THE PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN YEMEN: A CROSS-SECTIONAL STUDY

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ABSTRACT
Due to the importance of the contribution of Small and Medium Enterprises (SMEs) towards development worldwide, researchers in different contexts have investigated the development of SMEs and how economic development can be driven forward by supporting the SME sector. However, when it comes to lower-income economies, literature is scant in investigating the performance and the development of the contribution of SMEs towards economic development in lower-income economies. Hence, the aim of this article is to explore the extent and status of small and medium enterprises in Yemen as a lower-income economy and how their performance varies according to their characteristics. The article adopts cross-sectional quantitative methodologies, it relies on primary data collected conveniently from 400 owners and managers of manufacturing SMEs in Yemen. Descriptive analysis is used to explore the extent of SMEs' performance, and further, variance analysis using Independent Sample t-test and One Way ANOVA in order to explore the variance in the performance according to the variance of enterprise characteristics. The findings indicated a low extent of business performance among manufacturing SMEs, where the mean score of the overall extent ranges from 4.94 to 5.06 out of 7. Further, The result of running One Way ANOVA revealed that the scope of operation, age, and position of managers, in addition to owning a share of enterprises, significantly contribute to the variance in the business performance among manufacturing SMEs (P < 0.05). These results can benefit the managers and owners of SMEs in Yemen and other similar economies by focusing on the extent of performance that their management can target. The implication of this research is summarized by discussing the performance of SMEs in lower-income economies to draw the attention of authors and scholars toward investigating the role and contribution of SMEs in economic development and welfare in lower-income economies.

KEYWORDS: Performance, SMEs, Enterprises, Small Business, Development, Yemen

JEL CLASSIFICATION: M13, Q01, L25.

INTRODUCTION

The Yemeni economy depends largely on the sector of small and medium enterprises (SMEs) in economic activity and economic growth (World Bank, 2013). However, they still work in a challenging environment (Saleh & Manjunath, 2020a), especially during the current period of instability (Saleh & Manjunath, 2020b; Saleh, et al., 2021), let alone how the pandemic of Covid isolated the humanitarian aid to the vulnerable community in addition to affecting the market and hence the performance of SMEs (Saleh and Manjunath, 2020c). Their environment is too weak to promote their development such as in digitalizing their business process (Saleh and Manjunath, 2021).

Regardless of being challenged with many obstacles SMEs in Yemen still contribute towards income generation, employment creation, and the development of the country's GP (Saleh, Manjunath and Qaied, 2021).

When it comes to development, none is significantly achieved in entrepreneurship in Yemen as it was the 187th country in doing business in 2019 against the 90th country in 2006 (World Bank, 2019; World Bank, 2005) Now taking into consideration, the two facts together which are, SMEs play a significant role in the business development in Yemen and Yemen has not yet achieved significant development in the sector of SMEs, raises questions about the performance of the SMEs sector. Hence the research problem of this article is the lack of investigation of manufacturing small and medium enterprises in lower income countries. This implies that investigating how manufacturing perform can bring sufficient insight into the status of the SME sector in general and the ability to anticipate growth or improvement in the performance of SMEs.

When taking into consideration small and medium enterprises in lower-income economies, scholarly research has not paid attention to empowering this category in the business sector. This created the need to explore an aspect of small and medium enterprises in a lower-income country. Therefore, this study aims to investigate the status and extent of the performance in order to explore how the SME sector standing still during the chaotic times experienced in the country and being a contributary sector in the economy.

The structure of this paper begins with the introduction, followed by the literature review and theoretical background, research methodology, results, and the discussion and conclusion are provided.

1 LITERATURE REVIEW AND THEORETICAL BACKGROUND

The performance of Small and Medium-sized Enterprises (SMEs) is a wide topic, influenced by various factors and strategies. One critical aspect is the adoption of social responsibility by SME owners and managers, as discussed by Supeková et al. (2023). This means that SMEs actively engage in activities that benefit society, such as environmental sustainability and ethical business practices. Moreover, it's noteworthy that in developing countries, there is a prevalent trend of SMEs embracing Corporate Social Responsibility (CSR), as emphasized by Gavurova et al. (2022). This aligns with the notion that SMEs can pursue profit and contribute positively to their communities.

