



The Impact of Entrepreneurial Orientation Dimensions on the Performance of Industrial SMEs in Yemen: Evidence from a Conflict-Affected Economy

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Abstract: This study examines the direct effect of entrepreneurial orientation (EO) dimensions on the performance of industrial small and medium-sized enterprises (SMEs) in the Republic of Yemen. Although entrepreneurial orientation has been widely recognized as a strategic determinant of firm performance, prior studies have reported inconsistent findings regarding the EO-performance relationship, particularly in developing and conflict-affected economies. Drawing on the Resource-Based View (RBV), this study conceptualizes EO as a strategic intangible resource that may contribute to superior organizational performance. The study focuses on five EO dimensions: innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness. A quantitative research design was adopted, and data were collected through a structured questionnaire administered to owners and managers of industrial SMEs operating in Yemen. A total of 402 valid responses were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that innovativeness and proactiveness do not have significant direct effects on SME performance. Risk-taking has a significant negative effect on performance, whereas autonomy and competitive aggressiveness have significant positive effects. These findings indicate that not all EO dimensions contribute equally to SME performance in unstable and resource-constrained environments. The study contributes to EO literature by extending the analysis of EO dimensions to an underexplored conflict-affected economy and provides practical implications for SME owners, policymakers, financial institutions, and development agencies seeking to strengthen industrial SME performance in Yemen.

Keywords: Entrepreneurial Orientation, Innovativeness, Risk-Taking, Proactiveness, Autonomy, Competitive Aggressiveness, SME Performance, Industrial SMEs, Yemen, Resource-Based View.

INTRODUCTION

Small and medium-sized enterprises (SMEs) play a central role in economic growth, employment generation, industrial development, innovation, and poverty reduction [1-3]. Their importance is especially visible in developing countries, where SMEs often represent a major source of employment opportunities, local production, entrepreneurial activity, and income generation [4, 5]. However, the contribution of SMEs to economic development depends not only on their number but also on their ability to achieve satisfactory and

sustainable performance. Therefore, SME performance remains a critical issue for researchers, policymakers, entrepreneurs, and development agencies [1, 6].

In Yemen, the performance of industrial SMEs is particularly important because the country has experienced prolonged political instability, economic fragility, conflict, and institutional weakness. These conditions have created a challenging business environment characterized by uncertainty, limited access to finance, weak infrastructure, reduced purchasing power, and difficulties in production and distribution. The Global Competitiveness Report 2019 ranked Yemen 140th out of 141 countries, indicating weak competitiveness in several areas, including SME financing, innovation capability, entrepreneurial culture, workforce skills, technology adoption, and local competition [7]. Similarly, the Ministry of Industry and Trade (2019) reported that Yemeni SMEs suffer from weak managerial practices, shortage of qualified human resources, poor marketing practices, and limited productive capacity.

The industrial sector is an important pillar of economic development because it supports production, job creation, technological upgrading, and long-term economic recovery [8-10]. In Yemen, industrial SMEs can contribute to economic resilience by strengthening domestic production and reducing dependence on imports. Nevertheless, many industrial SMEs in Yemen still face weak performance and low competitiveness due to financial, managerial, technological, and institutional constraints [11, 12]. Therefore, identifying strategic capabilities that may improve the performance of industrial SMEs is an urgent research and practical priority.

Entrepreneurial orientation (EO) has been identified as one of the most important strategic orientations that may help firms improve performance in competitive and uncertain environments [13-15]. EO reflects the entrepreneurial posture of a firm and describes how firms behave when they identify opportunities, develop new products, take risks, act ahead of competitors, support independent initiatives, and respond aggressively to competition [15, 16]. Previous studies have suggested that EO may enhance firm performance by enabling firms to innovate, respond to market changes, exploit opportunities, and develop competitive advantage [17-19].

Despite this theoretical support, empirical findings on the EO-performance relationship remain inconsistent. Some studies have found that EO positively affects firm performance [6, 19], while others have reported weak, insignificant, negative, or context-dependent effects [20-22]. These inconsistencies may be due to differences in institutional context, country conditions, sector characteristics, firm size, environmental turbulence, and the way EO is measured [3, 15, 22]. Consequently, scholars have argued that EO should not always be treated as a single aggregated construct. Instead, its dimensions should be examined separately because each dimension may influence firm performance differently [15, 23, 24].

The five-dimensional model of EO proposed by Lumpkin and Dess [15] includes innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness. Innovativeness reflects the firm's tendency to support creativity, experimentation, and new ideas. Risk-taking refers to the firm's willingness to commit resources to uncertain opportunities. Proactiveness reflects opportunity-seeking and future-oriented behavior. Autonomy refers to independent action by individuals or teams in bringing forward

entrepreneurial ideas. Competitive aggressiveness refers to the firm's tendency to directly challenge competitors and defend its market position [15, 25].

In the Yemeni context, limited empirical evidence exists on how these five EO dimensions affect the performance of industrial SMEs. Most prior studies in Yemen have focused on technology, innovation, market orientation, or specific SME challenges [3, 4, 11, 12]. Thus, this study aims to examine the direct effects of innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness on the performance of industrial SMEs in Yemen. Accordingly, the main research question is:

What is the impact of dimensions of entrepreneurial orientation the performance of manufacturing SMEs in Yemen?

