

The impact of business process re-engineering on organizational performance: A study of Saudi Pharmaceutical Industries and Medical Appliances Corporation (SPIMACO)



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ARTICLE INFO

Article history:

Received 5 December 2025

Received in revised form

25 May 2026

Accepted 18 August 2026

Keywords:

Business process re-engineering

Organizational performance

Organizational structure

Employee empowerment

Organizational culture

ABSTRACT

This research investigates the effect of business process re-engineering on organizational performance at Saudi Pharmaceutical Industries and Medical Appliances Corporation (SPIMACO). A descriptive research approach was employed, with data collected through a structured questionnaire administered to a sample of 120 employees. The instrument assessed four core dimensions of process re-engineering: restructuring of the organizational structure, top management commitment and support, employee empowerment, and organizational culture. The results indicate that all dimensions achieved high mean scores, with values of 3.401 for organizational structure, 3.402 for top management commitment and support, 3.592 for employee empowerment, and 3.559 for organizational culture. Statistical analysis further revealed a significant effect of business process re-engineering and its dimensions on organizational performance at the ($\alpha \leq 0.05$) significance level. The findings suggest that the systematic implementation of process re-engineering enhances organizational performance by increasing structural adaptability, strengthening managerial commitment, encouraging employee participation, and fostering a supportive organizational culture. Accordingly, the study recommends integrating business process re-engineering as a strategic mechanism to achieve sustained performance improvement and strengthen competitive positioning within the healthcare and pharmaceutical sector.

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1. Introduction

Organizations strive tirelessly to undergo a basic transformation and develop organizational and informational structures to keep pace with environmental changes (Leso et al., 2023). This effort aims to enhance competitiveness and sustainability in a dynamic market, involving improving operations through strategic decision-making and effective monitoring of changes to bolster competitive advantage (Roszkowska and Melé, 2021).

The distinction of business organizations is linked to their ability to interact with the development of process re-engineering and its reflection on organizational performance. Khdair

(2021) pointed out that business process re-engineering is not an end in itself but rather a means and a natural phenomenon inherent in all organizations, characterized by dynamism. It continues to evolve and expand despite challenges and changes, effectively responding to opportunities while adapting to difficulties (Akpa et al., 2021).

Business process re-engineering is regarded as a fundamental initiative for companies seeking to improve their performance, as reflected in its clear association with organizational outcomes (Shahul Hameed et al., 2022). The Saudi Pharmaceutical Industries & Medical Appliances Corporation (SPIMACO) is not unfamiliar with the global trend toward improving competitiveness and production processes (Alshehri et al., 2023). Yameen et al. (2019) argued that the most successful companies are those capable of adapting to change while achieving success. Business process re-engineering is considered a key driver of development, as it focuses on elements such as flexibility, speed, design, and radical change to improve productivity within organizational structures. Olannye et al. (2023) also pointed out that business process re-engineering

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<https://doi.org/10.21833/ijaas.2026.08.014>

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revolves around implementing fundamental transformations aimed at enhancing productivity and effectively meeting customer needs (Akpa et al., 2021). Additionally, it aims to increase management efficiency and effectiveness by making fundamental improvements to organizational structures.

It is worth mentioning that organizational performance is a fundamental component within modern management concepts, manifested in the implementation of plans and strategies within company walls, resulting in outstanding organizational performance and outputs that enhance companies' competitiveness (Olannye et al., 2023). SPIMACO, like other economic sectors, actively works to enhance competitiveness and improve organizational performance by adopting process re-engineering strategies (Alzahrani and Harris, 2021). This company holds strategic importance in the Saudi national economy, receiving substantial support from the government, which takes tangible measures to support this sector and enhance its competitiveness in both local and global markets (Tawfik et al., 2022).

