

An investigation into the Relationship between Business Processes Re-engineering (BPR) and Employees' Performance: An empirical study at the Jordanian public shareholding companies

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Abstract. *This study is aiming at exploring and analyzing the relationship between the three dimensions of Business Re-engineering Processes (Organization's Structural, Procedural and Technological) (BPR) and the three aspects of employees' performance (knowledge, skill, and attitude). The main results of this study have revealed that there is a positive, strong, and significant relationship between the BPR dimensions and employee performance. It also indicates that there is a statistically significant effect of the BPR dimensions on the employee's performance.*

Keywords: Business Processes Re-engineering, Employees' Performance, Organization performance.

JEL, Codes: M1, M11, L6

1. Introduction

BPR concept first emerged during the decade of the 90s. It was defined as “essential rethinking with a radical redesign of business processes to achieve considerable improvement in the main contemporary measures of performance, such as cost, quality, service, and speed,” [1]. It has been considered as a change in management program, of improving efficiency of the major processes throughout the implementation of some new approaches of modifying or/and eliminating the non-value adding activities to renewing process structure, organizational culture, improving the quality of services and reducing work time [2], [3], [4].

Willmott, [5], has stated that markets are witnessing essential changes that need an adaption of modern technologies particularly in terms of production operations, traditional innovation process to maintain a level of mass production of goods and services to satisfy the global market demand. If businesses do not adopt programs for changing their old systems, policies, and strategies, they will be out of the competition locally and globally or even totally disappeared [3], [6]. Childe et al. [7] argued that all types of changes adopted by a firm are customer satisfaction that is aiming at pleasing, aiming at pleasing, attracting, and retaining the firm's customers. Furthermore, encouraging and bolstering innovation activities to reinforce the firm's competitive position and ensuring efficient use of advanced technologies are other reasons for organizational changes. According to this direction, some other companies undertake changes to assure quality enhancement and cost reduction.

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On the other hand, very few firms adopt changes to carry out a re-engineering program that leads to an expansion of products and services diversity. Biazzo, [8], field study results have indicated that business environment has been changing rapidly, which has urged companies to change their operating methods to be able to meet customer expectations and maintain their survival. Many other studies were focusing on the importance of the strategic dimension of the re-engineering process [3], [9], [10], [11].

Some other studies were focused on the importance of the strategic dimension of the re-engineering process [12], [13]. Chan and Choi [14] study are concerned with the importance of linking BPR programs with the vision and strategic objectives of the organization. According to that, a group of researchers was interested in linking BPR to dramatic of the organization's competitive position [3], [15]. As traditional administrative methods have become inappropriate for the current working environment, in terms of tools, or tactics, therefore many contemporary business organizations have been highly concerned about the efficiency of their operations [16], [17], [18]. Zucchi and Edwards [19] have investigated a group of organizations that were implementing BPR program. Their main objective was to explore how the process of changing the role of a manager was handled. Jan has highlighted the impact of value-related information on operations managers' decisions, of supporting a redesigning process [20]. Box and Platts [21] considered the BPR as an administrative approach which includes a group of mechanisms for improving the way organizations is operating. It is a facilitating mean for improving managers' competitiveness capabilities by implementing several related strategies. Neglecting the emphasis on employees has been considered as one of the main reasons for the unsuccessful implementation of BPR system [22].

This neglecting is also led to a failure in the process of implementing a reengineering. Zucchi and Edwards, [19], believed that an organization's employees are the essential keys for a successful implementation of any new BPR procedures, processes, or modify organizational structures. It might be relevant to mention that the likelihood for a successful application of any type of technological advancement suitable for the organization's working environment totally depends upon its employees. Based on the results of the previous studies, it can be concluded that convincing qualified employees and equipped them by required skills, experiences, and relevant technological support would be a critical criterion for an organizations success. In other words, the reengineered processes cannot be successfully implemented without the presence of skillful, experienced, competent and empowered employees. BPR also requires a general review of each individual process, individual worker, and their activities using value and workflow analysis. Thus, business organizations need to provide an innovative means to maintain sustainable professional development of their employees, for example; the business organization needs to train their employees on the intensive use of information technology and computer networks to replace the paperwork, by an electronic work procedure especially in the developing countries. In this context, many researchers have emphasized the importance of measuring workers performance related to the implementation of BPR which should be followed by the introduction of appropriate modifications in the incentive and reward system to be in parallel with a successful implementation of BPR [16], [23].