Study contributes to the literature in three ways. First, it extends EO research to Yemen, a fragile and underexplored economy. Second, it examines EO as a multidimensional construct rather than a single construct. Third, it provides practical guidance for industrial SME owners and policymakers by identifying which EO dimensions contribute positively to firm performance and which dimensions may require caution.

THEORETICAL FRAMEWORK

This study is grounded in the Resource-Based View (RBV). RBV argues that firms achieve superior performance when they possess and effectively use resources that are valuable, rare, inimitable, and non-substitutable [26]. These resources may be tangible or intangible. However, intangible resources are often more important in explaining performance differences because they are difficult for competitors to observe, imitate, or substitute [27, 28].

RBV is particularly relevant to SMEs because many SMEs lack sufficient tangible resources, such as financial capital, advanced technology, skilled labor, and large-scale production facilities [29]. Therefore, their success often depends on intangible resources and capabilities, such as entrepreneurial behavior, strategic orientation, managerial knowledge, customer relationships, innovation capability, and organizational flexibility [30, 31].

Entrepreneurial orientation may be viewed as an intangible strategic resource because it reflects a firm's behavioral capacity to identify opportunities, support innovation, accept uncertainty, act independently, and compete strongly in the marketplace [15, 16]. From the RBV perspective, EO can improve performance when it helps firms deploy their resources effectively, respond to environmental changes, and build competitive advantage [17, 18].

However, the value of EO may depend on context. In stable environments, innovativeness and risk-taking may create opportunities for growth. In unstable and conflict-affected environments, the same behaviors may create additional costs, expose firms to financial losses, or fail to generate immediate returns [21, 22]. Thus, the RBV perspective supports the need to examine whether each EO dimension functions as a valuable resource in the context of Yemeni industrial SMEs.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Entrepreneurial Orientation

Entrepreneurial orientation refers to the processes, practices, and decision-making activities that lead firms toward entrepreneurial behavior and new entry [15]. Miller [13] originally conceptualized EO through three dimensions: innovativeness, risk-taking, and proactiveness. Later, Lumpkin and Dess [15] expanded the EO construct by adding autonomy and competitive aggressiveness, arguing that these five dimensions provide a broader understanding of entrepreneurial firm behavior.

Several studies have shown that EO can enhance firm performance by enabling organizations to recognize market opportunities, introduce new products, respond to competitors, and adapt to environmental turbulence [16-18]. However, other studies suggest that the EO-performance relationship is not always positive and may depend on internal capabilities, environmental conditions, and institutional context [21, 22]. Therefore, examining the independent effect of each EO dimension provides a more detailed understanding of how entrepreneurial behavior affects performance.

SME Performance

Firm performance refers to the extent to which a firm achieves its organizational, financial, market, and operational objectives [32, 33]. In SME research, performance is commonly measured using subjective indicators because SMEs often do not maintain reliable financial records or may be unwilling to disclose financial information [19, 34, 35]. Subjective measures are considered acceptable when objective data are unavailable, particularly when respondents are owners or managers with direct knowledge of the firm's operations [34, 36].

In this study, SME performance is measured through owners' and managers' perceptions of performance over the previous three years, including market share, sales growth, profitability, customer satisfaction, employee growth, and customer base growth. These indicators are consistent with prior SME performance studies [3, 36].

Innovativeness and SME Performance

Innovativeness refers to a firm's tendency to support new ideas, creativity, experimentation, and the development of new products, services, or processes [13, 15]. Innovative firms are expected to respond better to customer needs and environmental changes by introducing improved products and adopting better methods of operation [12]. Previous studies have suggested that innovativeness may improve performance by enhancing product quality, customer satisfaction, market share, and competitive advantage [18, 19].

However, the performance effect of innovativeness may depend on internal and external conditions. Innovation requires financial resources, skilled employees, technical knowledge, and market support. In resource-constrained contexts, SMEs may lack the capacity to convert innovative ideas into successful market outcomes [22, 37, 38]. In Yemen, industrial SMEs operate under uncertainty and limited resources, which may weaken the direct effect of innovativeness on performance. Nevertheless, based on EO theory, the following hypothesis is proposed:

- **H1:** Innovativeness has a positive effect on the performance of industrial SMEs in Yemen.

Risk-Taking and SME Performance

Risk-taking refers to the willingness of a firm to commit resources to uncertain projects or opportunities with unpredictable outcomes [13, 15]. Entrepreneurial firms often take risks by investing in new products, entering new markets, borrowing funds, or allocating resources to uncertain business opportunities [16, 17]. From the EO perspective, calculated risk-taking may help firms exploit opportunities and achieve superior performance [18, 39].

Nevertheless, risk-taking may harm performance in fragile environments where resources are scarce and uncertainty is high. Yemeni SMEs face financial constraints, weak infrastructure, unstable demand, and institutional uncertainty [12, 40]. In such conditions, risk-taking may expose firms to resource losses, debt pressure, and operational difficulties. However, based on the theoretical argument that risk-taking is a core EO dimension, the following hypothesis is proposed:

- **H2:** Risk-taking has a positive effect on the performance of industrial SMEs in Yemen.