Despite the growing interest in business process re-engineering, limited empirical research has examined how its key organizational dimensions jointly influence organizational performance within the Saudi pharmaceutical and medical supplies sector. This gap is particularly important in the case of SPIMACO, which operates in a competitive and highly regulated environment shaped by quality requirements, operational efficiency demands, and the broader objectives of Saudi Vision 2030. Accordingly, the present study aims to examine the impact of business process re-engineering, through organizational structure restructuring, top management commitment and support, employee empowerment, and organizational culture, on organizational performance at SPIMACO. In doing so, the study contributes context-specific evidence on how re-engineering dimensions interact with performance outcomes in an under-examined Saudi industrial setting.

SPIMACO operates within a highly regulated Saudi healthcare and pharmaceutical supply environment characterized by increasing demands for efficiency, quality compliance, and responsiveness (Al-Omar et al., 2020). In alignment with Saudi Vision 2030, firms in this sector are under pressure to modernize operational workflows, strengthen governance, and enhance performance outcomes through organizational transformation initiatives. Business process re-engineering (BPR) provides a suitable theoretical lens for examining such transformation because it focuses on radical redesign of core processes to achieve measurable gains in cost, speed, quality, and service (Alshehri et al., 2023). In this study, BPR is conceptualized as a multidimensional construct encompassing (i) organizational structure restructuring, (ii) top management commitment and support, (iii) employee empowerment, and (iv) organizational culture, which together shape the organization's

capacity to implement change and sustain performance improvement.

Against this background, the following section reviews the relevant literature on business process re-engineering and organizational performance, with particular attention to the structural, managerial, human, and cultural dimensions that shape performance outcomes.

2. Literature review

This section reviews the literature relevant to business process re-engineering and organizational performance, with particular attention to organizational restructuring, top management support, employee empowerment, and organizational culture.

Existing studies largely agree that BPR is associated with improved organizational performance; however, the strength and direction of these relationships vary by context and implementation conditions. A recurring limitation in prior work is the tendency to examine BPR dimensions in isolation or to treat them as uniformly positive predictors. In practice, BPR outcomes depend on the organizational configuration: structural flexibility can enable faster decision cycles, top management support can reduce resistance and secure resources, empowerment can improve problem-solving at the operational level, and culture can either amplify or neutralize change efforts (Alyahya et al., 2020). Therefore, the present study adopts an integrated framework that tests the simultaneous contribution of four BPR dimensions to organizational performance within the Saudi pharmaceutical and medical supplies context, addressing an under-examined setting in the literature.

2.1. Organizational change and process re-engineering

Organizations increasingly operate in environments characterized by technological change and competitive pressure (Harika et al., 2021), alongside rising expectations for efficiency and responsiveness in contemporary organizational settings (Roszkowska and Melé, 2021). Under such conditions, incremental improvement is often insufficient, which explains the continuing relevance of business process re-engineering as a change-oriented managerial approach. Rather than focusing on minor adjustments, re-engineering emphasizes the fundamental redesign of core processes to achieve substantial improvements in organizational outcomes such as speed, quality, cost efficiency, and service effectiveness (Wang et al., 2024). From this perspective, process re-engineering is not merely a technical intervention, but an organizational transformation strategy whose success depends on how structural, managerial, and human factors are aligned during implementation (Akpa et al., 2021).

2.2. Conceptual framework of process re-engineering

Conceptually, business process re-engineering can be understood as a multidimensional organizational framework rather than a single isolated practice. The effectiveness of re-engineering lies in its holistic character, as it extends beyond procedural modification to include broader organizational redesign. Khdair (2021) indicated that re-engineering becomes more effective when it is linked to administrative change that improves work performance rather than being treated as a narrow technical adjustment. Accordingly, the present study treats organizational structure restructuring, top management commitment and support, employee empowerment, and organizational culture as interconnected dimensions through which re-engineering may influence organizational performance. This integrated view is consistent with prior research showing that the performance effects of re-engineering become more meaningful when strategic and organizational dimensions are considered together, and when process redesign is connected to broader organizational improvement outcomes (Shahul Hameed et al., 2022).

