organizational performance. Organizational development is a nonstop process but the rapidity of adjust has improved in manifolds. In an unstable global world, organizations improve competitive advantage BPR by completely redesigning chosen processes.

Since its initiation two decade ago, BPR has become a buzz word to carry about innovative initiatives and cultural changes in the business world. Many companies deployed BPR and achieved new competitive advantages in the global marketplace. Sharma (2006) posited that business process re-engineering 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. Organizational valuable performance has turn out to be a catchphrase in contemporary business; as consequences there are

unavoidable pressures for Business Process Re-engineering.

According to Stoddard and Jarvenpea (1995) Business Process are simply a set of activities that transformed a set of inputs into a set of outputs (goods or services) for another person or process using people and equipments. Business process entails set of logically related tasks performed to achieve a defined business output or outcome. It involves a wide spectrum of activities procurement, order fulfillment, product development, customer service and sale (Sharma 2006). Thus, Business Process Re-engineering becomes an offshoot of Business Process.

BPR relies on a diverse school of ideas. It accepts as true the on going process development, re-engineering believe that existing procedure is unconnected and there is necessity to originate a new one. Such a fresh plan will allow the designers of BPR to spotlight on innovative process. Business Process Re-engineering in the genuine brains, have mixed achievements therefore, business process reengineering projects intend to transform incompetent effort process. Henceforth, organizations required to optimize outcome from this form in actual business circumstances.

Business process reengineering (BPR) does not appear to qualify as a scientific theory because among other things, it is not duplicable and it is limited in scope (Maureen et al, 2005). Recently organizational improvement is a nonstop progression however the rapidity of change had enlarged in many ways. Which means that in these spirits surrounding organizations will improve its readiness for action in its process, if it successfully design and apply Business Process Reengineering (BPR) on the chosen procedure.

According to Huang and Palvia (2001), change management and corporate culture have played significant roles in BPR and ERP acceptance in various countries. Aspects affecting BPR execution outcomes can be classified into two categories: national & environmental and organizational & internal. National & environmental factors include such variables as economy and economic growth, infrastructure, and government regulations. Organizational & internal factors describe such firm specific aspects as information technology (IT) maturity, BPR experience, and computer culture. On the one hand, information technology, such as ERP, enables and reinforces firms' innovative behavior as one of the key success factors for BPR and change management. The Conference

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Board (2004) reports that "IT systems that don't mesh, making it difficult to consolidate data cross the organization" as one of the key obstacles to innovation and BPR. On the other hand, BPR is measured as one of the fundamentals for a successful ERP implementation.

In learning national differentiation and execution practices, Sheu et al. (2003) find that culture and language, government and corporate policies, management style, and government regulations are among the key aspects that have to be taken into consideration to successfully implement BPR & ERP in the global marketplace. Moreover, Martinsons (2004) reports that even in the same country using the same information technology, four private (non-state) ventures (PVs) that he studied performed significantly better than four state-owned enterprises (SOEs) in implementing ERP in China.

Thus, he considers that dissimilar types of organizations even within a single country may behave differently due to social, cultural, and government policy influences. Based on a study of 150 enterprises in China, He (2004) finds via a resource-based viewpoint that BPR is one of the critical success factors (CSFs) of ERP implementation along with executive support, ERP-SCM vision, and ERP Communications of the IIMA 25 2005 Volume 5 Issue 1 Comparative Study of BPR in China Xin James He concept. While high costs, high complexity are considered the most commonly encountered obstacles of ERP implementation both in China and in USA, insufficient IT infrastructure, lack of well-trained workers, lack of incentives for the state-owned enterprises (SOEs), and different corporate culture are China specific obstacles to ERP implementation (He, 2004).

Aremu and Saka (2006) argued that Information technology (IT) is a strategic resource that facilitates major changes in competitive behavior, marketing and customer service. In essence, IT enables a firm to achieve competitive advantages. IT should be viewed as more than an automating or mechanizing force; to fundamentally reshape the way business is done. Information technology (IT) and Business Process Reengineering (BPR) have recursive relationship. IT capabilities should support business processes and business should be in terms of the capabilities IT can provide

2.1 Elements of Reengineering in an Organization

Ezigbo (2003), the essential element or principles of reengineering include the following:

Table-2: Essential element or principles of reengineering

- Rethinking the theory of the business.
- Challenging old assumptions and discharging old rules that are no longer applicable.
- Breaking away from conventional wisdom and the constraints of organizational boundaries.
- Using information technology not to automatic outdated process but to redesign new ones.
- Externally focus on clients and the age group of superior value for clients.
- Internally spotlight on binding more of the potentials of groups and concern it to those activities that identify and deliver values to customers.
- Encourages training and development by building creative work environment.
- Consider and carry out as much activity as feasible horizontally, focusing on flows and processes through the organization.