In parallel, effective supply chain management is instrumental in enhancing SME performance, as highlighted by Muangmee et al. (2022). Efficient supply chain processes ensure timely access to resources and reduce operational costs, directly impacting the overall competitiveness and sustainability of SMEs. Furthermore, quality management practices, as suggested by Potkany et al. (2022), play a pivotal role in improving SMEs' performance. These practices encompass quality control, process optimization, and continuous improvement, all of which can lead to higher product and service quality, customer satisfaction, and overall business success.

Access to reliable energy supplies, as discussed by Tapang (2023), is a fundamental factor for SMEs. Adequate energy resources enable SMEs to maintain consistent operations, reduce production disruptions, and explore new opportunities for growth. Simultaneously, fostering an entrepreneurial culture, as advocated by Breyer-Mayländer and Zerres (2022), is crucial for creating an ecosystem conducive to SME development. This entails promoting innovation, risk-taking, and a proactive mindset within SMEs and their surrounding business environments.

SMEs are not just economic entities but are expected to contribute positively to society, as highlighted by Rozsa et al. (2022). This implies that they should consider the social and environmental impacts of their operations and actively engage in activities that benefit their communities. However, they face challenges, particularly in technology adoption, as noted by Amoah et al. (2021). Keeping up with technological advancements is critical for SMEs to remain competitive in the global marketplace.

Furthermore, modern forecasting methods, as suggested by Kolková and Ključnikov (2022), can assist SMEs in making informed decisions, managing resources efficiently, and mitigating risks. Additionally, adapting to changes in the labor market, as emphasized by Blahová et al. (2023), is essential for SMEs to attract and retain talent and remain agile in responding to workforce dynamics.

Engaging in global supply chains is a strategic move for SMEs, but this is hindered by various challenges, as pointed out by Bozsik et al. (2023). Overcoming these challenges requires innovative approaches and the ability to meet international standards and demands. Lastly, to thrive in an ever-evolving business landscape, SMEs must prioritize innovation, as recommended by Civelek et al. (2023). Innovation drives product development, process improvement, and adaptation to changing market conditions, ultimately ensuring the long-term success and sustainability of SMEs.

Regardless of accounting for the majority of the business sector in Yemen (World Bank, 2013), SMEs still have no unique definition adopted as there are many definitions based on the organization adopting it and their purposes, such as the Central Statistics Organization (CSO), Social Funds for Development (SFD) or Ministry of Industry and Commerce (MIC) (Alnedhari, 2009). The definitions mainly distinguish between micro, small, and medium enterprises by the number of employees (Aliriani, 2013). Further, there is no supervising authority supporting the SME sector like in other countries (Al-Attas, 2017).

The Yemeni SME sector still strives to grow and sustain remarkable development even in critical times (World Bank, 2012). There was significant resilience in the sector during the instability and the absence of public service in the economy (SCSS, 2019). This creates a need for continuous recovery and development for SMEs to contributory to the Yemeni economy.

The performance and growth of SMEs in Yemen are still stunted by many challenges and obstacles that are of two types: obstacles that are historical and similar to other business environments and other obstacles that are temporary in the Yemeni context (Saleh & Manjunath, 2020b) and mainly associated with functioning in an unstable business environment characterized as chaotic (Saleh & Manjunath, 2020).

A question could be raised about the ability of SMEs to be a significant factor in seeking entrepreneurial development in Yemen. Research indicates that economic development and economic growth rely on entrepreneurship, especially in lower-income countries, due to a lack of developmental opportunities due to the nature of the infrastructure and shortfall in science, technology, and innovation (Toma, et al., 2014; Carree & Thurik, 2005; Stam & Stel, 2011).