Proactiveness and SME Performance

Proactiveness refers to a firm's tendency to anticipate future market needs, identify opportunities, and act before competitors [13, 15]. Proactive firms introduce new products, monitor emerging market trends, and respond quickly to environmental changes [16, 39]. Prior studies suggest that proactiveness may improve performance by creating first-mover advantages, increasing market share, and strengthening competitive position [17, 18].

However, proactiveness may not directly improve performance when firms lack the capabilities required to exploit opportunities. In developing and conflict-affected economies, SMEs may identify opportunities but remain unable to act effectively due to limited finance, production constraints, weak technology, and poor market infrastructure [36, 41, 42]. Nevertheless, based on EO theory, the following hypothesis is proposed:

- **H3:** Proactiveness has a positive effect on the performance of industrial SMEs in Yemen.

Autonomy and SME Performance

Autonomy refers to the independent action of individuals or teams in developing and implementing entrepreneurial ideas [15]. Autonomy allows managers and employees to make decisions, solve problems, and respond to opportunities without excessive restrictions. In SMEs, autonomy is particularly important because decision-making is often centralized and firms require flexibility to respond to environmental uncertainty [15, 17].

Autonomy may enhance SME performance by encouraging initiative, improving responsiveness, reducing delays, and supporting creative problem-solving [16, 43]. In unstable environments such as Yemen, autonomous decision-making may be especially

valuable because firms must respond quickly to supply disruptions, customer needs, and market changes. Therefore, the following hypothesis is proposed:

- **H4:** Autonomy has a positive effect on the performance of industrial SMEs in Yemen.

Competitive Aggressiveness and SME Performance

Competitive aggressiveness refers to a firm's tendency to challenge competitors directly and respond strongly to competitive threats [15]. Firms with high competitive aggressiveness may use pricing strategies, product improvements, promotional activities, market expansion, and customer-service improvements to strengthen their market position [39].

Competitive aggressiveness may be especially important for SMEs operating in uncertain and competitive markets because it reflects a firm's willingness to defend market share and improve its competitive position [16, 18]. In Yemen, industrial SMEs face weak purchasing power, intense local competition, and limited market opportunities. Therefore, firms that compete aggressively may be more capable of maintaining customers, improving sales, and enhancing performance. Thus, the following hypothesis is proposed:

- **H5:** Competitive aggressiveness has a positive effect on the performance of industrial SMEs in Yemen.

RESEARCH METHODOLOGY

Research Design

This study adopted a quantitative research approach to examine the direct effect of EO dimensions on the performance of industrial SMEs in Yemen. A cross-sectional survey design was used because data were collected from respondents at one point in time. This design is common in SME and entrepreneurial orientation research because it allows researchers to examine relationships among latent constructs using structured data [44-46].

Population and Sample

The population of the study consisted of small and medium-sized industrial firms operating in the Republic of Yemen. The respondents were owners and managers of industrial SMEs because they are directly involved in strategic decision-making and possess sufficient knowledge about their firms' entrepreneurial behavior and performance [47-50]. A structured questionnaire was distributed to the target respondents, and 402 valid responses were used for data analysis.

Measurement of Variables

Entrepreneurial orientation was measured through five dimensions: innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness. These dimensions were based on the conceptualization of Lumpkin and Dess [15]. SME performance was measured using subjective indicators because subjective performance measures are widely accepted in SME research, especially when objective financial data are unavailable or difficult to obtain [19, 34, 35]. Performance indicators included market share, sales growth,

profitability, customer satisfaction, employee growth, and customer base growth, consistent with Abdulsamad, Ali [3], Khan, Salamzadeh [36]. All items were measured using a five-point Likert scale.

Data Analysis Technique

The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM is appropriate for prediction-oriented research and for analyzing models that include multiple latent constructs [46]. The analysis followed two stages. First, the measurement model was assessed using outer loadings, Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity. Second, the structural model was assessed using path coefficients, t-values, p-values, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2), following Hair and Alamer [51], Fornell and Larcker [52], Henseler, Hubona [53].

DATA ANALYSIS AND RESULTS

Measurement Model Assessment

Before testing the structural relationships, the measurement model was assessed to confirm reliability and validity. Following Hair and Alamer [51], the assessment included indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was examined using outer loadings, while internal consistency reliability was assessed using Cronbach's alpha and composite reliability. Convergent validity was evaluated using the average variance extracted (AVE). Discriminant validity was examined using the Fornell-Larcker criterion and the Heterotrait-Monotrait ratio (HTMT), as recommended by Fornell and Larcker [52], Henseler [54].

Reliability and Convergent Validity

As shown in Table 1, most indicator loadings exceeded the recommended threshold of 0.70. A few performance items had loadings slightly below 0.70 but above 0.60; therefore, they were retained because the composite reliability and AVE values of the performance construct were acceptable. Composite reliability values ranged from 0.785 to 0.909, exceeding the recommended minimum value of 0.70. The AVE values ranged from 0.550 to 0.751, exceeding the recommended threshold of 0.50, thereby confirming convergent validity. Although Cronbach's alpha for proactiveness was below 0.70, the construct was retained because its composite reliability and AVE met the acceptable thresholds, and composite reliability is considered more appropriate than Cronbach's alpha in PLS-SEM.