RESEARCH METHODOLOGY

There are number of phases involved in the production of research document, however we used empirical and descriptive method to reach our objective in this research. According to Hammer & Champy (1993) 'Reengineering is the basic review and essential redesign of business processes to reach remarkable improvements in critical measures of performance such as cost, quality, service and speed'. Therefore, our dependent variable is Business performance and independent variables are (Speed, Quality, and Cost). Data for this paper was obtained from primary and secondary sources. The primary source involves the use of questionnaire that was designed considering expert views on business process re-engineering. The paper further employed personal interview to obtain additional information on the specific areas that the questionnaire mechanism did not cover. The secondary

data source is extracted from report, journals, textbooks and other relevant publications.

3.1 Research Questions and Hypotheses

We set three questions to be answered through this research as follow:

Table-3: BPR Based Hypothesis

- Do BPR enhance cost cutting in the process of delivering services or products.
- Do BPR enhance quality of services or products **provided?**
- Do BPR enhance speed and time consumed in delivering services or **products?**

The following hypotheses formulated to be tested.

Table-4: Hypothesis Formulated

H₁. There is significant relationship between cost and business performance.

H₀₁. There is no significant relationship between cost and business performance.

H₂. There is significant relationship between quality and business performance.

H₀₂. There is no significant relationship between quality and business performance.

H₃. There is significant relationship between time cycle and business performance.

H₀₃. There is no significant relationship between time cycle and business performance.

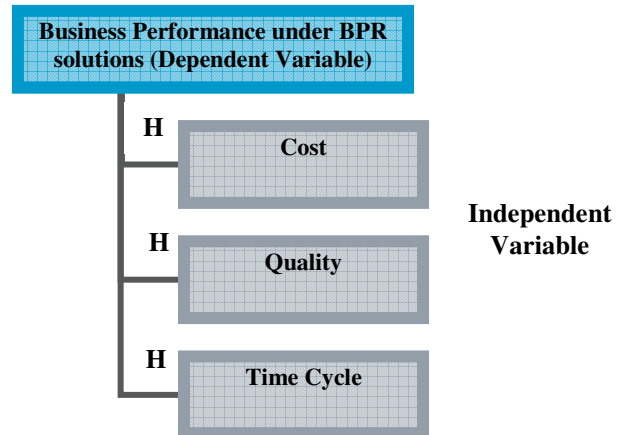


Figure 1: Research Model

3.2 Research Design

We followed a quantitative method by distributing questionnaire to staff from various strategic departments of Bahrain Commercial Facilities (BCFC) which already implemented BPR solutions and this will add some qualitative feature. The questionnaire was divided into two parts. The first section asked to the respondents about their views on the impact of business process reengineering on organizational performance while the second section focuses on the demographic characteristics of the respondents. The data collected were analyzed through simple percentage analysis and regression analysis. We distributed 80 questionnaires to targeted people and we get back 50 responses only which represent 62.5% of our targeted sample.

CHALLENGES AND IMPLEMENTING BPR

Companies need to have sufficient motivation to make significant changes for business and performance improvements. However, generally this is difficult to reach due to the resistance of change by the organization culture and the commitment and reliance on the existing processes.

Moreover, high cost of change specifically the cost of high-end technology implementation and its obstacles may stand as barriers to the success of BPR solution, where advance technology needs a professional and well trained human resources in addition to a well stabilized infrastructure or even in many organizational development it will cost to outsource its technology based solutions to a vendor.

As BPR combine tasks and processes to fewer and may reduce human interaction, as a result human allocation, restructuring and downsizing will be a considerable concerns to the company's management and a difficult decision to take. Furthermore, lack of time and deprived planning may lead companies to fail in implementing BPR solution which this will cause huge financial losses.

RESULTS AND FINDINGS

H₁. There is significant relationship between cost and business performance.

This hypothesis laid down to test the relation between (Cost & Business Performance) under BPR solutions and to answer the first question in this research (Do BPR enhance cost cutting in the process of delivering services or products). On the other hand, we set null hypothesis against H₀₁.

When the regression between cost and business performance calculated (sig=0.307, which is greater than 0.05) therefore H₁ rejected while H₀₁ accepted which mean the relationship between cost and business performance doesn't exist.

Table-5: Research Based on ANOVAs Test-1

ANOVA ^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.174	1	.174	1.067	.307 ^a
	Residual	7.806	48	.163		
	Total	7.980	49			
a. Predictors: (Constant), Cost						
b. Dependent Variable: BP						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error			
1	(Constant)	3.593	.313		11.477	.000
	Cost	.129	.124	.147	1.033	.307
a. Dependent Variable: BP						

- **H₂. There is significant relationship between quality and business performance.**

This hypothesis laid down to test the relation between (quality & Business Performance) under BPR solutions and to answer the second question in this research (Do BPR enhance quality of services or products provided). On the other hand, we set null hypothesis against H₀₂.

When the regression between quality and business performance calculated (sig=1.582, which is greater than 0.05) therefore H₂ rejected while H₀₂ accepted which mean the relationship between quality of service & products provided and business performance doesn't exist.

