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The Impact of Business Process Reengineering on Cost Reduction of International Business Operating in the Middle East

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Abstract

This study aims to demonstrate the impact of BPR in reducing cost in international business organizations by analyzing the impact of decentralization, re-engineering organizational structures, re-engineering human resources, industrial process technology, improving total quality standards, and value engineering. The study population includes all the international business organizations operating in the Middle East, with the condition that they operate in at least four countries. The results showed that there is a significant effect of all dimensions of BPR in reducing costs in international business organizations operating in the Middle East. When studying the impact of the dimensions combined, the moral effect appeared at each processes (decentralization, re-engineering of human resources and industrial process technology), while the moral effect did not appear in (rebuilding organizational structures, improving total quality standards, and value engineering). This does not negate the importance of the impact of these dimensions, but rather shows a disparity between dimensions in reducing cost, when studying its combined effect. The study recommends that organizations should adopt modern management accounting methods, including value engineering, in order to identify and enhance activities that add value to the organization's operations, as well as identify and eliminate non-value adding activities, in order to reduce costs.

Keywords: Business Process Reengineering, Cost Reduction, International Business Organizations

JEL Classification Code: G3, G34, M14, O16

1. Introduction

The business environment is currently characterized by dynamism, speed of change, and increasing organizational levels, which has made it imperative for international business organizations to adapt to the changes and developments and confront them with efficiency and ability, in order to achieve long-term growth and continuity and maintain their competitive positions (Zraqat, 2020; Al-Basal et al., 2021). In light of the high intensity of competition and development in the business world and the accompanying significant changes in information and communication technology, in addition to the increasing changes in obtaining a high-quality product or service, the necessity of survival and continuity of international business organizations has become arduous and challenging. This is especially significant considering that many organizations lack the basic ingredients that fit these changes and motivate them to confront them (Prabowo et al., 2021; Innocenti et al., 2011). These changes reflect the nature of markets and a difference in the pattern of competition, which prompted organizations to highlight their different capabilities and competencies to adapt and interact with the new competitive environment and try to occupy a distinguished position in the market in order to achieve excellence and superiority over their competitors and gain a competitive advantage (Alotaibi et al., 2021).

Therefore, searching for new and advanced concepts has become one of the basic and necessary requirements to interact with the complex environment variables (Zraqat et al., 2021), and to maintain the survival and continuity

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of these organizations by strengthening them with various sources that achieve competitive advantages for them (Tobing et al., 2021; Hussien et al., 2017). The most important of which is the cost advantage as a current and future source that allows the organizations the opportunity to employ and exploit its capabilities and ability in light of the variables of the competitive environment (Zraqat, 2019). Hence, a new trend emerged that focused on the approach of business process re-engineering (BPR), which is considered one of the most appropriate contemporary methods and the best organizational models necessary for change in order to achieve a competitive advantage (Wan Hanafi & Daud, 2021; Sungau, 2019). The importance of BPR stems from the fundamental rethinking of operations, organizational structure, information technology, and job content in order to achieve tangible improvements in productivity (Chandna & Ansari, 2012).

Widespread globalization and its influence in different fields has resulted in high competitiveness among international business organizations. The senior management of organizations need to follow various methods and strategies that support and increase their competitiveness by cost-reduction (Chandra & Kumar, 2000). Many international business organizations do not use modern accounting and administrative methods and techniques effectively, and they do not give BPR the appropriate importance in order to reduce the production costs, which negatively affects their performance and competitive position (Al-Basal et al., 2021).

This study is important in view of the link between BPR and cost reduction with the developments of the times and the rapid changes in the economic environment, and the resulting increase in the intensity of global competition in the industries market, which has burdened the organizations and has reduced them to weaker competitive positions. Implementation of BPR enhances the competitiveness of organizations in light of the intense competition they face in the present day business environment, which requires international business organizations to devote efforts towards stimulating the use of modern methods to enhance their value in the market and increase their ability to stand up to the competition and confront it. Therefore, it is expected that the results of this study will have a significant impact on the decision-makers in the departments of international business organizations to direct them towards the application of modern means and methods through the BPR. The importance of the study also stems from the need for the management of international business organizations to strive for excellence in reducing costs and identifying the resources and capabilities available for the purpose of reducing costs in products and business operations.