Table 1: Reliability and Convergent Validity

Construct	Item	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Innovativeness	INN1	0.803	0.767	0.865	0.682
	INN2	0.847			
	INN3	0.826			

Risk-Taking	RT1	0.844	0.834	0.900	0.751
	RT2	0.869			
	RT3	0.886			
Proactiveness	PRO1	0.773	0.591	0.785	0.550
	PRO2	0.708			
	PRO3	0.742			
Autonomy	AUT1	0.843	0.875	0.909	0.666
	AUT2	0.809			
	AUT3	0.836			
	AUT4	0.803			
	AUT5	0.789			
Competitive Aggressiveness	CA1	0.799	0.766	0.865	0.681
	CA2	0.854			
	CA3	0.821			
SME Performance	PERF1	0.671	0.873	0.905	0.617
	PERF2	0.677			
	PERF3	0.847			
	PERF4	0.792			
	PERF5	0.866			
	PERF6	0.837			

Note: AVE = Average Variance Extracted.

Discriminant Validity: Fornell-Larcker Criterion

Discriminant validity was first assessed using the Fornell-Larcker criterion. According to Fornell and Larcker [52], the square root of the AVE for each construct should be higher than its correlations with other constructs. As shown in Table 2, the diagonal values are greater than the corresponding inter-construct correlations, indicating satisfactory discriminant validity.

Table 2: Discriminant Validity Using the Fornell-Larcker Criterion

Construct	AVE	INN	PERF	PRO	AUT	CA	RT
Innovativeness	0.682	0.826					
SME Performance	0.618	0.290	0.786				
Proactiveness	0.550	0.441	0.392	0.742			
Autonomy	0.667	0.420	0.495	0.600	0.816		
Competitive Aggressiveness	0.681	0.336	0.569	0.528	0.598	0.825	
Risk-Taking	0.751	0.392	0.234	0.605	0.486	0.449	0.867

Note: Diagonal values in bold represent the square root of AVE. INN = Innovativeness; PERF = SME Performance; PRO = Proactiveness; AUT = Autonomy; CA = Competitive Aggressiveness; RT = Risk-Taking.

Discriminant Validity: HTMT Ratio

The HTMT ratio was also used to further confirm discriminant validity. Henseler [54] recommended HTMT as a robust approach for assessing discriminant validity in variance-based SEM. As shown in Table 3, all HTMT values were below the conservative threshold of 0.90. Therefore, the constructs were considered empirically distinct from one another.

Table 3: Discriminant Validity Using the HTMT Ratio

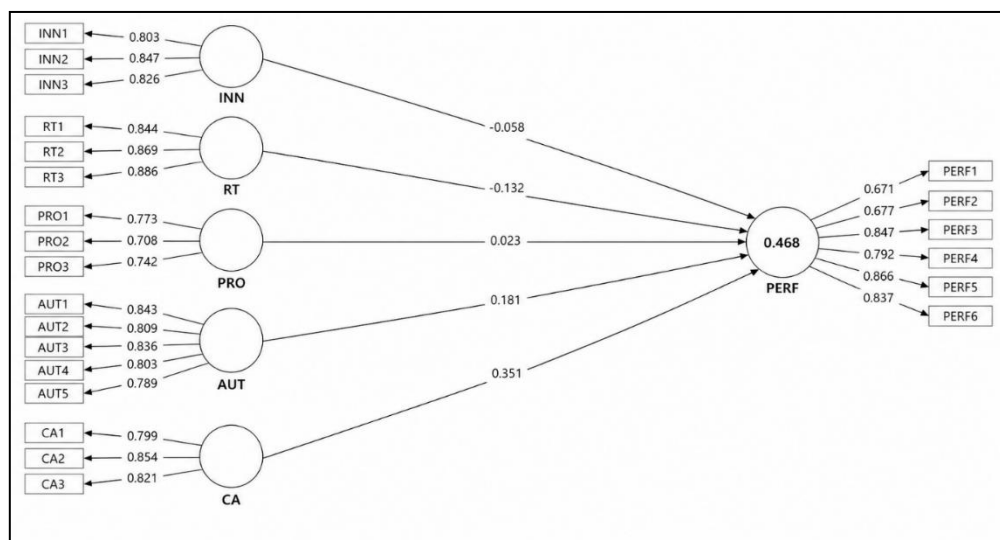
Construct	INN	PERF	PRO	AUT	CA	RT
Innovativeness						
SME Performance	0.358					
Proactiveness	0.656	0.541				
Autonomy	0.510	0.567	0.833			
Competitive Aggressiveness	0.436	0.692	0.788	0.727		
Risk-Taking	0.491	0.275	0.863	0.569	0.566	

Note: INN = Innovativeness; PERF = SME Performance; PRO = Proactiveness; AUT = Autonomy; CA = Competitive Aggressiveness; RT = Risk-Taking.

Overall, the results of the measurement model assessment indicate that the constructs achieved acceptable levels of reliability, convergent validity, and discriminant validity. Therefore, the data were suitable for proceeding to the structural model assessment.

Structural Model Assessment

After confirming the adequacy of the measurement model, the structural model was assessed to test the hypothesized direct relationships between EO dimensions and SME performance. Bootstrapping was used to determine the statistical significance of the path coefficients. The results are presented in Table 4 and Figure 1.