2. Literature Review

2.1 Framework of BPR & Employees Performance

Business Processes Re-engineering (BPR) is a platform for wide change focusing on the core processes of an organization. Poirier and Walker [24] and Dissler [25] have pointed out that BPR is a fundamental rethinking and a radical re-design of an organization operations to achieve a super-intuitive improvement in the governance standards such as cost, quality, service, and speedy delivery. Harvey and Brown [26] asserted that BPR depends on re-examining and evaluating of each process related to its effects on the company

customers to achieve a significant leap in the total performance. BPR can be viewed as an operationally-oriented process that directly linked with product and customer, as well as; it is actually a management-oriented process that primarily based on organization resources. In general, the main sake of a BPR is to achieve the desired level of efficiency in all organizational processes and tasks by using means of assembling, shortening, and redesigning that overriding the currently used traditional methods. Barrier [27] has stated that the concept of BPR is actually focusing on customers through a restructuring of various organizational processes. The main requirements for BPR implementation include organizational structure re-design, providing high technological capability, increasing the effectiveness of completion processes, and an overall improvement of quality standards [28].

Management commitment, availability of IT infrastructure, effective training programs for employees, and enough financial resource all have been considered as the most important factors for a successful implementation of BPR [29]. Anand et al., [30] argued that the implementation of a BPR, can be accompanied by a deep analysis of business processes and systems, and periodically expand the organization database to maintain the redesign capacity. Gunasekaran and Kobu [31] have plainly determined BPR requirements according to the suggested model they have developed (organizational restructuring, behavioral changes, information technology). It might be reasonable to suggest that BPR is one of the modern development approaches directed towards a realistic and ambitious improvement covering all performance facets, particularly service, productivity, customer satisfaction, quality, and fast completion of work [32]. Therefore, this study has considered BPR as an administrative approach based on the use of a set of structural, technical and procedural processes to build a broad changing platform covering all types of the organizational tasks and smoothing out the improvement of employees' performance.

2.2 BPR implementation Requirements

The main requirements for BPR implementation by any business organization are the following: organization' structural, procedural factor, technological factor

2.2.1 Organization's Structural

The researchers have emphasized the importance of carrying out changes on the organizational structure to satisfy BPR implementation requirements. Carrying out an organizational structure changes is an essential step for a successful implementation of BPR programs [9], [10], [24], [27], [28], [30], [33], [34], [35], [36]. The existing unstable business environment requires a flexible organizational structure to maintain cooperation and coordination between all administrative units. This will also facilitate the transformation toward work teams as an effective method of doing business, shortening the time for transactions completion time, enhancing employees' performance level, boosting service delivery, and that will consolidate the competitive advantage of the firm. Hence, this sort of development would urge managers to dispense traditional organizational structures. Besides the challenges of the intensive competition, the contemporary organizations working environment is characterized by its volatility, fluctuations, and uncertainty. Therefore, to maintain their competitive advantage, business organizations need to rethink about the flexibility of their organizational structure. To assure a high level of organizational performance, employees' and customers' welfare must be taken into account weight when designing the organizational structure [37].

2.2.2 Procedural Factor

The adopted administrative and regulatory procedures to provide all the required resources for running the business should be compatible with the expected situations that emerge during BPR implementation phases. It is incorrect to state that a change in a company's internal procedures and practices is a prerequisite

for achieving the intended innovation and growth [31]. Business organization senior management should be called on to adopt appropriate methodologies for conducting a change in their business activities in response to the needs of the environmental changes or the internal needs of their organizations [38]. Business leaders need to consider the internal environment of their firms in the light of their external environments to be able to adopt the appropriate procedures and take the necessary actions during the stages of BPR implementation. It might be serviceable to mention that many researchers have individually addressed and analyzed the implications of this dimension in their studies. Some studies have focused on some other dimensions such as the commitment and support of senior management, related working environment, and organizational culture capable of absorbing change, [29], [33], [34], [35], [39].

Salimifard et al., [35], and Ahmad, et al., [34] argued that providing adequate financial resources is an important element for ensuring a successful implementation of BPR across the organizations.