The study mainly aims to demonstrate the impact of BPR in reducing cost of the international business organizations by studying the impact of decentralization, re-engineering organizational structures, re-engineering human resources, industrial process technology, improving total quality standards, and value engineering. This study also aims to come up with a set of recommendations and suggestions that support the application of process re-engineering in international business organizations operating in the Middle East region.

The problem of the study can be expressed in answering the following questions:

Is there an impact of BPR on reducing costs in international business organizations operating in the Middle East?

The following sub-questions emerge from this question:

1. Is there an impact of the trend towards decentralization in reducing costs in international business organizations operating in the Middle East?
2. Is there an impact of reengineering organizational structures in reducing costs in international business organizations operating in the Middle East?
3. Is there an impact of human resource re-engineering in reducing costs in international business organizations operating in the Middle East?
4. Is there an impact of improving total quality standards in reducing costs in international business organizations operating in the Middle East?
5. Is there an impact of industrial process technology in reducing costs in international business organizations operating in the Middle East?
6. Is there an impact of value engineering in reducing costs in international business organizations operating in the Middle East?

2. Literature Review

The progress and development that the business environment is still witnessing, and the accompanying events and changes, have prompted the organizations of this environment to move towards making fundamental changes and a qualitative shift in their organizational structures (Masumi, 2013), reconsidering and updating their operations and information to increase their ability and efficiency to keep pace with the changes that occur in the work environment (Menon, 2019), and meet its data and requirements in a way that guarantees it the ability to compete, survive and continue (Alharafsheh et al., 2021). Bringing about change in the organizational structure primarily aims at giving organizations the flexibility and ability necessary to achieve their goals in order to serve their future directions and strategic plan and enhance their competitive advantage (Srinivas et al., 2021). There has been tremendous technological development in the recent times and global communication network (the Internet)

has entered all aspects of the society. BPR is being used in many organizations, factories, ministries and universities as it contributes significantly in reducing cost and time as well as improving the quality of products and services offered by organizations (Karlsson, 2014).

The concept of BPR is one of the key factors in development, which focuses on the rapid and fundamental re-design of strategic administrative processes with added value. This is in addition to other factors such as reconsidering systems, policies, and organizational structures, in order to raise the level of performance, improve and develop it, maximize the productivity of the organization, and modernize it quantitatively and qualitatively in order to reach customer satisfaction (Li & Nazif, 2021). The beginning of the spread of the concept of BPR dates back to the early nineties of the last century under the name of process re-design, and the credit for this is attributed to American researchers (Champy & Hammer, 1993), when they issued a book entitled "Re-engineering organizations: An Introduction to the Business Revolution", which left a wide echo in the world of management. This book gave different ideas and innovative proposals calling for a review of the organization's activities and operations and the procedures it follows, upon which its organizational structure is built through carrying out production and management operations, and replacing it radically and completely to suit the events and changes that is experienced by the business environment (Nkomo & Marnewick, 2021), thus increasing its ability to achieve the organizational goals.

Champy and Hammer (2009) referred to BPR as returning to the starting point, and starting again and in a different way from what was prevalent, in the sense of completely abandoning the existing processes and not being concerned with correcting or restoring it and not focusing on making formal improvements that leave the infrastructure and basic work procedures to what they were. In order to find out the meaning of the term BPR with some accuracy and detail, the two researchers redefined it again, in 1995, and referred to it as rethinking and making a radical design for all the administrative activities and processes to bring about improvements and fundamental changes in the performance standards such as cost, speed, quality and service. This definition refers to three things, namely: First, that BPR is a process that requires starting over, which does not necessarily mean working to address defects in work processes, but rather abandoning those processes completely and thinking in a new way. Second: BPR is based on reconsidering the basic work systems and procedures and re-correcting them in a new and different way. Finally, the objective of BPR lies in the pursuit of modernization and development of performance in the organization.

Bayomy et al. (2021) considers that re-engineering is a suggested solution when the current system is not working satisfactorily or when significant system improvements are required to simulate competitive enterprises. Elapatha and Jehan (2020) define BPR as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures on performance". Many organizations have implemented business reengineering since 1990 but the success rate is low (Nzewi et al., 2015). The BPR cycle consists of four steps that must be followed in order, each step taking care of different aspects of BPR, and this cycle is illustrated as in Figure 1.