This led to the need to study the extent and level of performance among Yemeni SMEs based on the perspective of their owners and managers. Research indicates that the perceived performance of enterprises should be used to measure the overall functional performance and not only the financial performance (Gomezelj & Kušce, 2013). Therefore, the perceived performance differs from one business environment to another, which implies that perceiving impressive performance in underdeveloped economies (especially the ones witnessing political and economic instability) would be compromised as, the number of challenges increases during such periods. Considerable research has been dedicated to evaluating the performance of firms and enterprises and such factorial relevance to the success and goal achievement by firms and enterprises (Neely et al., 1995; 2000; Taticchi et al., 2010; Nudurupati et al., 2011). Prior to the 1980s, measuring the performance of firms and companies was mainly based on financial data off late, it is observed by researchers that the information related to comprehensive performance cannot be captured by financial data alone (Wu, 2009).

According to Lebas & Euske (2002), performance is a set of financial and non-financial indicators that reflect information about the goal accomplishment in a firm, or it can be a set of metrics that facilitate the understanding of the extent of efficiency as well as the effectiveness of activities in an organization (Neely et al., 2000). Anggadwita & Mustafid (2014) describe performance as a measure of the success of a company. Rosli & Sidek (2013) indicate performance as a mirror to an enterprise accomplishment being a center point for evaluation.

Based on this discussion, the study hypothesizes that the performance of manufacturing SMEs does not differ significantly according to the difference or variance in the demographic characteristics of owners and managers and the characteristics of SMEs

2 RESEARCH METHODOLOGY

This section provides a sufficient description of the research methods and approach adopted for the study. It provides a description of the sample and statistical ethods as well a the data collection and analysis.

2.1 Research design

This study is a cross-sectional study using a descriptive-analytical research approach. It relied on primary data that is collected from respondents at one point in time

2.2 Research question

Based on the previous review of the available literature, the following questions are framed to be answered in this research study:
What is the extent and level of SMEs performance in Yemen as a lower-income country?
How does the performance of SMEs differ according to the difference in their characteristics?

2.3 Research aim

This research aims to explore the extent and status of Small and Medium Enterprises (SMEs) in Yemen, a lower-income economy, and assess how their performance varies based on various characteristics. To achieve this, a cross-sectional quantitative methodology was employed.

2.4 Research hypothesis

Based on the reviewed literature and the research objectives, the study hypothesized the following statement:
H1: There is a moderate level of SMEs performance embraced by small and medium enterprises in Yemen.
H2: There is no significant difference in SMEs performance when they are categorized according to their demographic characteristics

2.5 Research sample

The primary data used in this study were collected conveniently from a sample of 400 owners and managers of manufacturing SMEs in Yemen. The selection of participants was made to ensure representation from various segments of the SME sector in the country. The data collection process involved a survey to gather information related to SME characteristics and performance.

2.6 Research Instrument

The study relied on research questionnaire that was developed based on reviewing the previous related research. The performance of manufacturing SMEs is measured based on reviewing the relevant literature. The performance of SMEs is measured by four main variables: Performance growth among SMEs (PG) measured with three statements in the questionnaire, Performance improvement during the last five years (PI) measured with three statements; Internal performance of SMEs (IP) measured with three statements, Learning growth and performance (LGP) measured with four statements in the research questionnaire. The scale was adapted from relevant studies (Makanyeza and Dzvuke, 2015; Mabenge, Ngorora-Madzimure and Makanyeza, 2020; Karabulut, 2015; Al-Matari, Al-Swidi and Fadzil, 2014: Santos and Brito, 2012

2.7 Participants

The participants in this study are managers and owners of manufacturing enterprises. A total of 400 individuals responded to the research questionnaire. It is observed that the majority of respondents (89.5%) are males and in the age group of 41 to 50 years old (44.5%), 36.7% of respondents are administrative supervisors, and 58.3% hold a bachelor's degree, (48.3%) are the one with experience of five to ten years, and finally 63.5% of managers only manage the enterprises without any ownership (Table 1).