**Figure 1: Structural-Model****Table 4: Direct Effects of EO Dimensions on SME Performance**

Hypothesis	Relationship	Path Coefficient	t-value	p-value	Decision
H1	Innovativeness → SME Performance	-0.058	1.331	0.183	Not supported
H2	Risk-Taking → SME Performance	-0.132	2.854	0.004	Significant, but negative

H3	Proactiveness → SME Performance	0.023	0.437	0.662	Not supported
H4	Autonomy → SME Performance	0.181	3.457	0.001	Supported
H5	Competitive Aggressiveness → SME Performance	0.351	6.885	0.000	Supported

The results show that innovativeness has no significant direct effect on SME performance. Therefore, H1 is not supported. Risk-taking has a significant negative effect on SME performance. Although the relationship is statistically significant, the direction is negative; therefore, H2 is not supported in the expected positive direction. Proactiveness has no significant direct effect on SME performance, so H3 is not supported. Autonomy has a significant positive effect on SME performance, supporting H4. Competitive aggressiveness has a significant positive effect on SME performance, supporting H5.

Coefficient of Determination and Predictive Relevance

The coefficient of determination (R^2) was used to assess the explanatory power of the model. The thesis model reported an R^2 value of 0.468 for SME performance, indicating that the independent variables explain 46.8% of the variance in SME performance. This value suggests an acceptable explanatory level according to commonly used PLS-SEM standards [46, 55, 56].

The effect size (f^2) was also examined to determine the relative contribution of each predictor to SME performance. The f^2 values indicated that innovativeness and proactiveness had no meaningful effect size, risk-taking had a weak effect, autonomy had a weak effect, and competitive aggressiveness had the strongest effect among the EO dimensions.

Table 5: Effect Size of EO Dimensions on SME Performance

Predictor	Dependent Variable	f^2	Effect
Innovativeness	SME Performance	0.004	No effect
Proactiveness	SME Performance	0.000	No effect
Autonomy	SME Performance	0.031	Weak
Competitive Aggressiveness	SME Performance	0.131	Weak
Risk-Taking	SME Performance	0.019	Weak

The predictive relevance of the model was assessed using Q^2 . A Q^2 value greater than zero indicates that the model has predictive relevance for the endogenous construct [46]. The results indicated that the model achieved acceptable predictive relevance for SME performance.

DISCUSSION

The purpose of this study was to examine the direct effects of five EO dimensions-innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness-on

the performance of industrial SMEs in Yemen. The findings demonstrate that EO dimensions do not affect SME performance equally. This supports the argument that EO should be examined as a multidimensional construct rather than as a single aggregated variable [15, 23, 24].

First, innovativeness was found to have no significant direct effect on SME performance. This finding contradicts studies that found a positive relationship between innovativeness and firm performance [18, 19]. However, it is consistent with the argument that innovation may not generate performance benefits when firms lack sufficient financial, technological, and human resources [5, 22, 50]. In Yemen, industrial SMEs may be willing to introduce new ideas or improve products, but resource scarcity, market instability, and weak institutional support may prevent innovation from producing immediate performance benefits.

Second, risk-taking has a significant negative effect on SME performance. This finding challenges the traditional assumption that risk-taking always improves entrepreneurial success [13, 39]. In the Yemeni context, taking risks may expose SMEs to additional losses because firms operate under financial constraints, market uncertainty, institutional weakness, and infrastructure limitations [12, 57, 58]. Therefore, risk-taking should be carefully managed and based on realistic assessments of available resources, market conditions, and operational capacity.

Third, proactiveness did not have a significant direct effect on SME performance. Although proactiveness is generally expected to improve performance through opportunity recognition, first-mover advantage, and early market response [15, 17], this study suggests that proactive behavior alone may not be sufficient in Yemen. Industrial SMEs may be able to identify future market opportunities but may lack the financial, technical, and managerial resources required to exploit those opportunities successfully [5, 36].

Fourth, autonomy had a significant positive effect on SME performance. This result supports the argument that independent decision-making enables firms to respond quickly and flexibly to environmental changes [15, 16]. In the Yemeni industrial SME context, autonomy may allow owners, managers, and employees to solve problems, make timely decisions, and adapt to disruptions. This is particularly important in conflict-affected environments where firms frequently face unexpected market and operational challenges.

Fifth, competitive aggressiveness had the strongest positive effect on SME performance. This finding suggests that industrial SMEs in Yemen benefit from directly confronting competitors and defending their market positions. Competitive aggressiveness may help firms improve customer retention, sales growth, market share, and profitability [15, 18]. In difficult market environments, firms that respond strongly to competition may be more capable of survival and performance improvement.

Overall, the findings demonstrate that EO is not universally beneficial across all dimensions. In fragile economies, some entrepreneurial behaviors may enhance performance, while others may be ineffective or harmful. For Yemeni industrial SMEs, autonomy and competitive aggressiveness appear to be the most valuable EO dimensions. Risk-taking may reduce performance when it is not carefully controlled, while innovativeness and proactiveness may require stronger financial, technical, and institutional support before they can generate positive performance outcomes.

