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Exploring Key Factors Influencing the Sustainability of Small and Medium Enterprises in Jazan, Saudi Arabia

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ARTICLE INFO	ABSTRACT
	This study critically examines the principal determinants influencing the sustainability of small and medium-sized enterprises (SMEs) in Saudi Arabia, with a particular emphasis on the Jazan region. It systematically presents the principal challenges confronting SMEs. Employing survey data collected from 130 SMEs in the region, the study applies a range of statistical techniques to fulfill its research objectives. A correlation matrix is constructed to delineate the interrelationships among various variables. Moreover, the research categorizes the underlying factors impacting SME sustainability and evaluates a comprehensive framework structured around the dimensions of the Balanced Scorecard (BSC)—namely financial performance, customer orientation, internal processes, and learning and growth. The study further incorporates Business Intelligence (BI) into the BSC model to investigate its influence on SME sustainability dimensions. The findings underscore the necessity of a nuanced understanding of SME sustainability and highlight the primary obstacles hindering SME development in the Jazan region. **Keywords:** Balanced Scorecard, Small and Medium Enterprises, Business Intelligence, strategic performance management system.

INTRODUCTION

Small and Medium Enterprises (SMEs) play a pivotal role in global economies, particularly in developing nations. These enterprises drive economic growth by fostering employment opportunities, stimulating local economies, promoting diversification, and encouraging innovation and entrepreneurship. Often termed the "backbone" of economies, SMEs are typically defined by thresholds for employee count, assets, or revenue, which vary across countries and industries. Globally, SMEs represent approximately 90% of businesses and contribute over 50% of employment. In emerging economies, formal SMEs generate up to 40% of national GDP [1].

Sustainability in SMEs encompasses economic, environmental, and social dimensions, though standardized metrics for evaluation remain under development [2]. Despite their significance, SMEs encounter challenges in adopting sustainability initiatives due to limited resources and evolving market dynamics. Policymakers increasingly prioritize enhancing SME sustainability amid growing environmental and social concerns. This review synthesizes research on SMEs, highlighting regional variations in definitions. For instance, the European Commission classifies SMEs by employee count, turnover, and balance sheet totals, while the U.S. Small Business Administration (SBA) uses industry-specific criteria, complicating cross-context comparisons.

Studies emphasize SMEs' disproportionate role in job creation compared to larger firms [3], as well as their agility in adapting to market changes [4]. However, barriers such as limited access to finance [5], gaps in managerial expertise [6], market entry challenges [7], regulatory compliance costs, and insufficient sustainability reporting [8,9] hinder their growth. These issues are exacerbated by regulatory frameworks favoring larger corporations. While some scholars advocate technology and innovation as key drivers of SME competitiveness [10], others stress the need for tailored strategic planning [11]. External factors like globalization and technological advancements further influence SMEs, with internationally active SMEs showing greater resilience despite exposure to global risks [12]. Research also links SME innovation and adaptability to broader economic resilience and diversification [13, 14].

Traditional performance metrics focused on financial outcomes often encourage short-term thinking, potentially skewing decision-making [15, 16]. The Balanced Scorecard (BSC), introduced by Kaplan and Norton [17, 18, 19], addresses this by integrating financial and non-financial indicators. While initially designed for large corporations, its applicability to SMEs has gained attention due to their simpler structures and faster implementation potential. Despite this, empirical studies on BSC adoption in SMEs remain limited, with most research centered on larger firms [20 - 31].

Furthermore, the prosperity of numerous small and medium-sized enterprises (SMEs) is contingent upon their ability to swiftly adjust to fluctuations in their external environment, allocate limited resources efficiently, and synchronize operational functions with overarching strategic goals. In this regard, the Balanced Scorecard (BSC) has emerged as a significant strategic performance management framework that articulates an organization's vision and strategy into quantifiable objectives across diverse dimensions, encompassing financial, customer, internal processes, and learning and growth. Nevertheless, SMEs often face obstacles when endeavoring to implement the BSC, primarily attributable to limitations in resources and the informal characteristics of strategic planning [32]. To mitigate these difficulties, organizations are progressively integrating Business Intelligence (BI) systems with BSC [33]. BI furnishes accessible, real-time, and precise data that bolsters decision-making processes and augments the comprehensive efficacy of performance measurement systems [34].

The Balanced Scorecard (BSC) constitutes a strategic performance management framework initially conceived for large organizations; however, it has exhibited exceptional flexibility and adaptability across a diverse array of organizational environments [32]. The BSC synergistically incorporates both financial and non-financial metrics to encapsulate performance in a comprehensive manner. Within the context of small and medium-sized enterprises (SMEs), the BSC facilitates the conversion of strategic objectives into operational targets by establishing a network of cause-and-effect relationships among various perspectives and explicitly linking these to key performance indicators (KPIs) [35]. Notwithstanding the simplified organizational structures prevalent in many SMEs, the necessity for strategic alignment and effective performance monitoring remains paramount. SMEs necessitate systems that not only reflect historical outcomes but also forecast prospective opportunities, which elucidates the significance of leading indicators being as vital as lagging measures in these contexts [36].