Anjali and Dhruv [40] have suggested that the reengineering process is a radical change that causes work resistance. Organization's work procedures that directly impact customers and employees need to be under the focus of top management. To meet the intended application level of these procedures, management should encourage an employees' participation in setting organizational objectives, adopting an employees' empowerment procedure-in-place, enhancing workers skills, ability, and creativity. The implementation of BPR should be in parallel with an enlightening executive plan targeting the newly established procedures, the adoption of new policies, to rise the level of employees' assimilation of training programs and to encourage teamwork practices.

2.2.3 Technological Factor

Generally, technological factor includes the adoption, activation, and usage of advanced communication technology and networks to accelerate and activate the communication with customers in solving their issues promptly. As a distinguished approach, BPR is used to create an efficacious computer-based system able to facilitate the management of supply chain traceability with ensuring a flow-in for all types of information [41].

Organizations usually handle a great amount of data and information during their daily operations [42]. Besides the task of accelerating the data processing operations, information technology is also executing the integrating of operations to minimize errors and improving organization productivity [29], [43], [44]. Moreover, modern organizations have capitalized their incredible technological development to increase their productive capacity and improve the quality of their outputs. The macro-environmental forces viz technological, political, economic factors, etc. are among the major challenges facing contemporary business organizations. The macro-environmental forces viz. technological, political, economic, etc. are among the major challenges for contemporary business organizations [30]. The current advancement in the field of information technology has made the possession of modern IT as an imperative action has to be taken by business organizations to acquire the latest production and communication equipment and to attain mastery in term of optimizing their utilization. So, securing the intended expertise through technology-dependent learning and training program is a necessary step for the successful implementation of a BPR program.

2.3 Employees Performance

Neglecting the human being side will definitely lead to the failure of the BPR implementation program [45]. Champy [46] have suggested that employees should no longer be paid according to the old traditional way. In sated, employee's compensation should commensurate their performance, and their role in creating value-added [1], [47]. Due to a changing organizational structure, the executing of a BPR requires extra information about the effective ways for providing valuable feedback on employees' performance [48].

Apart from that, adopting a BPR usually leads to a dramatic change in the style and modes of operations across the organization [49]. This dramatic change requires adequate and constant executive management's support to meet the desired performance level. Contemporary organizations need competent employees to realize the re-engineering strategies, implement and facilitate change processes in their operations [48], [50].

Ivan [51] stated that to achieve organizational goals, it would be very important for employees to realize the priorities of their daily activities and practices. Since employees' performance represents an activity or program implementation, to pursue organizational objectives, therefore, the behavior of all individuals and teams must be directed towards the accomplishment of those objectives and maintaining an enhancement of organization competitive position which must keep under a very effective, and efficient, monitoring system. In fact, managers and employees are primarily accountable for identifying the gaps of competency level and objectives formulation process of their organizations to be in line with the main organizational goals to ensure performance improvements that lead to a sustainable increase of organizational productivity. It might be necessary to criticize what has been investigated by all studies mentioned above regarding the concept, importance, and implementations requirements of a BPR. First of all, we must admit that Business Processes Re-engineering is a must according to the nature of our current environment. A change has become a compulsory action has to be taken by all organization in general and business organizations in particular to ensure its survival. All that has been investigated by the previous studies is partially correct because it is one dimension-focus. A very necessary primary step for a successful implementation of BPR by any business organization is the conducting of a SWOT analysis to make the leaders and management team aware about the nature of the internal and external environments a company operates in. This awareness will positively affect all the following actions, such as building plans, formulating objectives, determining resources, finding funds.... etc. We must not forget that at the summit of all what has been stated is the human being who is the driver of the performance vehicle toward intended goals.

3. Methodology

This study concentrates on the re-engineering of the business organization's process as a necessity to maintain business efficiency and consolidate competitive advantage. It seeks to examine the relationship between a business's process re-engineering dimensions (BPRD) and employee's performance at a group of Jordanian public shareholding companies.

3.1. Participants

All the managers of the 14 Jordanian companies under study (the Jordanian public shareholding companies) were targeted by this study based on the Human resources department's records. The main characteristics of the study sample are portrayed by table (1). This table shows that 83.75 % of the participants are male, and 16.25 % are female. The majority of the sample is bachelor holders (65 %) while the lowest percentage is that of the Doctorate holders. (3 %). In term of tenure, it was found that 36.25 % of the sample have a service of 16--20 years and. In term of age, about 32% of the participants are 51 years. Table (2) illustrates the questionnaires distribution and percentage of return by the company.