2.3. Organizational restructuring as a driver of performance

Organizational restructuring constitutes a key dimension of process re-engineering, as it provides the structural foundation necessary for redesigned processes to function effectively (Olannye et al., 2023). Organizational structures are not static arrangements; rather, they evolve in response to organizational growth, environmental pressures, and strategic objectives (Aljlayel, 2020). Fetais et al. (2022) suggested that restructuring enhances competitive advantage by streamlining hierarchies, clarifying roles, and improving coordination across functional units. Additionally, learning-oriented and adaptable structures have been associated with higher levels of organizational performance. Al-Omar et al. (2020) noted that organizational frameworks enable knowledge sharing and continuous improvement, which are essential for sustaining performance in dynamic environments. These findings are further reinforced by Leso et al. (2023), who demonstrated that organizational structure plays a critical role when combined with leadership and culture in supporting transformation initiatives.

2.4. Role of leadership

The literature consistently identifies top management support as a decisive factor in the success or failure of process re-engineering initiatives. Leadership commitment provides strategic vision, legitimizes change efforts, and ensures the availability of necessary resources

(Harika et al., 2021). Shahul Hameed et al. (2022) argued that organizations lacking managerial support often encounter resistance that undermines the potential benefits of re-engineering.

Employee empowerment also emerges as a vital element of successful process re-engineering (Almahirah, 2020). Re-engineered processes typically require employees to exercise autonomy and engage in problem-solving activities. Research indicates that empowered employees exhibit higher motivation and contribute more effectively to organizational outcomes.

Furthermore, organizational culture significantly shapes the extent to which process re-engineering can be successfully implemented. Cultures that emphasize innovation, collaboration, and openness to change are more conducive to performance improvement initiatives (Akpa et al., 2021). Conversely, rigid cultural norms may limit the effectiveness of re-engineering efforts, even when formal structures and systems are redesigned (Leso et al., 2023).

2.5. Process re-engineering within the Saudi pharmaceutical context

The pharmaceutical and medical supplies sector represents a highly regulated and technologically intensive industry, where efficiency and quality are critical determinants of success (Tawfik et al., 2022). In Saudi Arabia, national development strategies have accelerated the growth and localization of pharmaceutical manufacturing, emphasizing the need for advanced managerial and operational practices (Alzahrani and Harris, 2021).

The study by Alshehri et al. (2023) indicated that Saudi pharmaceutical companies increasingly rely on digital transformation, process integration, and quality-oriented strategies to enhance performance. Mahmood et al. (2024) further revealed that challenges following ERP implementation highlight the necessity of continuous process re-engineering to maintain operational effectiveness.

SPIMACO reflects these industry-wide trends. Since its establishment in 1986, the company has pursued strategic initiatives aimed at operational excellence, innovation, and expansion into global markets (Wang et al., 2024).

Despite the growing body of literature on business process re-engineering and organizational performance, limited empirical research has examined the combined influence of organizational restructuring, top management support, employee empowerment, and organizational culture within Saudi pharmaceutical companies. Existing studies often address these dimensions independently or focus on different sectors.

Accordingly, the present study seeks to address this gap by empirically investigating the impact of process re-engineering, through its multiple dimensions, on organizational performance at SPIMACO.

By contextualizing re-engineering within the Saudi pharmaceutical industry, the study contributes to both theoretical development and managerial practice, particularly in light of ongoing organizational and Vision 2030. Based on this gap, the study adopts a quantitative methodological approach to examine the relationship between BPR dimensions and organizational performance in SPIMACO.

3. Methodology

This section explains the research design, sampling procedure, instrument development, validity and reliability procedures, ethical considerations, and statistical techniques used to test the study hypothesis.

The present study adopted a descriptive-analytical research design and employed inferential statistical techniques to examine the relationship between business process re-engineering and organizational performance (Taylor et al., 2015). The Statistical Package for the Social Sciences (SPSS) was used to analyze the data. To achieve the objectives of the study, a structured questionnaire was developed as the primary data-collection instrument. The questionnaire was based on a five-point Likert scale and included 23 items designed to assess four dimensions of business process re-engineering: organizational structure restructuring, top management commitment and support, employee empowerment, and organizational culture.