Multiple research investigations demonstrate that networks of SMEs derive significant advantages from customized BSC frameworks that effectively encompass intangible assets, including but not limited to innovation, customer satisfaction, and the caliber of knowledge dissemination. In numerous instances, SMEs exhibit a deficiency in formalized strategic management systems, thereby enhancing the attractiveness of the BSC's adaptable and multidimensional approach [32, 8, 37 - 39].

METHODOLOGY

Two conceptual models were developed to assess how business intelligence (BI) tools influence SME sustainability in Saudi Arabia's Jazan region. The first model employed stepwise regression analysis to evaluate the direct impact of BSC perspectives on sustainability, proposing four hypotheses:

H1: Financial Perspective positively affects SME sustainability.

H2: Customer Perspective positively affects SME sustainability.

H3: Internal Processes Perspective positively affects SME sustainability.

H4: Learning and Growth Perspective positively affects SME sustainability.

The second model utilized path analysis to examine both direct and indirect effects, hypothesizing that BI tools influence BSC perspectives, which in turn affect sustainability. Additional hypotheses included:

H1–H4: BI tools positively impact each BSC perspective (Financial, Customer, Internal Processes, Learning and Growth).

H5–H8: Each BSC perspective positively influences SME sustainability.

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ANALYSIS

This section presents the analysis of primary data collected through questionnaires distributed to SMEs in the Jazan region. It aligns with the research objectives outlined in the introduction and is structured into five main sections, each further divided into subsections. The findings are summarized concisely to ensure clarity while retaining sufficient detail for comprehensive understanding.

Descriptive Analysis

Out of 130 questionnaires distributed, 125 stakeholders participated in the study (96.15% response rate), while 5 declined (3.85%). Key demographic and operational insights include:

Gender Distribution: 92.0% of SME stakeholders were male, and 8.0% were female.

As shown in Table 1, 57.6% of the participants were between 20 and 30 years of age Table 1 also indicates the Half of the respondents (50.4%) had fewer than 5 years of professional experience work experience participants. Where the responses of participants reported the most company size (62.4%) classify as small business which the staff size from 1 to 5 employees. Also, the participants response show in Table 1 the retail sector was dominate among all sectors which represented 37.6% of SMEs. The participants responses show the annual revenues of 87.2% of SMEs below 3 million Saudi Riyals.

As shown in Table 1Displays the research respondents' cross-tabulated frequency description. below only 30.4% of SMEs utilize the Business Intelligence tools in their business.

Table 1 Displays the research respondents' cross-tabulated frequency description.

Business Intelligence	Counts	% of Total	Cumulative %
Yes	38	30.4 %	30.4 %
No	87	69.6 %	100.0 %

Frequencies of Gender

Gender	Counts	% of Total	Cumulative %
Male	115	92.0 %	92.0 %
Female	10	8.0 %	100.0 %

Frequencies of Age

Age	Counts	% of Total	Cumulative %
<20 year	9	7.2 %	7.2 %
20-30 year	72	57.6 %	64.8 %
30-40 year	29	23.2 %	88.0 %
40-50 year	12	9.6 %	97.6 %
>50 year	3	2.4 %	100.0 %

Frequencies of working experience

working experience	Counts	% of Total	Cumulative %
<5 year	63	50.4 %	50.4 %
5-10 year	33	26.4 %	76.8 %
10-20 year	20	16.0 %	92.8 %
20-30 year	6	4.8 %	97.6 %

>30 year	3	2.4 %	100.0 %

Frequencies of Number of employees

Number of employees	Counts	% of Total	Cumulative %
1 to 5 employees	78	62.4 %	62.4 %
6 to 49 employees	39	31.2 %	93.6 %
50 to 249 employees	6	4.8 %	98.4 %
More than249 employees	2	1.6 %	100.0 %

Frequencies of type of industry

type of industry	Counts	% of Total	Cumulative %
Manufacturing	6	4.8 %	4.8 %
Retail	47	37.6 %	42.4 %
Hospitality	34	27.2 %	69.6 %
Healthcare	7	5.6 %	75.2 %
Technology	31	24.8 %	100.0 %

Frequencies of Annual Revenue

Annual revenue	Counts	% of Total	Cumulative %
From zero to 3 million	109	87.2 %	87.2 %
From 3 to 40 million	10	8.0 %	95.2 %
From 40 to 200 million	6	4.8 %	100.0 %

Stepwise Regression Analysis

Stepwise regression analysis was employed to assess the influence of four independent variables—financial perspective, customer perspective, internal processes perspective, and learning and growth perspective—on SME sustainability (dependent variable). The results in Table 2 Model Fit Measures revealed an R-squared (R^2) value of 0.613, indicating that approximately 61.3% of the variability in SME sustainability could be explained by these predictors. The model intercept was 0.543, with a p-value of 0.023, confirming statistical significance.