BPR is a management tool through which business processes are examined and re-engineered to improve cost efficiency and service effectiveness (Pasaribu et al., 2021). Many international business organizations have invested heavily in BPR by leveraging information technology to improve services and reduce costs in many areas including finance, human resources, business intelligence, education, learning and advancement (Windarto et al., 2021). Penrod and Dolence (1992) considered BPR as an appropriate way to ensure that organizations adapt to the changing demands placed upon them. Administrative complexity in international business organizations requires effectiveness and efficiency in administrative processes. Al-Hattami et al. (2019), indicates that BPR contributes to cost-effectiveness. Meanwhile, Lucas (2016) found that BPR requires support from an effective information technology (IT) system so that it can overcome insufficient budget gaps in business operations. Pasaribu et al. (2021) concluded that BPR supported by technology systems in organizations is very important to increase efficiency and reduce costs.

The process of reducing costs is defined as reaching to the lowest level of costs compared to the previous level, such as using machines and equipment that perform the same operations at lower costs, maximizing production quantities at the same value of costs, acquiring materials and products at lower costs compared to the previous one (Hussien et al., 2021), or making a changes and modification in policies, methods and practices work to reduce wastage of time or reduce overtime costs of work (Arnold et al., 2008). This process is of the highest importance to organizations due to its impact on the returns and profits of the organization, ensuring its growth and continuity, and achieving the purpose of that process requires following a series of methods, policies and practices derived from the reality of the organization, its environment and the nature of its work (Hussien, 2021) and achieving interaction and participation between all individuals and stakeholders of the organization, especially who are in a position of accountability (Goetsch & Davis, 2013).

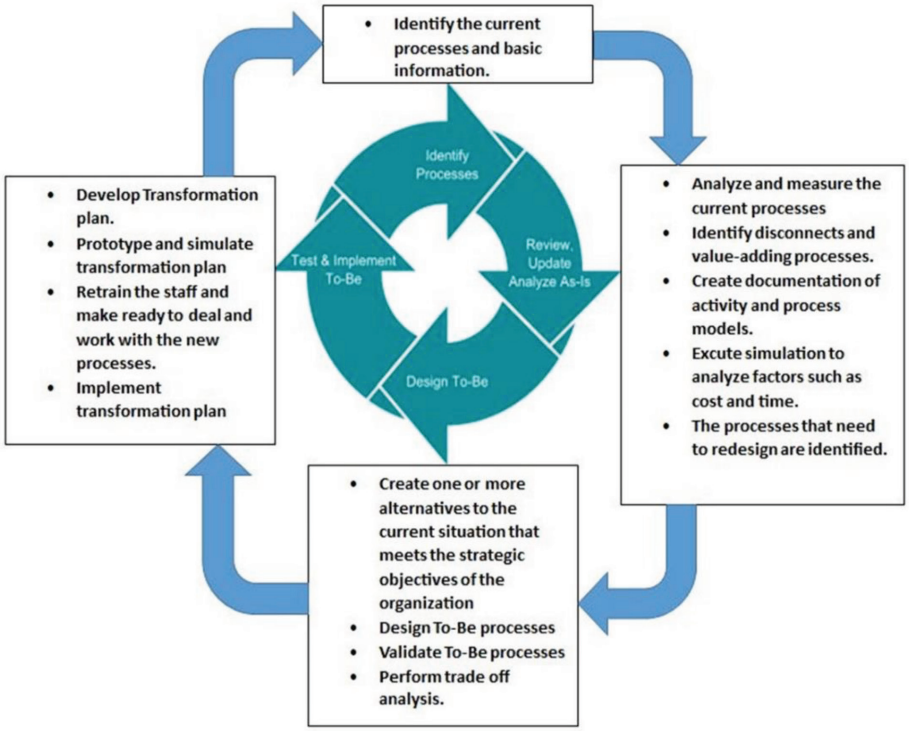

Figure 1: BPR Life Cycle (Bayomy et al., 2021)

The BPR method is considered as one of the modern methods used in reducing the volume of production costs, as the role of this method is to reduce the costs of activities and operations and reduce non-value-adding activities and processes, by re-designing the application of production processes, their flowchart and their distribution (Al-Basal et al., 2021).