The study population consisted of 610 employees working at SPIMACO across different administrative levels, including senior, middle, and operational staff, during the data-collection period. A simple random sampling approach was adopted to enhance representativeness across job levels and reduce selection bias. From this population, a sample of 120 employees was selected, and all the questionnaires collected were retained in analyzable form for the final analysis. The questionnaire was developed based on prior BPR and organizational performance literature and aligned with the four study dimensions (organizational structure restructuring, top management commitment and support, employee empowerment, and organizational culture). Content validity was assessed through an

expert review panel of 10 faculty members who evaluated item clarity, relevance, and dimensional alignment. Based on their feedback, wording refinements were made to improve interpretability and contextual fit for SPIMACO.

Prior to full administration, the instrument was pilot tested with 17 employees who were not included in the main sample to assess item comprehensibility, completion time, and preliminary reliability. Reliability was assessed using Cronbach's alpha on the pilot sample, indicating acceptable-to-excellent internal consistency across the scale and its sub-dimensions. Table 1 presents the reliability coefficients for the study instrument. The Kolmogorov-Smirnov test was used by the researcher to verify the normal distribution of the data, as illustrated in Table 2.

Table 1: Cronbach's alpha

Variable	Cronbach's alpha
Process re-engineering	0.930
Rebuilding the organizational structure	0.747
Commitment and support from top management	0.713
Empowering employees	0.871
Organizational culture	0.898

Table 2: Normal distribution of variables

Variable	Kolmogorov-Smirnov	Sig.	Finding
Process re-engineering	3.762	0.053	Normal
Rebuilding the organizational structure	3.372	0.065	Normal
Commitment and support from top management	3.752	0.074	Normal
Empowering employees	3.862	0.058	Normal
Organizational culture	3.914	0.081	Normal

Table 2 shows that all study variables followed a normal distribution. The normal distribution values for the variables were greater than 0.05, which is the acceptable level for statistical processing in this study.

4. Findings

Table 3 presents the descriptive results for the organizational structure restructuring dimension, highlighting respondents' perceptions of the extent to which the company's structural arrangements facilitate flexibility, communication flow, and support for process re-engineering within SPIMACO.

Table 3: Organizational structure restructuring

Organizational structure	M	SD	Rank	Level
The company is transitioning from hierarchical organizational structures to more flexible ones.	3.421	0.8360	2	High
The organizational structure supports the possibility of re-engineering processes and development within the company.	3.394	0.8650	5	Medium
The organizational structure is characterized by the swift flow of administrative communication across various management levels in the company.	3.473	0.7380	1	High
The organizational structure facilitates the consolidation of some sub-functions into a single role.	3.407	0.9110	3	High
The organizational structure simplifies the rapid distribution of authorities and tasks.	3.403	1.0960	4	Medium
The company's organizational structures include clear programs and foundations for incentives and promotions to foster creativity and encourage excellence.	3.131	1.0490	6	Medium
Overall restructuring the organizational structure	3.401	0.7020		High

Overall, organizational structure restructuring was rated at a high level ($M = 3.401$, $SD = 0.702$). Item means ranged from 3.131 to 3.473, indicating

generally positive perceptions, although comparatively lower agreement was observed for incentive and promotion programs. These results

suggest that structural flexibility and communication flow are perceived as supportive of re-engineering efforts at SPIMACO. Table 4 presents the descriptive results for the top management commitment and support dimension, highlighting respondents'

perceptions of the extent to which leadership commitment, managerial support, and the use of expertise contribute to process re-engineering within SPIMACO.