Table 1 **Characteristics of managers**

Variable	Category	Frequency	%
Gender	Male	358	89.5
	Female	42	10.5
	Total	400	100
Age	Less than 30 years	35	8.8
	31 - 40 years	167	41.8
	41 - 50 years	178	44.5
	More than 50 years	20	5
	Total	400	100
Position	General manager	144	36
	Department Manager	61	15.3
	Executive manager	48	12
	Administrative supervisor	147	36.75
	Total	400	100
Qualification	Secondary Education	6	1.5
	Diploma (Mini Degree)	110	27.5
	Batchelor degree	233	58.3
	Postgraduate	51	12.75
	Total	400	100
Experience	Less than one year	0	0
	one to five years	149	37.3
	five to ten years	193	48.3
	more than ten years	58	14.5
	Total	400	100
Ownership	Yes	146	36.5
	No	254	63.5
	Total	400	100

(*Source*: primary data)

23.5% of enterprises are found to employ more than 60 employees, (45.5%) were established between 2000 and 2010, (88.5%) operate in the domestic marketplace, and finally, 30% of enterprises are into construction, packaging, and others (Table 2).

Table 2 **Characteristics of enterprises**

Variable	Category	Frequency	%
Number of Employees	Up to 20 employees	116	29
	Up to 40 employees	51	12.8
	up to 60 employees	103	25.8
	More than 60 employees	130	32.5
	Total	400	100
Establishment year	1991 - 2000	101	25.3
	2001 - 2010	182	45.5
	2011 - 2020	117	29.25
	Total	400	100
Scope of Operation	Domestic	354	88.5
	National	26	6.5
	International	20	5
	Total	400	100
Manufacturing Field	Food processing	115	28.8
	Plastic	57	14.3
	Appliances	108	27
	Construction and others	120	30
	Total	400	100

(*Source*: primary data)

2.8 Data collection

The data was collected with a research questionnaire that was distributed to managers and owners of SMEs. The printed questionnaire was distributed by visiting enterprises and targeting the managers and department heads. A maximum of two managers are selected from each enterprise. 450 forms were distributed, 416 forms were returned, making the response rate 83%, which is relatively high due to the actual visits made to the locations of enterprises. However, only 400 were found complete and suitable for analysis

2.9 Data analysis

The data was analyzed using descriptive statistics and variance analysis through the SPSS 26th version. The reliability of the research questionnaire and was found for all the dimensions higher than 0.8, which indicates their applicability of data collection and data analysis. The following tests were employed:

Descriptive Analysis: Descriptive analysis was initially performed to examine the extent of SMEs' performance. This analysis involved calculating descriptive statistics, such as means and standard deviations, to provide an overview of the overall performance of manufacturing SMEs in Yemen.
Variance Analysis: To investigate the variance in business performance based on various enterprise characteristics, two statistical techniques were applied:

a. Independent Sample t-test: This test was used to determine if there were significant differences in performance between different groups of SMEs based on categorical variables.

b. One-Way Analysis of Variance (ANOVA): One-Way ANOVA was employed to assess the impact of multiple categorical variables (scope of operation, age, position of managers, and ownership share) on SME performance.

2.10 Statistical Significance

A significance level of $P < 0.05$ was used as the threshold to determine statistical significance in both the t-test and ANOVA analyses.

3 RESULTS

3.1 Descriptive Analysis

This section presents the descriptive analysis of the responses relating to four dependent variables, which are the four variables related to the performance of manufacturing SMEs. In order to explore the extent f SMEs performance according to the responses of owners and managers, frequency is used to show the extent of agreement/disagreement of managers and owners with respect to the statement measuring the performance variables in the study. So, the number of responses towards the responding option provided in the 7-point Likert scale adopted is interpreted, in addition to that, the percentage of the responses is also drawn and explained.

In the descriptive analysis, weighted average mean and standard deviation are chosen to interpret the research outcome. The reason for choosing these two statistical tests is to answer the research question pertaining to the extent of the business performance of SMEs. Since the study relied on primary data measuring SMEs performance, this implies that the performance is measured according to the opinion of managers and owners od SMEs.