Table-6: Findings Based on ANOVAs Test-2

ANOVA ^b						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.255	1	.255	1.582	.215 ^a
	Residual	7.725	48	.161		
	Total	7.980	49			
a. Predictors: (Constant), Quality						
b. Dependent Variable: BP						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error			
1	(Constant)	3.593	.313		11.477	.000
	Quality	.106	.084	.179	1.258	.215
a. Dependent Variable: BP						

- **H₃. There is significant relationship between time cycle and business performance.**

This hypothesis laid down to test the relation between

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(Time Cycle & Business Performance) under BPR solutions and to answer the third question in this research (Do BPR enhance speed and time consumed in delivering services or products). On the other hand, we set null hypothesis against H_{03} .

When the regression between time and business performance calculated (sig=0.004, which is less than 0.05) therefore H_3 accepted and H_{03} rejected, which mean the relationship between quality of service & products provided and business performance exist and BPR enhance the time cycle to deliver product and services.

Table-7: Research and Findings Based on ANOVAs Test-3

ANOVA ^b						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.266	1	1.266	9.053	.004 ^a
	Residual	6.714	48	.140		
	Total	7.980	49			

a. Predictors: (Constant), Time

b. Dependent Variable: BP

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	5.249	.425		12.346	.000
	Time	-.307	.102	-.398	-3.009	.004

a. Dependent Variable: BP

DISCUSSION

BPR solution objectives is to help the companies to fundamentally rethink how they do their work in order to dramatically cut operational cost, improve customer satisfaction by the quality of the products and services provided, and speed

up the consumed time to provide the products or services. Therefore, BPR aims to enhance business performance and as (Hammer and Champy, 1993) said: "Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvement in critical, contemporary measures of performance such as cost, quality, service, and speed".

In our research we distributed 50 questionnaires to Bahrain Commercial Facilities (BCFC), a company which just experienced the BPR solutions, and from BCFC's experience which is reflected on the questionnaire answers we come to the following results after calculating the linear regression between business performance as an independent and the following variables as dependants (cot, quality, and time).

- There is no relationship between cost and business performance after implementing BPR. Although it's known that an important aspect of business performance is the cycle time, and it's know as the total consumed time to accomplish a frequent task. It also may extend this definition to reach the time consumed to come with new ideas of products or services to the customers. Time can be used to measure productivity by comparing time consumed in specific company with benchmarks. Many benefits can be reached by reducing time cycle such as product or services can enter and reach market earlier, and enhance profitability.

- There is no relationship between quality and business performance after implementing BPR. However we know that the use of operational techniques and activity to maintain a quality of product or service that will satisfy specific needs, the aim of quality is to provide quality that is satisfactory, e.g (safe, and economical) which require an integrating several related steps including proper specification to meet the requirements; production to meet the specification; inspection to determine the degree of conformance to specification; and review of usage to provide for revision of specification. To control quality management and especially top management must have a commitment to TQC, to enhance the quality of products and service provided; where process capabilities and design, ethics, change and development, internal staff relations all should be controlled.

- There is a positive relationship between time and business performance after implementing BPR. Many companies beset with extremely long time to deliver a product or services and cannot solve this issue because they have difficulties to bring products and services on idle time.

The causes of long cycle time are broad and diverse, and have a growing impact on operating results. However, recognizing and modifying the source obstacle should be made to attain major enhancements in business performance. The disadvantages of long time cycle can swing between customer dissatisfactions and loss of customer base, drop in sales, high cost because of non value added processes, destroying goodwill, and losing the business. Cycle time always should be pressed in all stages to achieve an idle time cycle from time that order is taken to delivering product and services. The process design must spotlight the customer's needs: high quality, short cycle time, and low cost.

In our interviews with account department we concluded that the new system causing them many errors since it's migrated with the old system, moreover other staff who use the output of account department were complaining about accuracy of work done. Therefore, we come through that account staffs were not well trained on the new system and/or not willing to accept this change.

Moreover, consumer finance department were referring any delay or errors in underwriting loans to the new system which is again show as the lack of knowledge or training to those employees.

These results are not limited to this research only; where in different scenarios of BPR implementation the results might be different and the relation between the dependant and the variables may vary due to several factors such as BPR implementation plan, post implementation procedures, organizational culture, management commitment, quality assurance. Etc...

CONCLUSION

BPR put forward hope of providing such improvement in cost, cycle time, quality, and use of capital to many enterprises. Reengineering is not riskless, and many have failed to reengineer. There are several victorious stories, like: Ford Motor, and IBM Credit. However, some will fail.

The reasons why reengineering efforts fail are often due to lack of executive leadership or due to organizational resistance therefore Companies need to have sufficient motivation to make significant changes for business and performance improvements. BCFC management was committed to change; it is ready for change, but information technology support was not up to the standards and the employees were not trained well on the new system and this obstacle mentioned previously in chapter four under challenges as follow high cost of change specifically the cost of high-end technology implementation and its obstacles may stand as barriers to the success of BPR solution, where advance technology needs a professional and well trained human resources in addition to a well stabilized infrastructure or even in many organizational development it will cost to outsource its technology based solutions to a vendor.

The concluded relations reflects BCFC experience in implementing their BPR solution and the inverse relation might be due to a failure of the BPR implementation in any phase of that project.

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