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Identifying Vital Determinants of SME Sustainability in Saudi Arabia's Jazan Region

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Abstract

This research explores and identifies the vital factors that influence small and medium enterprise (SME) sustainability in Saudi Arabia, particularly in the Jazan region. This research provides and reports on the challenges that face SMEs. Using questionnaire data from 130 SMEs in the Jazan region of Saudi Arabia, Various statistical techniques were applied to address the research objectives. Hence, this research provides a correlation matrix that identifies the relationship between various variables. Moreover, this research classifies the causes that impact SMEs' sustainability. As well, this research measures and analyses the comprehensive framework for SMEs in light of the Balanced Scorecard (BSC) dimensions. The literature review illustrates that the BSC consists of four dimensions: financial, customer, operations, and learning growth. This research develops and integrates the Business Intelligence (BI) factor with BSC to examine and find a significant relationship among SME sustainability dimensions. The research findings emphasize the importance of understanding SME sustainability and provide the most challenging challenges that face SMEs in the Jazan region.

Keywords: Balanced Scorecard, Small and Medium Enterprises, Business Intelligence, strategic performance management system

1. INTRODUCTION

Small and Medium Enterprises (SMEs) are crucial to most economies, especially in developing nations. SMEs contribute to supporting the economic growth and advancement of many countries. They are vital in increasing employment, expanding local economy, encouraging economic diversification, accelerating product and service innovation, and encouraging entrepreneurship. Thus, they are considered the backbone of the economies of many countries around the world. SMEs are defined as businesses with fewer than a specific number of people, assets, or revenues. This specific number varies from nation to nation and industry to industry. SMEs account for most businesses worldwide, contributing

to job creation and global economic development. They comprise about 90% of businesses and over 50% of employment worldwide. Formal SMEs can add up to 40% of emerging economies' national income (GDP) [1].

Economic, environmental, and social sustainability are the three interconnected dimensions that comprise the specific metrics and indicators used to evaluate the sustainability of SMEs, although they are still being developed [2]. However, the constantly evolving business landscape, and the size and resource constraints of SMEs can pose unique challenges to implementing sustainability initiatives compared to larger corporations.

The research problem in the study "Identifying Vital Determinants of SME Sustainability in Saudi Arabia's Jazan Region" focuses on understanding the key factors that contribute to the sustainability of Small and Medium Enterprises (SMEs) in the specific context of the Jazan region in Saudi Arabia. SMEs play a crucial role in driving economic growth, creating employment opportunities, and fostering innovation in many economies, including Saudi Arabia. However, SMEs face various challenges that can hinder their sustainability and growth prospects.

The Jazan region, located in the southwestern part of Saudi Arabia, is known for its strategic location, natural resources, and government support for economic development. Despite these advantages, SMEs in the Jazan region encounter unique challenges that may affect their sustainability. These challenges could include limited access to finance, bureaucratic hurdles, lack of skilled workforce, infrastructure constraints, and market competitiveness.

Therefore, the research problem aims to address the following questions:

[1] What are the key determinants that impact the sustainability of SMEs in the Jazan region?

[2] How do factors such as access to finance, government policies, market conditions, and entrepreneurial skills influence the sustainability of SMEs in the Jazan region?

[3] What strategies can be implemented to enhance the sustainability and growth of SMEs in the Jazan region?

2. LITERATURE REVIEW

As sustainability continues to grow in importance amidst rising environmental and social issues, improving and ensuring the sustainability of SMEs has become a key priority for policymakers. This literature review summarizes research findings from different studies, providing insights into the intricate nature of SMEs. SMEs vary depending on regions and organizations. The European Commission, for example, categorizes SMEs based on the number of employees, annual turnover, and balance sheet total.