BPR reduces costs through several steps:

First: Defining the operations activities are necessary to perform each specific production process, and then classifying them into groups that include simplified and miniature steps involved in the implementation of the production process (Sudarman et al., 2021), which facilitates the process of tracking and identifying those that do not add value to the products and process and thus predicting the actual time taken to perform the work (Bhaskar, 2014).

Second: Analyzing the value of operations activities and work steps and classifying them into groups, which facilitates their study and quantification of their costs, resources and capabilities used in them (Parry et al., 2010).

Third: Analysis of the flow of operations activities within the departments and organizational units within the organization, which facilitates the process of determining the time taken to perform the steps and stages of that process and the steps that do not add value (Browning, 1998).

Fourth: Determining responsibility centers by determining the costs of activities and operations, activating responsibility accounting procedures, and participating in the application of the BPR method (Dungtripop & Srisuwan, 2021; Mahmud et al., 2018).

The application of BPR to gain customer satisfaction, and providing the appropriate climate to ensure its growth and continuity (Masumi, 2013). BPR is applied by a decision issued by the organization's management (Goksoy et al., 2012), and taking that decision is subject to many factors, namely: Cost, by comparing the costs of implementing BPR with the costs of maintenance, modernization, development and innovation of a new system (Grover et al., 1995). Time, by specifying the period of time that the process of BPR, and the life span of that process (Hong & Kim, 2002). Risk, by identifying the effects generated by the performance of the BPR operations, and the attendant price inflation (Ozcelik, 2010). Finally, the benefits, by defining the benefits that the organization derives from its application of the BPR (Jurisch et al., 2014).

By reviewing the previous literature, the following hypotheses can be formulated:

H0: *There is no statistically significant effect of BPR on reducing costs in international business organizations operating in the Middle East.*

The following sub-hypotheses are derived from this main hypothesis:

H1: *There is no statistically significant effect of the trend towards decentralization in reducing costs in international business organizations operating in the Middle East.*

H2: *There is no statistically significant effect of reengineering organizational structures in reducing costs in international business organizations operating in the Middle East.*

H3: *There is no statistically significant effect of human resource re-engineering in reducing costs in international business organizations operating in the Middle East.*

H4: *There is no statistically significant effect of improving total quality standards in reducing costs in international business organizations operating in the Middle East.*

H5: *There is no statistically significant effect of industrial process technology in reducing costs in international business organizations operating in the Middle East*

H6: *There is no statistically significant effect of value engineering in reducing costs in international business organizations operating in the Middle East.*

3. Methodology

This study is classified in terms of nature as an experimental study, and in terms of purpose it is illustrative, as it works to discover the impact of BPR on reducing costs in international business organizations.

3.1. Population and Sample

The study population includes all international business organizations operating in the Middle East, where organizations operating in at least four countries were selected, and the number of these organizations reached (128) organizations. A sample of (72) organizations was selected, the organizations that expressed willingness to participate in answering the questionnaire for this study. The general managers and their deputies and directors of departments and sections related to financial matters, production, sales, marketing, procurement, and supply in each organization were targeted. (450) questionnaires were distributed, and (380) questionnaires were returned, of whom (367) were able to be analyzed.

3.2. Data Sources

The study relied on a questionnaire to collect the necessary data to conduct the study. The questionnaire was prepared by reviewing the administrative theories related to the subject of the study, in addition to the literature related to the subject of the study. The questionnaire consisted of three parts, where the first part included demographic variables, the second part was the independent variable "dimensions of BPR", and the third part included the dependent variable "cost reduction".

4. Results and Discussion

To test the suitability of the study data for linear regression analysis and parametric tests, multiple linear correlation was tested, where this phenomenon indicates the presence of a near-perfect linear correlation between two or more variables, which inflates the value of the coefficient of determination R^2 and makes it greater than its actual value. Therefore, the Pearson correlation coefficient and the value of the variance inflation coefficient for each variable were calculated according to the hypothesis being tested, and the results were as follows (Table 1).