Table 4: Commitment and support of top management

Commitment and support of top management	M	SD	Rank	Level
The top management demonstrates awareness of the importance of administrative process re-engineering, striving for its effective implementation.	3.223	1.0530	5	Medium
The top management seeks to leverage significant advancements in information and communication technology.	3.197	1.0330	6	Medium
Efforts are made by the top management to attract highly knowledgeable human resources.	3.404	0.8930	3	High
The top management engages external experts to provide support in implementing administrative process re-engineering.	3.592	0.8820	1	High
The top management supports decentralization in decision-making and delegates authority to employees.	3.433	0.9370	2	High
The top management relies on adopting creative ideas and transforming them into executable realities.	3.223	1.0400	4	High
Overall commitment and support of top management	3.402	0.6440		High

Overall, top management commitment and support were rated at a high level ($M = 3.402$, $SD = 0.644$). Item means ranged from 3.197 to 3.592, indicating generally positive perceptions of leadership support for process re-engineering. The highest rating was associated with the engagement of external experts, whereas the lowest mean was related to leveraging advancements in information and communication technology. These results suggest that managerial commitment is viewed as an

important facilitator of re-engineering efforts at SPIMACO, although some aspects of strategic technological support may require further strengthening.

Table 5 presents the descriptive results for the employee empowerment dimension, highlighting respondents' perceptions of the extent to which autonomy, training, skill development, and resource provision support process re-engineering within SPIMACO.

Table 5: Empowering employees

Empowering employees	M	SD	Rank	Level
The employees are empowered by regularly identifying their training needs.	3.394	1.0330	5	Medium
Employees are granted the freedom to choose the method they find suitable.	3.710	0.8130	1	High
The company's management empowers employees by increasing the budget allocated for training and development.	3.644	0.8270	3	High
The company's management encourages empowering employees to build their skills independently.	3.671	0.8700	2	High
The company provides the necessary tools to empower employees and facilitate their effective performance.	3.539	0.9000	4	High
Overall empowering employees	3.592	0.6600		High

Overall, employee empowerment was rated at a high level ($M = 3.592$, $SD = 0.660$). Item means ranged from 3.394 to 3.710, indicating generally positive perceptions of empowerment practices within the company. The highest rating was reported for employees' freedom to choose appropriate work methods, whereas the lowest mean was associated with regularly identifying training needs. These results suggest that employee empowerment is reflected mainly through autonomy, skill

development, and the provision of supportive resources, although some aspects related to systematic training assessment may require further attention. Table 6 presents the descriptive results for the organizational culture dimension, highlighting respondents' perceptions of the extent to which shared values, openness to change, employee involvement, and innovation-supportive norms contribute to process re-engineering within SPIMACO.

Table 6: Organizational culture

Organizational culture	M	SD	Rank	Level
There is alignment between organizational values and employee values in the company.	3.684	0.8510	1	High
Employees in the organization face a significant challenge in developing and implementing new ideas and accomplishing work in appropriate organizational units.	3.434	0.8690	5	High
The company is characterized by an organizational culture that supports change and enhances work development in its environment.	3.671	0.7000	2	High
Dominant norms among employees contribute to creating a climate that encourages transitioning from traditional methods to more advanced ones in the workplace.	3.421	0.9270	6	High
Employees in the company share common beliefs about the importance of everyone's involvement in any future changing processes.	3.486	0.8400	4	High
The company aims to build values that foster creativity and innovation in the work environment.	3.657	0.9020	3	High
Overall organizational culture	3.559	0.6360		High

Overall, organizational culture was rated at a high level ($M = 3.559$, $SD = 0.636$). Items ranged from 3.421 to 3.684, indicating generally positive perceptions of the cultural environment surrounding process re-engineering within the company. Higher ratings were associated with value alignment,

support for change, and the promotion of creativity and innovation. By contrast, the comparatively lower mean for norms related to the transition from traditional to more advanced work methods suggests that, although the cultural climate is broadly supportive, the practical enactment of

change-oriented norms may still vary across organizational practices.

Table 7 presents the diagnostic statistics for the independent variables included in the multiple regression model, namely organizational structure restructuring, top management commitment and support, employee empowerment, and organizational culture, in order to assess multicollinearity and the distributional properties of the variables.