Five incremental models were constructed by sequentially adding each predictor. All independent variables demonstrated a statistically significant impact on SME sustainability (p-value < 0.05). Key findings include:

- Financial Perspective: Coefficient = 0.168, p-value = 0.031
- Customer Perspective: Coefficient = 0.308, p-value < 0.001
- Internal Processes Perspective: Coefficient = 0.243, p-value = 0.002
- Learning and Growth Perspective: Coefficient = 0.140, p-value = 0.044

Table 3 further validated the statistical significance of all five models. These results underscore the critical roles of financial strategies, customer engagement, operational efficiency, and innovation in enhancing SME sustainability within the Jazan region.

Table 2 Model Fit Measures

Model	R	R²	Adjusted R²
1	0.805	0.648	0.634

Table 3 Model Fit Measures

Model	R	R²	Adjusted R²
1	0.613	0.376	0.371
2	0.746	0.557	0.550
3	0.782	0.612	0.603
4	0.791	0.625	0.613
5	0.805	0.648	0.634

Model Comparisons

Comparison						
Model		Model	ΔR²	F	df1	df2	p
1	-	2	0.1811	49.85	1	122	< .001
2	-	3	0.0553	17.26	1	121	< .001
3	-	4	0.0129	4.14	1	120	0.044
4	-	5	0.0232	7.84	1	119	0.006

Path Analysis

Path analysis was conducted to evaluate direct and indirect relationships between Business Intelligence (BI) tools, Balanced Scorecard (BSC) perspectives, and SME sustainability. Key findings include:

-   Model Fit and Variance Explained

As presented in Table 4, the model accounts for 38.6% of the variance in SME sustainability (R^2 = 0.386; 95% CI: 0.250−0.516).

-   Hypothesis Testing

Direct Effects on SME Sustainability

-   All BSC perspectives significantly influenced sustainability:
-   Customer Perspective: Strongest impact (β = 0.3081, *p* < 0.001).
-   Internal Processes Perspective: Substantial effect (β = 0.2434, *p* < 0.001).
-   Financial Perspective: Moderate effect (β = 0.1680, *p* = 0.002).
-   Learning & Growth Perspective: Smaller but significant effect (β = 0.1397, *p* = 0.003).

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As presented in Figure 1 the BSC perspectives generally contribute positively to SME sustainability. Among them, the Customer Perspective emerges as the most influential driver of sustainability, followed by Internal Processes and the Financial Perspective.

Table 4 R-squared

Variable	R²	95% Confidence Intervals	
		Lower	Upper
Sustainability for SMEs	0.38555	0.250	0.516
Financial Perspective	5.51e-4	0.023	0.039
Customer Perspective	0.00986	0.006	0.073
Learning and Growth Perspective	0.01475	0.003	0.085
Internal Processes Perspective	0.00371	0.013	0.055

Impact of BI Tools on BSC Perspectives

Table 5 and Figure 1 demonstrates no significant relationships were foundH5−H8: BI tools showed no statistically meaningful influence on Financial, Customer, Learning & Growth, or Internal Processes Perspectives (*p* > 0.05).

Table 5 Parameter Estimates

| Dep	Pred	Estimate	SE	95% Confidence Intervals		β	z	P
				Lower	Upper			
Sustainability for SMEs	Customer Perspective	0.3081	0.0539	0.2025	0.4136	0.4011	5.720	< .001
Sustainability for SMEs	Financial Perspective	0.1680	0.0548	0.0606	0.2753	0.2150	3.066	0.002
Sustainability for SMEs	Learning and Growth Perspective	0.1397	0.0470	0.0476	0.2317	0.2086	2.974	0.003
Sustainability for SMEs	Internal Processes Perspective	0.2434	0.0475	0.1504	0.3365	0.3595	5.127	< .001
Financial Perspective	Business Intelligence1	-0.0343	0.1308	-0.2906	0.2220	-0.0235	-0.263	0.793
Customer Perspective	Business Intelligence1	-0.1477	0.1324	-0.4072	0.1118	-0.0993	-1.115	0.265
Learning and Growth Perspective	Business Intelligence1	-0.2073	0.1515	-0.5042	0.0897	-0.1215	-1.368	0.171
Internal Processes Perspective	Business Intelligence1	-0.1028	0.1506	-0.3981	0.192	-0.0610	-0.683	0.495