CONCLUSION

This study examined the direct effects of entrepreneurial orientation dimensions on the performance of industrial SMEs in Yemen. Based on data collected from 402 owners and managers and analyzed using PLS-SEM, the study found that innovativeness and proactiveness do not significantly affect SME performance, risk-taking has a significant negative effect, and autonomy and competitive aggressiveness have significant positive effects.

The study contributes to EO literature by showing that the five dimensions of EO have different effects on firm performance in a conflict-affected and resource-constrained economy. The results support the argument that EO should be examined as a multidimensional construct rather than as a single aggregate variable [15, 22, 24]. From the RBV perspective, the findings suggest that only some EO dimensions function as valuable intangible resources in the Yemeni industrial SME context [26, 28, 59].

THEORETICAL IMPLICATIONS

This study provides several theoretical implications. First, it extends EO literature by examining the five-dimensional EO model in the context of industrial SMEs in Yemen. This context is important because most EO studies have been conducted in developed or relatively stable economies [22, 23]. Second, the study supports the multidimensional view of EO by showing that innovativeness, risk-taking, proactiveness, autonomy, and competitive aggressiveness have different effects on performance. Third, the study extends RBV by demonstrating that entrepreneurial resources do not automatically generate performance benefits. Instead, their value depends on whether they fit the firm's internal capabilities and external environment.

PRACTICAL IMPLICATIONS

The findings provide practical implications for SME owners and managers. First, industrial SMEs should encourage autonomy by allowing managers and employees to participate in decision-making and respond flexibly to business challenges. Autonomy can improve speed, flexibility, and problem-solving capacity. Second, SMEs should strengthen competitive aggressiveness through better product quality, customer service, pricing strategies, market responsiveness, and promotional activities. Third, risk-taking should be carefully controlled, particularly in unstable environments where resources are limited. Risk-taking should be calculated and supported by feasibility analysis, financial planning, and market information.

Fourth, innovativeness and proactiveness should not be ignored, but SME owners should recognize that these dimensions may require additional support before generating performance benefits. Innovation requires finance, technology, skilled employees, and market access. Proactiveness requires planning systems, market intelligence, and operational capacity. Therefore, development agencies, chambers of commerce, financial institutions, and policymakers should support industrial SMEs through training, financing mechanisms, market-information systems, technical assistance, and innovation-support programs.

LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. First, the study used a cross-sectional design, which limits the ability to examine changes over time. Future studies may use longitudinal research designs to assess how EO dimensions affect SME performance over different periods. Second, the study relied on subjective performance measures. Although subjective measures are widely used in SME research [34, 35], future studies may combine subjective and objective indicators. Third, this study focused on industrial SMEs in Yemen, which may limit generalizability to other sectors and countries. Future research may compare industrial SMEs with service or commercial SMEs or compare Yemen with other developing and conflict-affected economies. Fourth, future studies may examine moderating variables such as environmental turbulence, access to finance, digital capability, organizational culture, or institutional support.

REFERENCES

1. Abdulsamad, A., et al., Entrepreneurial Orientation and Innovation Capabilities as Drivers of Sustainable Innovation Performance: A Conceptual Framework for SMEs, in Tech Fusion in Business and Society : Harnessing Big Data, IoT, and Sustainability in Business: Volume 2, R.K. Hamdan, Editor. 2025, Springer Nature Switzerland: Cham. p. 845-858.
2. Abdulsamad, A., et al., The Impact of Market Orientation Components on Organizational Performance of SMEs. The single-industry approach" Food and Beverage Sector. Advances in Social Sciences Research Journal, 2021. 8(5): p. 504-516.
3. Abdulsamad, A., et al., The Importance of Entrepreneurial Orientation's Dimensions in Influencing the Organizational Performance of Food and Beverage SMEs. Advances in Social Sciences Research Journal, 2020. 7(12): p. 81-99.
4. Jandab, A., et al., The influence of it capability on it-based innovation: the mediating role of organizational learning capability. Sci. Int.(Lahore), 2020. 32(4): p. 357-365.
5. AlQershi, N.A., Z.B. Abas, and S.S.M. Mokhtar, The intervening effect of structural capital on the relationship between strategic innovation and manufacturing SMEs' performance in Yemen. Management Science Letters, 2021. 11(1): p. 21-30.
6. Kowo, S.A. and P.M. Akanmu, The Efficacy of Entrepreneurship Orientation on SMEs' Performance. Journal of Islamic Economic and Business Research, 2021. 1(1): p. 40-58.
7. Schwab, K., The Global Competitiveness Report 2019. 2019, World Economic Forum. p. 666.
8. Lip, T.K., et al., Entrepreneurial Knowledge and Sustainable SMEs Performance: The Mediation Role of Strategic Opportunity Recognition. Advances in Social Sciences Research Journal, 2025. 12(04): p. 24-42.
9. Raqee, A., et al., Influence of Risk Reduction and Hedging on Project Management: Internal Control Mediator in Iraqi SMEs Construction, in Tech Fusion in Business and Society : Harnessing Big Data, IoT, and Sustainability in Business: Volume 2, R.K. Hamdan, Editor. 2025, Springer Nature Switzerland: Cham. p. 873-899.
10. Haraguchi, N., C.F.C. Cheng, and E. Smeets, The importance of manufacturing in economic development: Has this changed? World Development, 2017. 93: p. 293-315.
11. Jandab, A., et al., IT-Based Innovation and New Product Development Performance in Yemen: The Moderating Role of Intellectual Property. International Journal of Business Society, 2019. 3(11): p. 1-8.