Table 1: Sample Characteristics

Description	Category	Frequency	Percentage %
Sex	Male	67	83.75
	Female	13	16.25

	Total	80	100%
Education	Diploma	12	15
	Bachelor	52	65
	Master	13	16.25
	Doctorate	3	3.75
	Total	80	100%
Age	30 – 35 Years	19	23.75
	36 – 44 Years	11	13.75
	45 – 50 Years	24	30
	51 ---- Years	26	32.5
	Total	80	100%
Tenure	3 – 9 Years	8	10
	10 – 15 Years	21	26.25
	16 –20 Years	29	36.25
	21--- Years	22	27.5
	Total	80	100%

3.2. Study Hypotheses

Ho1: There is no statistically significant collective effect of Business's process re-engineering dimensions on employee's performance elements at the Jordanian public shareholding companies.

Ho2: There is no statistically significant relationship between Business's process re-engineering and employee's performance at the Jordanian public shareholding companies.

3.3. Data collection

To collect the required data, a three parts questionnaire was designed, its statements were formulated, and then it was evaluated, refereed, modified, tested, finalized, and distributed to the sample individuals. The first part was assigned to the participant's demographic information. The second part was concerned with measuring the independent variables, while the third part of the questionnaire was related to the dependent variable measurement. The Likert five scales measurement was used to quantify the participant's response to the questionnaire's statements. One hundred forty questionnaires were directly handed to the participants (all managers at the 14 Jordanian companies under study) by the researchers. Eighty questionnaires were correctly filled in and returned (57.14 %) which were used to conduct the intended statistical tests and analysis. Table (2) illustrates the distribution of the questionnaire and return by the company.

To classify the importance of the study variables (BPR Dimensions and employee's performance elements) according to the respondent's opinions, the averages and the standards deviations for these variables were calculated. Correlation coefficient analysis and multiple regression tests were executed to

identify the type of relationships between the study variables and to determine the Impacts, if any, of independent variables on the dependent's ones.

Table 2: Questionnaires Distribution

Company Name	Number of Questionnaires Distributed	Number of Questionnaires Return	% of Questionnaires Return
1-General Company for Mining	10	6	60
2- Arabian Aluminum Manufacturing Company	10	6	60
3- Jordanian Phosphate Mines Company	15	8	53.3
4- Jordanian Wood Industries Company	8	5	62
5- Jordanian Cement Factories	10	7	70
6- Arabian Potash Company	15	7	46.6
7- Jordanian Iron Company	9	6	66.6
8- National Aluminum Manufacturing Company	8	5	62.5
9- Magnesia Jordan Company	7	4	57.1
10 Jordanian Petroleum Refinery	10	5	50
11- National Steel Manufacturing Company	10	6	60
12- Paper and cardboard factories	10	5	50
13- National Chlorine Manufacturing Company	8	4	50
14- National Steel Manufacturing Company	10	6	60
Total	140	80	57.14

4. Results Discussion & Conclusions

4.1. Results Discussion

To classify the study variables (BPR Dimensions), the averages and the standards deviations for these variables were calculated. Table (3) portrays the results of this analysis, which indicate that the technological dimensions and the skills element were the top-ranking variables according to the participant's classifications. Correlation coefficient analysis and multiple regression tests were executed to identify the

type of relationships between the study variables and to determine the impacts, if any, of independent variables on the dependent variable.

Table 3: Respondent Classification of independent and Dependent Variables

Independent Variables	Mean	Standard deviation	Ranking	Importance level
Organizational structure	2.23	0.673	2	Low
Procedural	2.11	0.540	3	Low
Technological	2.51	0.740	1	Medium
Total	2.28	0.570		Low
Dependent Variables	Mean	Standard deviation	Ranking	Response level
Knowledge	2.22	0.51	2	Low
Skills	2.32	0.94	1	Low
Attitudes	2.13	0.76	3	Low
Total	2.22	0.62		Low

Table (4) portrays the correlation testing results. These results have indicated that the Business Process Re-engineering (BPR) Dimensions are collectively highly, positively, and significantly correlated with employee's performance. Where the correlation coefficient value is (0.858) and the determinant coefficient is (0.736) at 0.000 level of significance with calculated F value = 59.741 against (3.960) tabulate F value. These results mean that employees' performance at the companies under investigation is strongly correlated by Business Process Re-engineering (BPR) Dimensions and a change of one unit of these dimensions collectively will interpret about 70% of the change in the level of employee's performance change. These results confirm that the first null hypothesis (Ho1: There is no statistically significant collective effect of Business's process re-engineering dimensions on employee's performance elements at the Jordanian public shareholding companies.) should be rejected and the alternative hypothesis should be accepted.