On the other hand, the Small Business Administration (SBA) in the United

States employs industry-specific size standards, which presents a challenge in synthesizing data and comparing SMEs across various contexts. Research, such as [3], underscores SMEs' critical role in job creation compared to their larger counterparts. SMEs are also acknowledged for their nimbleness and innovation, as they are frequently more adaptable to shifts in market conditions [3-4]. However, the literature reveals that SMEs face several obstacles, including inadequate access to financial resources and funding [5], deficiencies in managerial and technical skills [6], difficulties in accessing new markets [7] pressure from larger buyers on the supply chain, high costs associated with complying with regulations, and a lack of formal sustainability reporting and visibility [8-9]. These hurdles are compounded by regulatory environments that often favor larger enterprises. Various growth strategies are available to small and medium-sized enterprises (SMEs). According to some researchers, utilizing technology and innovation can be the key drivers of competitive advantage [10].

Conversely, others believe that SMEs must implement strategic planning and management practices tailored to their needs to achieve sustainable growth [11]. External factors like economic policies, globalization, and technological advancements significantly impact SMEs, and literature suggests that SMEs active in international trade possess greater resilience and growth potential [12]. However, they are also more exposed to global economic fluctuations. Research indicates that SMEs' ability to innovate and adapt contributes to economic diversification and resilience, and there is a strong correlation between the health of the SME sector and overall economic development [13-14].

However, traditional performance measurement systems that rely on financial metrics may place undue emphasis on short-term strategic thinking. Hence, these performance evaluation approaches must be revised for managers to run organizations successfully [15]. Financial indicators mainly monitor historical or previous performance, and this one-dimensional technique can lead to errors and inconsistencies, such as supplying skewed data and insufficient statistical analysis [16].

The Balanced Scorecard (BSC) approach was developed to address various concerns and provide a comprehensive perspective, considering financial and non-financial metrics. Early BSC publications by Kaplan and Norton focused on larger corporations, with little attention given to SMEs and public sector organizations [17-19]. However, the texts frequently mention large technology firms and banks as target users [20-21]. While implementing a BSC in SMEs is similar to larger organizations, it may take less time due to their smaller employee count and more straightforward organizational structure. This critical distinction was acknowledged by [22] during the

creation of this multifaceted performance assessment system.

While considerable research has been conducted on implementing the Balanced Scorecard (BSC) framework in large enterprises, more empirical evidence regarding its utilization in smaller businesses still needs to be provided. Despite the pioneering work of Kaplan and Norton, small and medium-sized enterprises (SMEs) have often been overlooked. Regrettably, only a few studies have specifically addressed the adaptation of BSC to SMEs [22-31].

3. METHODOLOGY

To gain insights into the impact of using business intelligence tools on the sustainability of SMEs in the Jazan region by stockholders, two models were developed to measure and assess the sustainability of their aging SMEs. In the first model, a conceptual model proposed to measure the direct impact of the balanced scored card on the SME's sustainability in the Jazan region by using stepwise regression analysis, which proposed the following hypothesizes:

- Hypothesis 1: Financial Perspective positively impacts their SME's sustainability.
- Hypothesis 2: Customer Perspective positively impacts their SME's sustainability.
- Hypothesis 3: Internal Processes Perspective positively impacts their SME's sustainability.
- Hypothesis 4: Learning and Growth Perspective positively impacts their SME's sustainability.

The figure depicted the balanced scored card on the SME's sustainability (Stepwise regression analysis)

In the second model, a conceptual model proposed to measure the direct and indirect impact of the balanced scored card on the SME's sustainability, and the indirect impact of the Business Intelligence Tools on the balanced scored card by using the path analysis, which proposed the following hypothesizes:

- Hypothesis 1: BIT positively impacts the Financial Perspective of the SMEs.
- Hypothesis 2: BIT positively impacts the Customer Perspective of the SMEs.
- Hypothesis 3: BIT positively impacts the Internal Processes Perspective of the SMEs.
- Hypothesis 4: BIT positively impacts the Learning and Growth Perspective of SMEs.
- Hypothesis 5: Financial Perspective positively impacts their SME's sustainability.
- Hypothesis 6: Customer Perspective positively impacts their SME's sustainability.
- Hypothesis 7: Internal Processes Perspective positively impacts their SME's sustainability.