Table 7: Multicollinearity and normality diagnostics for the independent variables

Independent variables	VIF	Tolerance	Skewness
Organizational structure restructuring	2.085	0.432	-0.637
Top management commitment and support	2.349	0.441	-0.804
Employee empowerment	2.883	0.358	-0.956
Organizational culture	2.812	0.315	-0.836

Table 7 shows that the VIF values for the independent variables ranged from 2.085 to 2.883, while tolerance values ranged from 0.315 to 0.441. These results indicate that multicollinearity was not a serious concern in the regression model, as the VIF values were below commonly accepted thresholds and the tolerance values remained above the minimum acceptable level. In addition, the skewness coefficients ranged from -0.637 to -0.956, suggesting that the variables did not exhibit problematic departures from normality. Overall, these diagnostic results support the suitability of the independent variables for inclusion in the multiple regression analysis.

Table 8 presents the results of the multiple regression analysis examining the extent to which the dimensions of process re-engineering predict organizational performance at SPIMACO.

Table 8: Results of multiple regression

Dependent variable	R	R ²	Adjusted R ²	F	Sig.
Organizational performance	0.774	0.599	0.576	26.523	0.000
Predictor	β	t		Sig.	
Organizational structure	0.263	2.594		0.012	
Top management commitment and support	0.347	3.210		0.002	
Employee empowerment	-0.205	-1.787		0.048	
Organizational culture	0.436	3.430		0.001	

Table 8 shows that the multiple regression model was statistically significant ($F = 26.523$, $p < 0.001$), indicating that the dimensions of process re-engineering jointly explained a meaningful proportion of variance in organizational performance at SPIMACO. The model yielded a relatively strong correlation coefficient ($R = 0.774$), while the coefficient of determination ($R^2 = 0.599$) indicated that approximately 59.9% of the variance in organizational performance was explained by the included predictors. The adjusted R^2 value of 0.576 further suggests that the model retained substantial explanatory power after adjustment for the number of predictors. At the individual level, organizational structure, top management commitment and support, and organizational culture had positive and statistically significant effects, whereas employee empowerment showed a negative but statistically significant coefficient. Overall, the findings indicate that process re-engineering dimensions are significantly associated with organizational performance at SPIMACO.

5. Discussion

The findings indicate that business process re-engineering is meaningfully associated with organizational performance in SPIMACO, suggesting that re-engineering should be understood not as a set of isolated administrative practices, but as an integrated organizational capability. The statistical significance of the overall model and its explanatory power indicate that performance outcomes are shaped by the combined influence of structural, managerial, human, and cultural dimensions. This

interpretation is consistent with studies that treat re-engineering as a multidimensional organizational process whose effectiveness depends on implementation conditions rather than procedural redesign alone, as reflected in the work of [Shahul Hameed et al. \(2022\)](#).

Organizational structure restructuring showed a positive and statistically significant contribution to organizational performance. This suggests that structural flexibility, clearer coordination, and smoother communication channels can facilitate process redesign and reduce operational rigidity within the company. In the context of SPIMACO, such structural adaptability may help improve workflow efficiency and strengthen the organization's responsiveness in a regulated and competitive environment. This interpretation is in line with [Fetais et al. \(2022\)](#), who linked process re-engineering to competitive advantage, and with [Al-Omar et al. \(2020\)](#), who emphasized the role of organizational frameworks in supporting improved performance.

Top management commitment and support also exhibited a positive and significant effect. Leadership sponsorship legitimizes transformation, secures resources, and reduces resistance to change. In practice, visible managerial support is likely to strengthen employee engagement and help sustain business process re-engineering beyond the initial implementation stage. This finding accords with [Khdair \(2021\)](#), who showed that administrative process re-engineering is more effective when supported by managerial commitment and linked to performance improvement.

Employee empowerment displayed a negative regression coefficient despite high descriptive ratings. This pattern may indicate that empowerment initiatives do not automatically translate into improved performance when employees are given broader autonomy without sufficient process clarity, role definition, or implementation support. Under such conditions, empowerment may increase role demands and create short-term strain rather than immediate performance gains. Although this result appears less consistent with the positive descriptive pattern, it still suggests that empowerment alone may not improve performance unless it is accompanied by clear structures, training, and implementation control. This interpretation is broadly compatible with [Almahirah \(2020\)](#), who highlighted the importance of organizational capability conditions in enhancing competitiveness rather than relying on individual dimensions in isolation.