Table 1 shows that the highest correlation between the independent variables is (0.798) between the two variables (decentralization) and (industrial process technology), and this may indicate the existence of the phenomenon of multiple linear correlation between the independent variables, as the correlation coefficient values that exceed (0.80). Which is an indication that the sample suffers from the problem of multiple high linear correlation for the independent variables (Guajarati, 2004, 359).

To confirm that the sample is free from the problem of multiple correlation, the Variance Inflation Factor (VIF) was calculated at the dimensions of the independent variable to

Table 1: Correlation Matrix for Independent Variables

Variables		1	2	3	4	5	6
1	Decentralization	1.000					
2	Rebuilding Organizational Structures	0.424**	1.000				
3	HR Reengineering	0.519**	0.474**	1.000			
4	Improving Total Quality Standards	0.429**	0.543**	0.321**	1.000		
5	Industrial Process Technology	0.798**	0.446**	0.534**	0.412**	1.000	
6	Value Engineering	0.536**	0.665**	0.412**	0.319**	0.578**	1.000

ensure that there is no multiple linear correlation between all the independent variables, and the results were as follows (Table 2).

Table 2 shows that the values of the variance inflation coefficient were all greater than 1 and less than 10, and the Tolerance value was between 0.1 and 1, which confirms the absence of the problem of multiple linear correlation between all the variables of the independent study (Gujarati, 2004, 253).

In order to test the hypotheses, multiple linear regression analysis was used. The results were as follows (Table 3).

The results of Table 3 indicate that the correlation coefficient (R = 0.543), refers to the relationship between independent and dependent variables, the effect of independent variables (BPR) dimensions on the dependent variable (Reducing Costs) is statistically significant where the value of the calculated F is (227.614) and the level of significance (Sig = 0.000) is less than (0.05), where the value of the coefficient of determination (R^2 = 0.295) indicates that 29.5% of the variation in Reducing Costs can be explained by the variation in (BPR) combined.

The table of coefficients showed that the value of B at (Decentralization) reached (0.201) and that the value of T is (4.549) with the level of significance (Sig = 0.002), which is less than 0.05, indicating that the effect of this dimension is significant. Accordingly, we reject the first null hypothesis, and accept the alternative hypothesis: There is a statistically significant effect of the trend towards decentralization in reducing costs in international business organizations operating in the Middle East. The table of coefficients showed that the value of B at (Rebuilding Organizational Structures) reached (0.022) and that the value of T is (0.484) with level of significance (Sig = 0.629), which is more than 0.05, indicating that the effect of this dimension is not significant.

Accordingly, we accept the second null hypothesis: There is no statistically significant effect of reengineering organizational structures in reducing costs in international business organizations operating in the Middle East. The table of coefficients showed that the value of B at (HR Reengineering) reached (0.834) and that the value of T is (27.757) with level of significance (Sig = 0.002), which is less than 0.05, indicating that the effect of this dimension is significant. Accordingly, we reject the third null hypothesis, and accept the alternative hypothesis: There is a statistically significant effect of human resource re-engineering in reducing costs in international business organizations operating in the Middle East. The table of coefficients showed that the value of B at (Improving Total Quality Standards) reached (0.023) and that the value of T is (0.769) with level of significance (Sig = 0.443), which is more than 0.05, indicating that the effect of this dimension is not significant.

Table 2: Results of the Multiple Correlation Test Between Independent Variables

Variables	VIF	Tolerance
Decentralization	2.323	0.415
Rebuilding Organizational Structures	1.954	0.329
HR Reengineering	2.357	0.492
Improving Total Quality Standards	1.875	0.621
Industrial Process Technology	2.925	0.538
Value Engineering	3.259	0.402

Table 3: Test Results of the Effect of BPR in the Middle East

Dependent Variable	Independent Variables	Coefficients Table			
		B	**Standard error**	**Calculated *T***	**Sig *t****
Reducing Costs	Decentralization	0.201	0.044	4.549	0.000
	Rebuilding Organizational Structures	0.022	0.045	0.484	0.629
	HR Reengineering	0.834	0.030	27.757	0.002
	Improving Total Quality Standards	0.023	0.030	0.769	0.443
	Industrial Process Technology	0.282	0.048	5.910	0.004
	Value Engineering	0.071	0.041	1.743	0.072
R		**0.543**			
R^2		**0.295**			
Calculated *F* value		**227.614**			
Sig. *F**		**0.000**			

*The effect is statistically significant at level ($\alpha \leq 0.05$).