12. Alhakimi, W. and M. Mahmoud, The impact of market orientation on innovativeness: evidence from Yemeni SMEs. *Asia Pacific Journal of Innovation and Entrepreneurship*, 2020. **14**(1): p. 47-59.
13. Miller, D., The correlates of entrepreneurship in three types of firms. *Management science*, 1983. **29**(7): p. 770-791.
14. Covin, J.G. and M.P. Miles, Corporate Entrepreneurship and the Pursuit of Competitive Advantage. *Entrepreneurship Theory and Practice*, 2017. **23**(3): p. 47-63.
15. Lumpkin, G.T. and G.G. Dess, Clarifying the Entrepreneurial Orientation Construct and Linking It To Performance. *Academy of Management Review*, 1996. **21**(1): p. 135-172.
16. Rauch, A., et al., Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship theory and practice*, 2009. **33**(3): p. 761-787.
17. Wiklund, J. and D. Shepherd, Entrepreneurial orientation and small business performance: a configurational approach. *Journal of Business Venturing*, 2005. **20**(1): p. 71-91.
18. Alvarez-Torres, F.J., G.C. Lopez-Torres, and G. Schiuma, Linking entrepreneurial orientation to SMEs' performance. *Management Decision*, 2019. **57**(12): p. 3364-3386.
19. Ali, G.A., H. Hilman, and A.H. Gorondutse, Effect of entrepreneurial orientation, market orientation and total quality management on performance. *Benchmarking: An International Journal*, 2020. **27**(4): p. 1503-1531.
20. Pratono, A.H., et al., Achieving sustainable competitive advantage through green entrepreneurial orientation and market orientation: The role of inter-organizational learning. *The Bottom Line*, 2019.
21. Pratono, A.H. and R. Mahmood, Entrepreneurial orientation and firm performance: How can micro, small and medium-sized enterprises survive environmental turbulence? *Pacific Science Review B: Humanities and Social Sciences*, 2015. **1**(2): p. 85-91.
22. Basco, R., F. Hernández-Perlines, and M. Rodríguez-García, The effect of entrepreneurial orientation on firm performance: A multigroup analysis comparing China, Mexico, and Spain. *Journal of Business Research*, 2020. **113**: p. 409-421.
23. Covin, J.G. and W.J. Wales, Crafting High-Impact Entrepreneurial Orientation Research: Some Suggested Guidelines. 2019. **43**(1): p. 3-18.
24. Kreiser, P.M., L.D. Marino, and K.M. Weaver, Assessing the psychometric properties of the entrepreneurial orientation scale: A multi-country analysis. *Entrepreneurship theory and practice*, 2002. **26**(4): p. 71-93.
25. Lumpkin, G.T. and G.G. Dess, Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of business venturing*, 2001. **16**(5): p. 429-451.
26. Barney, J., Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 1991. **17**(1): p. 99-120.
27. Fahy, J., The resource-based view of the firm: some stumbling-blocks on the road to understanding sustainable competitive advantage. *Journal of European Industrial Training*, 2000. **24**(2/3/4): p. 94-104.
28. Galbreath, J., et al., Entrepreneurial orientation and firm performance in Italian firms: The moderating role of competitive strategy. *International Journal of Entrepreneurial Behavior & Research*, 2020.
29. Runyan, R., C. Droge, and J. Swinney, Entrepreneurial orientation versus small business orientation: what are their relationships to firm performance? *Journal of Small Business Management*, 2008. **46**(4): p. 567-588.