- Hypothesis 8: Learning and Growth Perspective positively impacts their SME's sustainability.

The figure depicted the BIT and Balanced Scored Card on the SME's sustainability (Path analysis)

4. Data Analysis

This section discusses the primary data analysis that was gathered by using questionnaires for SMEs in Jazan region. Thus, this section works to address and analyze each aim that was proposed in the introduction chapter. Therefore, this chapter structure is divided into five sections, and each of these sections is divided into subsections. This chapter describes the analysis findings as concisely as we can while providing enough information for the reader to understand the data analysis.

4.1.1 Descriptive Analysis

Of a total of 130 responses, 125 agreed to participate in this study (96.15% response rate) and 5 declined (3.85%). When questioned about gender and age, the majority of stockholders of SMEs are male (92.0%) are male, while the remainder (8.0%) are female. The majority of SME stockholders who participated in this study their age between the ages of 20 and 30 years old (57.6%). Broken down by working experience the results show the majority of respondents (50.4%) have less than 5 years of working experience. As well, the majority of SMEs questioned respondents (62.4%) work for companies with 1 to 5 employees. Most respondents of SMEs (37.6%) work in the retail industry. On the other hand, the question of annual revenue shows the majority of respondents (87.2%) have less than 3 million riyals in annual revenue. Broken-down SMEs that used Business Intelligence (BI) tools show the majority of SEMs do not use BI accounts (69.6%), while the respondents (30.4%) use BI.

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 %

4.1.2 Stepwise regression analysis

Stepwise regression analysis uses to analyze and predict the sustainability of SMEs (dependent variable) by proposing the four independent variables which are finance perspective, customer perspective, internal processes perspective, and learning growth perspective. The results are shown in table 1, R-squared (R^2) =0.613 explained the proportion of variance that R^2 explained approximately 61.3% of the variability in SME sustainability based on the four predictors that chosen to measure the sustainability for SEMs. As well, the model intercept reports 0.543, p-value = 0.023. Table (2) shows five models that gradually add the predictors respectively (Financial Perspective, Customer perspective, internal processes perspective, and learning and growth perspective).

In fact, this model shows all predictors (independent variables) have a significant (p-value <0.05) that impact on the sustainability of SMEs. Table 2 provides statistical evidence that shows the comparisons of all five models are statistically significant. The results show the coefficient Financial Perspective:

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, and Learning and Growth Perspective coefficient: 0.140, p-value = 0.044.

Table (2). Display the five models (Financial Perspective, Customer perspective, internal processes perspective, and learning and growth perspective)

Model Fit Measures

Model	R	R^2	Adjusted R^2
1	**0.805**	**0.648**	**0.634**

4.1.3 Model Coefficients - Sustainability for SMEs

Predictor	Estimate	SE	t	p
Intercept [a]	0.749	0.2409	3.11	0.002
Financial Perspective	0.177	0.0748	2.36	0.020
Customer Perspective	0.296	0.0807	3.67	< .001
Internal Processes Perspective	0.248	0.0755	3.28	0.001
Learning and Growth Perspective	0.124	0.0670	1.85	0.067
BI:				
2 – 1	-0.225	0.0803	-2.80	0.006

[a] Represents reference level

Model Fit Measures

Model	R	R^2	Adjusted R^2
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**	**ΔR^2**	**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**

4.1.4 Path analysis

Path analysis is a statistical method used to examine the relationships between variables within a model. The results shows that the variance in Sustainability for SMEs is explained by the model R^2=0.386 (38.6%), and the 95% Confidence Interval: 0.250 to 0.516. On other hand, the variance Financial Perspective Very low explanatory power R^2= 0.000551, where the variance of the Customer Perspective explained by R^2 =0.00986, the variance of the Learning and Growth Perspective explained by R^2 = 0.01475, and the variance of the Internal Processes Perspective explained by R^2 = 0.00371. The below shows the results of hypothesizes that proposed in the model.