Accordingly, we accept the fourth null hypothesis: There is no statistically significant effect of improving total quality standards in reducing costs in international business organizations operating in the Middle East. The table of coefficients showed that the value of B at (Industrial Process Technology) reached (0.282) and that the value of *T* is (5.910) with level of significance (Sig = 0.004), which is less than 0.05, indicating that the effect of this dimension is not significant. Accordingly, we reject the fifth null hypothesis, and accept the alternative hypothesis: There is a statistically significant effect of industrial process technology in reducing costs in international business organizations operating in the Middle East. The table of coefficients showed that the value of B at (Value Engineering) reached (0.071) and that the value of *T* is (1.743) with level of significance (Sig = 0.072), which is more than 0.05, indicating that the effect of this dimension is not significant. Accordingly, we accept the sixth null hypothesis: There is no statistically significant effect of value engineering in reducing costs in international business organizations operating in the Middle East.

Based on the above, we reject the main null hypothesis and accept the alternative hypothesis: "*There is no statistically significant effect of BPR on reducing costs in international business organizations operating in the Middle East*".

5. Conclusion

The study mainly aims to demonstrate the impact of BPR in reducing cost of international business organizations by studying the impact of decentralization, re-engineering organizational structures, re-engineering human resources, industrial process technology, improving total quality standards, and value engineering in reducing cost in international business organizations. The study population includes all international business organizations operating in the Middle East, where organizations operating in at least four countries were selected. The general managers and their deputies and directors of departments and sections related to financial matters, production, sales, marketing, procurement, and supply in each organization were targeted.

The results showed that the attitudes of the study sample members were towards the existence of an application of BPR in international business organizations operating in the Middle East, at a high level, and it was found that the adoption of industrial process technology was one of the most important dimensions of BPR, while it was found that value engineering was the least important. Although all dimensions of BPR were shown to be of high relative importance. It was also found that international business organizations operating in the Middle East seek to reduce costs at a high level, and it was found that the continuous review of the costs of activities, products and processes is one of the most important methods used to reduce costs, but the focus on activities that add value, and the deletion of activities that do not add value, has been shown to be of medium relative importance. The results of testing the hypotheses subordinate to the main hypothesis of the study indicated that there is a significant effect of all dimensions of BPR in reducing costs in international business organizations operating in the Middle East, when studying the impact of the dimensions combined, and the moral effect appeared at each process (decentralization, re-engineering of human resources and industrial process technology), while the moral effect did not appear in (rebuilding organizational structures, improving total quality standards, and value engineering), and this does not negate the importance of the impact of these dimensions, but rather shows a disparity between dimensions in reducing cost, when studying its combined effect.

Based on the obtained results, the study recommends the need to increase attention to the development of the human element, by identifying training needs that increase the ability of employees to innovate and be creative. Providing the opportunity for employees to participate in the development of plans related to departments and administrative units, especially those in which they work and are compatible with the capabilities of the organization. It is also advised to increase the level of power of administrators to activate and achieve decentralization, and to involve them in the process of developing an organization's strategic plans. There is a need to update the organizational structures in international business organizations so that they becomecapable of modernization and development in line with the developments that occur in the environment in which the organization operates. It adopts the modern technology necessary for the success of the BPR processes, and conducts research and continuous studies to identify obstacles for its effective application. It is also advised to link the administrative levels in the organization to the level of technology used at each administrative level, and the information needed by the administration, with the aim of reducing administrative levels. Organizations should also adopt modern management accounting methods, including value engineering, in order to identify and enhance the activities that add value to the organization's operations, as well as identify and eliminate non-value-adding activities, in order to reduce costs. The study also concludes that linking the cost system applied by the organization to the ability to measure the actual performance of the elements and components of the product and the production processes, in order to ensure the quality of operations in exchange of cost reduction.

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