Finally, organizational culture had the strongest positive coefficient, implying that a supportive culture may be the main channel through which business process re-engineering translates into performance gains. A culture that normalizes change, innovation, and shared responsibility can amplify the effects of restructuring and leadership support by shaping everyday behaviors that sustain new processes over time. In this sense, culture does not merely accompany re-engineering efforts but may function as the organizational environment that enables their continuity and effectiveness. This interpretation is supported by [Akpa et al. \(2021\)](#), who emphasized the close relationship between organizational culture and performance, and by [Aljlayel \(2020\)](#), who showed that process-related transformation is strongly conditioned by organizational culture.

This study has several limitations. First, the cross-sectional design limits the ability to draw causal inferences, as the observed relationships reflect associations at a single point in time rather than changes over time. Future longitudinal research could provide a clearer understanding of how the effects of business process re-engineering evolve as implementation matures. Second, the study relied on self-reported perceptions, which may be influenced by common method bias and subjective evaluation. Future studies may therefore benefit from incorporating objective performance indicators, such as cycle time, error rates, or service-level measures. Third, the study was conducted within a single company, which may limit the generalizability of the findings beyond the SPIMACO context. Replication across multiple firms in the Saudi pharmaceutical and medical supplies sector would strengthen external validity.

Future research could also examine the mediating mechanisms, such as process ownership or digital transformation maturity, and the moderating factors, such as regulatory intensity or organizational size, that may shape the relationship

between business process re-engineering and organizational performance.

6. Conclusion

Drawing on the study findings and discussion, this section summarizes the main conclusions and presents practical recommendations for strengthening process re-engineering outcomes in SPIMACO.

The study concludes that business process re-engineering is significantly associated with organizational performance in SPIMACO. The findings indicate that process re-engineering should be understood as an integrated organizational capability shaped by structural, managerial, human, and cultural dimensions rather than as an isolated administrative intervention. Among the examined dimensions, organizational culture showed the strongest positive contribution, followed by top management commitment and support and organizational structure restructuring, while employee empowerment showed a negative coefficient despite its positive descriptive evaluation. Overall, the results suggest that the effectiveness of re-engineering depends not only on redesigning efforts themselves, but also on the organizational conditions that support implementation and sustainability.

Based on these findings, several practical recommendations can be made. First, SPIMACO should strengthen change-supportive cultural practices through communication, shared values, and recognition systems that reinforce innovation and openness to new work processes. Second, the company should institutionalize leadership sponsorship by establishing clear governance arrangements, sustained managerial involvement, and adequate resource allocation for re-engineering initiatives. Third, empowerment practices should be aligned with process clarity, role definition, training, and accountability mechanisms to ensure that greater autonomy translates into improved performance rather than operational strain. Finally, SPIMACO should continuously monitor process-related performance indicators to evaluate the effectiveness of re-engineering efforts and support ongoing improvement within the Saudi healthcare and pharmaceutical context.

List of abbreviations

BPR	Business process re-engineering
ERP	Enterprise resource planning
M	Mean
R	Multiple correlation coefficient
R ²	Coefficient of determination
SD	Standard deviation
Sig.	Significance level
SPIMACO	Saudi Pharmaceutical Industries and Medical Appliances Corporation
SPSS	Statistical package for the social sciences
VIF	Variance inflation factor

Acknowledgment

The author gratefully acknowledges the University of Hail for its academic support. The author also thanks the participants for their voluntary contribution to this study.

Compliance with ethical standards

Ethical considerations

The study was conducted in accordance with the ethical requirements applicable to research involving human participants. Participation was voluntary, and informed consent was obtained from all participants before completion of the questionnaire. Participants were informed of the academic purpose of the study and assured that their responses would remain anonymous and confidential. No personally identifiable information was collected, and participants could decline participation or withdraw at any stage without consequences. The collected data were analyzed and reported in aggregate form to protect participants' privacy.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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