- H1: Sustainability for SMEs to Customer Perspective: Positive relationship ($\beta = 0.3081$, $p < 0.001$).
- H2: Sustainability for SMEs to Financial Perspective: Positive relationship ($\beta = 0.1680$, $p = 0.002$).
- H3: Sustainability for SMEs to Learning and Growth Perspective: Positive relationship ($\beta = 0.1397$, $p = 0.003$).
- H4: Sustainability for SMEs to Internal Processes Perspective: Positive relationship ($\beta = 0.2434$, $p < 0.001$).
- H5: Financial Perspective to Business Intelligence1: Non-significant relationship.
- H6: Customer Perspective to Business Intelligence1: Non-significant relationship.
- H7: Learning and Growth Perspective to Business Intelligence1: Non-significant relationship.
- H8: Internal Processes Perspective to Business Intelligence1: Non-significant relationship.

Table (3). Display the Path analysis that examine the relationships between variables within the model

R-squared

Variable	R^2	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

Parameter Estimates

				95% Confidence Intervals				
Dep	**Pred**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
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	0.1924	-0.0610	-0.683	0.495

Variances and Covariances

				95% Confidence Intervals				
Variable 1	**Variable 2**	**Estimate**	**SE**	**Lower**	**Upper**	**β**	**z**	**p**
Sustainability for SMEs	**Sustainability for SMEs**	0.170	0.0215	0.128	0.212	0.614	7.91	< .001
Financial Perspective	Financial Perspective	0.452	0.0572	0.340	0.564	0.999	7.91	< .001
Customer Perspective	Customer Perspective	0.464	0.0586	0.349	0.579	0.990	7.91	< .001
Learning and Growth Perspective	Learning and Growth Perspective	0.607	0.0768	0.457	0.758	0.985	7.91	< .001
Internal Processes Perspective	Internal Processes Perspective	0.600	0.0759	0.451	0.749	0.996	7.91	< .001
Business Intelligence1	Business Intelligence1	0.212	0.0000	0.212	0.212	1.000		

Variances and Covariances

Variable 1	Variable 2	Estimate	SE	95% Confidence Intervals		β	z	p
				Lower	Upper			

Intercepts

Variable	Intercept	SE	95% Confidence Intervals		z	p
			Lower	Upper		
Sustainability for SMEs	0.543	0.367	-0.177	1.262	1.479	0.139
Financial Perspective	3.641	0.065	3.513	3.769	55.681	0.000
Customer Perspective	3.867	0.066	3.737	3.997	58.412	0.000
Learning and Growth Perspective	3.377	0.076	3.228	3.525	44.577	0.000
Internal Processes Perspective	3.580	0.075	3.433	3.728	47.533	0.000
Business Intelligence1	0.196	0.000	0.196	0.196		