30. Hitt, M.A., et al., Strategic entrepreneurship: Entrepreneurial strategies for wealth creation. *Strategic management journal*, 2001. **22**(6-7): p. 479-491.
31. Nasir, W., A. Al Mamun, and J. Breen, Strategic Orientation and Performance of SMEs in Malaysia. *Sage Open*, 2017. **7**(2): p. 1-13.
32. Richard, P.J., et al., Measuring organizational performance: Towards methodological best practice. *Journal of management*, 2009. **35**(3): p. 718-804.
33. Garg, P., et al., Examining the Relationship between Social Media Analytics Practices and Business Performance in the Indian Retail and IT Industries: The Mediation Role of Customer Engagement. *International Journal of Information Management*, 2020. **52**: p. 1-11.
34. Dess, G.G., G. Lumpkin, and J.E. McGee, Linking corporate entrepreneurship to strategy, structure, and process: Suggested research directions. *Entrepreneurship theory and practice*, 1999. **23**(3): p. 85-102.
35. Sapienza, H.J., K.G. Smith, and M.J. Gannon, Using Subjective Evaluations of Organizational Performance in Small Business Research. *American Journal of Small Business*, 2017. **12**(3): p. 45-54.
36. Khan, R.U., et al., Entrepreneurial Orientation and Small and Medium-sized Enterprises' Performance; Does 'Access to Finance' Moderate the Relation in Emerging Economies? *Vision*, 2020: p. 0972262920954604.
37. Milhem, M., et al., The Impact of Organizational Justice and Organizational Values on Reducing Work Stress Among Security Personnel at Gulf International Bank, in *Integrating Artificial Intelligence, Security for Environmental and Business Sustainability : Volume 1*, A. Hamdan, Editor. 2025, Springer Nature Switzerland: Cham. p. 645-660.
38. Owajege, G.A. and A.A. Ali Saif, The Effect of Inventory Control on The Performance of Small and Medium-Sized Enterprises in Douala. *International Journal on Recent Trends in Business and Tourism (IJRTBT)*, 2025. **9**(4): p. 34-45.
39. Covin, J.G. and D.P. Slevin, The development and testing of an organizational-level entrepreneurship scale. *Frontiers of entrepreneurship research*, 1986. **1**(3): p. 628-639.
40. Yusoff, T., et al., SMEs Sustainable Growth Model: The Role of Entrepreneurial Intention, Organizational Culture, and Networking Capabilities, in *Integrating Big Data and IoT for Enhanced Decision-Making Systems in Business: Volume 2*, R.K. Hamdan, Editor. 2026, Springer Nature Switzerland: Cham. p. 239-250.
41. Haetham Mustafa, S., et al., Building Tourist Loyalty through Service Quality: Mediating Role of Tourist Satisfaction Insights from Emerging Tourism Market. *Journal of Business and Social Review in Emerging Economies*, 2025. **11**(4).
42. Al-Refaei, A.A.-A., et al., A Conceptual Framework for the Impact of Entrepreneurial Leadership on Innovation Work Behavior and Sustainable Innovation Performance, in *Entrepreneurship Innovation and Education for Performance Improvement*, S.A. Salman and A. Bhaumik, Editors. 2024, IGI Global: Hershey, PA, USA. p. 577-598.
43. Arshad, A.S. and A. Rasli. Entrepreneurial Orientation of Technology-Based SMEs in Malaysia. in *Proceedings of the 2nd Advances in Business Research International Conference*. 2018. Springer.
44. Alghamdi, M.A.A., et al., Antecedents and consequences of employee well-being: Empirical study on Saudi Aramco. *Advances in Social Sciences Research Journal*, 2021. **8**(9): p. 22.
45. Alghamdi, M.A.A., et al., Employee Well Being and knowledge sharing behavior among employees of Saudi Aramco. *Advances in Social Sciences Research Journal*, 2021. **8**(8): p. 261-284.

46. Hair Jr, J., et al., Advanced issues in partial least squares structural equation modeling. 2023: saGe publications.
47. Al-Sharif, A.M., et al., The role of innovation capability in the relationship between entrepreneurial leadership and innovation performance in the SMEs service industry. *Advances in Social Sciences Research Journal*, 2023. **10**(1): p. 264-278.
48. Al-Sharif, A., et al., Effects of Innovation Capability and Environmental Dynamism on the Relationship between Entrepreneurial Leadership and Innovation Performance in the SMEs Service Industry. *International Journal of Academic Research in Business and Social Sciences*, 2023. **13**(10).
49. Abdulhadi, A.R., et al., The Impact of Internal Control on Project Management in Construction Site Among Small and Medium Enterprises in Iraq. *Advances in Social Sciences Research Journal*, 2023. **10**(3): p. 247-268.
50. Abdulhadi, A.R., et al., The Impact of Risk Management on the Dimensions of Project Management Among Small and Medium Enterprises in Iraq. *Advances in Social Sciences Research Journal*, 2022. **9**(11): p. 469-481.
51. Hair, J. and A. Alamer, Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 2022. **1**(3): p. 100027.
52. Fornell, C. and D.F. Larcker, Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 1981. **18**(1): p. 39-50.
53. Henseler, J., G. Hubona, and P.A. Ray, Using PLS path modeling in new technology research: updated guidelines. *Industrial Management & Data Systems*, 2016. **116**(1): p. 2-20.
54. Henseler, J., New developments in partial least squares (PLS) path modeling. *Industrial Management & Data Systems*, 2017. **116**(9): p. 2-30.
55. Chin, W.W., Commentary: Issues and opinion on structural equation modeling. *MIS Quarterly*, 1998. **22**(1): p. vii-xvi.
56. Cohen, J., Statistical power analysis for the behavioral sciences. 2nd ed ed. 1988, United States of America: Lawrence Erlbaum Associates.
57. Owajege, G.A. and A. Abdulsamad, The Role of Organizational Agility on Order Fulfillment in SMEs: A Literature-Based Perspective. *International Journal on Recent Trends in Business and Tourism (IJRTBT)*, 2026. **10**(1): p. 33-50.
58. Owajege, G.A. and A. Abdulsamad, Inventory Control Outcomes as Catalysts for Organizational Decision-Making in Cameroonian SMEs: A Systems Theory Perspective. *International Journal on Recent Trends in Business and Tourism (IJRTBT)*, 2026. **10**(2): p. 10-23.
59. Runyan, R.C., P. Huddleston, and J.L. Swinney, A resource-based view of the small firm: Using a qualitative approach to uncover small firm resources. *Qualitative Market Research: An International Journal*, 2007. **10**(4): p. 390-402.