Table 4: The Correlation between Business Process Re-engineering (BPR) Dimensions and the Employee's performance

Source of change	Total squares	Degrees of freedom Df	Average number of squares MS	R	R ²	F Calculated	F Tabulated	Level of Sig.
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Regression	6.789	3	6.786	0.858	0.736	59.741	3.96	0.000
Error	5.740	76	0.076					
Total	12.527	79						

In term of examining the impact of Business Process Re-engineering (BPR) dimensions on Employees performance regression analysis was conducted where the results of simple regression and stepwise regression analysis are presented in tables (5 & 6). Table (5) results ensure that the organizational structure dimension of Business Process Re-engineering (BPR) has a significant appositive impact on employee's performance at the 14 investigated companies as the Beta value is (0.488) at (0.002) level of significance with 4.988 calculated T value against (1.99) tabulated one. Table (6) results point out that organizational structure dimension has the best impact among other Business Process Re-engineering (BPR) dimensions on Employees performance at the 14 companies where its Beta value is (0.712) at 0.000 level of significant and (0.501) value of R2. These results are clearly suggested the second null hypothesis (Ho2: There is no statistically significant relationship between Business's process re-engineering and employee's performance at the Jordanian public shareholding companies) has to be rejected, and the alternative hypothesis needs to be accepted.

Table 5: The impact of Business Process Re-engineering (BPR) dimensions on Employees performance.

Dimensions of the independent variable	Unstandardized coefficient		Beta	T Calculated	T Tabular	Sig	R2
	β	Standard error					
Constant	1.023	0.312		2.332	1.99	0.002	0.597
Organizational structure	0.271	0.092	0.488	4. 988		0.002	
Procedural	0.320	0.062	0.155	5.981		0.007	
Technological	0.308	0.076	0.311	2..307		0.000	

Table 6: The stepwise regression of Business Process Re-engineering (BPR) dimensions against Employees performance

Dimensions	Unstandardized coefficients		Standardized coefficients	R	R2	Sig
	β	Standard Error	B			

Constant	1.779	0.244	0.712	0.712	0.501	0.000
Organizational structure	0.523	0.059				0.000
Constant	1.120	0.291				0.000
Organizational structure	0.389	0.066	0.530	0.762	0.580	0.000
Procedurals	0.310	0.086	0.326			0.001
Constant	1.015	0.284				0.000
Organizational structure	0.345	0.299	0.492	0.773	0.689	0.000
Procedurals	0.312	0.076	0.293			0.000
Technological	0.305	0.102	0.241			0.000

4.2. Conclusions

The above-discussed results have plainly indicated that business process reengineering has a positive, strong, and significant relationship with employee's performance at the 14 Jordanian companies under study. That might be due to the modernization of the organizational structure that conducted by these companies in response to the huge and rapid environmental changes, especially in the field of IT and its applications. The organizational structure impact on employee's performance must urge the management teams of these companies to pay extra attention to the possibility of conducting a periodical program for re-designing their company's organizational structure. The nature of their business imposes on them the use of new technologies and systems to keep their companies on track and maintain the intended level of satisfaction for their customers, and stockholders. Company good results, meeting its goals, its success, and having a distinguished competitive advantage is all the product of organization employees. That means that a business organization needs to satisfy and qualify its employees. Employee's satisfaction would achieve through a fair compensation system, good working conditions, and humanitarian organizational culture. Qualifying employees need sustainable training programs that provide them with the necessary skills to make them able to handle the new technologies, systems, methods, and devises.

It might relevant to suggest that management teams of the Jordanian public shareholding companies are called to maintain a sustainable acquisition of an updated IT means and systems by adopting a regularly-based business re-engineering policy to ensure a continuous improvement of their employee's performance, a high level of efficiency, good return and strong competitive advantage.

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Manuscript received: 06.04.2019

Manuscript received in revised form: 24.04.2019

Manuscript accepted: 26.06.2019