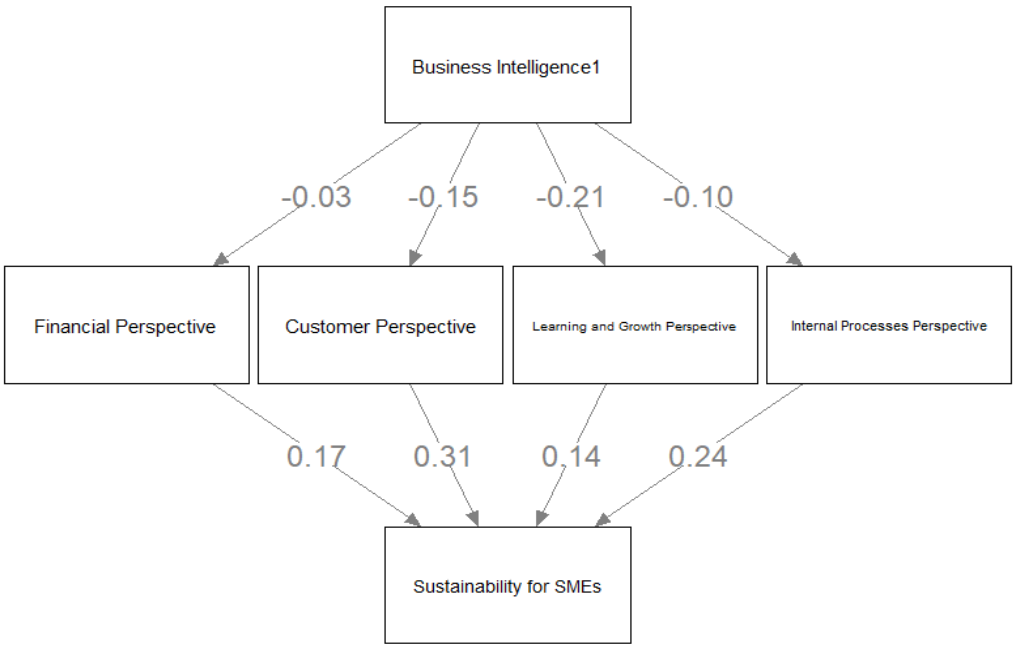

Figure 1. Perspective relationship between variables

5. Discussion

This research works to figure out the Balanced Scored Card dimensions (variables) that represent as independent factors. Actually, all independent variables (factors) have a statistically significant impact on the sustainability of SMEs. Thus, the model shows an R-squared value (0.625), indicating a good fit for the data. Also, the coefficient of the independent variables indicates the amount of change in one unit on the sustainability of SEM for instance, we can see that the "Customer Perspective" coefficient is 0.308, which means that an increase of one unit in the Customer Perspective results in an increase of 0.308 in the sustainability of SMEs.

In the second model, the model suggests that Sustainability for SMEs is positively influenced by its relationships with various perspectives, including Customer Perspective, Financial Perspective, Learning and Growth Perspective, and Internal Processes Perspective. The R-squared values indicate the proportion of variance explained by the model for each variable. The non-significant relationship with Business Intelligence1 indicates that this variable does not significantly contribute to the predicted values in the model.

This study conclusion is supported by several studies that demonstrate the significance of the perspectives on finances, customers, internal company processes, and learning and growth, as well as their effects on business performance and its sustainability Thus, the study results show the importance of predicting and understanding the sustainability of Small and Medium Enterprises by designing and developing a model containing the four perspectives for SMEs in the Jazan region. Also, the statistical evidence provides the correlations and the relationship among sustainability of SEMs (dependent variable), and four predictors (independent variables) are not due to random chance.

6. CONCLUSIONS

This research sought to Identify vital determinants of SME sustainability in Saudi Arabia's Jazan Region. Thus, this research works to illustrate and examine the factors relevant to sustainability. As mentioned above, understanding SME sustainability is no simple task, its complexity is extremely difficult. Therefore, the main aim of our study was to test and develop a comprehensive model. Therefore, our research findings are firmly supported by existing research

[8,9, 32-35], which highlights the critical influence of financial perspective, customer perspective, the internal processes perspective, and learning and growth perspective on business performance. This research reinforces these perspectives by demonstrating their significant impact on predicting and understanding the sustainability of SMEs in Saudi Arabia's Jazan region.

Furthermore, this research emphasizes that the evident statistically significant correlations between the variables of the model confirm that the relationships between the sustainability of SMEs (dependent variable) and the four identified predictors (independent variables) are not merely coincidental. However, research recommends using a large and homogeneous sample could be valuable in investigating the research study model based on invariance analyses across various regions in the Kingdom of Saudi Arabia which might enhance the potential generalizability.

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