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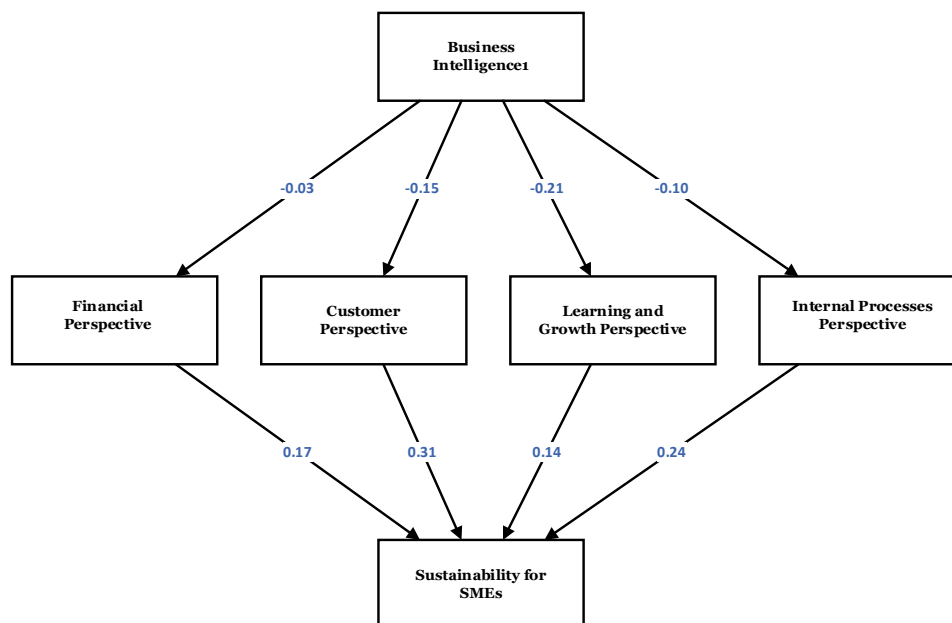
Figure 1

DISCUSSION

This study investigates the influence of Balanced Scorecard (BSC) dimensions—financial, customer, internal processes, and learning and growth perspectives—on the sustainability of SMEs in Saudi Arabia's Jazan region. The regression model demonstrated a strong fit, with an R^2 of 0.625, indicating that 62.5% of the variance in SME sustainability is explained by these four predictors. Each BSC perspective exhibited a statistically significant positive impact:

Customer Perspective had the strongest effect ($\beta = 0.308$), implying that a one-unit increase in this dimension elevates SME sustainability by 0.308 units.

Internal Processes Perspective ($\beta = 0.243$), Financial Perspective ($\beta = 0.168$), and Learning & Growth Perspective ($\beta = 0.140$) followed, reinforcing their critical roles in driving sustainable practices.

The path analysis further validated these relationships, with 38.6% of SME sustainability variance explained by the model. However, Business Intelligence (BI) tools showed no significant influence on any BSC perspectives (H5−H8). This aligns with descriptive findings, where 69.6% of SMEs did not use BI tools, suggesting potential gaps in adoption, integration, or relevance of BI systems to SMEs' operational needs.

These results are consistent with prior research [8, 9, 40 - 43], which underscores the importance of BSC dimensions in enhancing business performance and sustainability. The statistically robust correlations confirm that the relationships between SME sustainability and the four predictors are not random but reflect meaningful operational dynamics.

CONCLUSIONS

This research aimed to identify key determinants of SME sustainability in the Jazan region, developing a comprehensive model grounded in BSC frameworks. Key findings include:

- BSC Perspectives as Critical Drivers: Financial stability, customer engagement, efficient internal processes, and innovation/learning are pivotal to SME sustainability.
- Limited BI Impact: Despite theoretical potential, BI tools did not significantly influence BSC dimensions, likely due to low adoption rates or implementation challenges.
- Model Validity: The strong explanatory power ($R^2 = 0.625$) and statistical significance (*p* < 0.05) of the model highlight its utility in predicting SME sustainability.s.

RECOMMENDATIONS FOR FUTURE RESEARCH

- Expand sample size and diversity to enhance generalizability across Saudi Arabia's regions.
- Investigate mediating factors (e.g., leadership, data literacy) that may bridge BI tools and BSC outcomes.
- Conduct longitudinal studies to assess sustainability trends and BI's long-term impact.

This study contributes actionable insights for policymakers and SME leaders, emphasizing the need to prioritize BSC-aligned strategies while addressing barriers to BI adoption. By refining these frameworks, SMEs in Jazan and similar regions can bolster resilience and sustainable growth in evolving economic landscapes.

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