Therefore, the mean score is used to unveil the extent of responses towards the variables measuring SMEs performance. The mean score range from 1 to 7. The reason is because a 7-point Likert scale was used to collect the data. Further the standard deviation is used to identify how the responses deviate from their mean score in order to explore the homogeneity of responses in the research sample

Performance growth among SMEs (PG)

A moderate positive performance growth is observed among majority of manufacturing SMEs (33.5% = SWA, 26.3% = A, and 13.3% = SA), and the weighted average score of 4.96 indicates that there is a low to moderate growth in the growth of the performance among manufacturing SMEs in Yemen.
There is an improvement in the customer satisfaction level among the customers of majority of manufacturing SMEs (31.3% = SWA, 27.5% = A, and 14% = SA), the weighted average score of 4.97 indicates that there is a low to moderate level of increase in the satisfaction levels among customers of manufacturing SMEs in Yemen.

The majority of enterprises reported that the number of their permanent employees have increased in the recent years (30% = SWA, 28.5% = A, and 12% = SA) and the weighted average score of 4.87 indicates that there is a low increase in the permeant employment among manufacturing SMEs in Yemen. It can be concluded from an overall weighted average score of 4.94 that the level of performance growth among manufacturing SMEs in Yemen is relatively low (Table 3).

Table 3 **Descriptive statistics - Performance growth among SMEs**

Statements		SD	D	SWD	N	SWA	A	SA	Mean	S.D.
1-The company has achieved positive growth lately.	F	15	23	28	42	134	105	53	4.96	1.52
	%	3.8%	5.8%	7.0%	10.5%	33.5%	26.3%	13.3%		
2-Customer satisfaction has significantly increased.	F	19	24	19	47	125	110	56	4.97	1.56
	%	4.8%	6.0%	4.8%	11.8%	31.3%	27.5%	14.0%		
3-The company has increased in the number of permanent employees employed.	F	19	31	24	44	120	114	48	4.87	1.60
	%	4.8%	7.8%	6.0%	11.0%	30.0%	28.5%	12.0%		
Overall (PG)									4.94	1.40

(Source: primary data)

Note: SD = Strongly Disagree, D = Disagree, SWD = Somewhat Disagree, N = Neutral, SWA = Somewhat Agree, A = Agree, SA = Strongly Agree, Mean = Weighted average mean, S.D. = Standard deviation.

Performance improvement during the last five years (PI)

An increased customer base realized by majority of manufacturing SMEs in the lats five years (27.5% = SWA, 29.8% = A, and 15.5% = SA), a weighted average score of 5.02 indicates that there is a relatively low increase in customer base among manufacturing enterprises in Yemen.

Similarly, an increase in the sales to new and existing customer is realized by majority of manufacturing SMEs (20.3% = SWA, 37% = A, and 17.3% = SA), a weighted average score of 5.05 indicates that there is a low level of increase in the sales from their new customers as against their existing customers of manufacturing enterprises in Yemen.

Majority of manufacturing SMEs in Yemen have realized/reported an improvement in the general performance context (23.8% = SWA, 34% = A, and 16.8% = SA), a weighted average score of 5.10 indicates that there is has been a low improvement reported in the general performance among manufacturing SMEs in Yemen. It can be concluded with an overall weighted average score of 5.06 that not much improvement has been witnessed by the manufacturing enterprises in Yemen during the last five years of the study period (Table 4).

Table 4 **Descriptive statistics - Performance during the last five years**

Statements		SD	D	SWD	N	SWA	A	SA	Mean	S.D.
1-Number of new customers has increased.	F	19	20	29	41	110	119	62	5.02	1.59
	%	4.8%	5.0%	7.3%	10.3%	27.5%	29.8%	15.5%		
2-Sales to new and existing customers has	F	32	27	14	29	81	148	69	5.05	1.78

									Mean	S.D.
increased.	%	8.0%	6.8%	3.5%	7.3%	20.3%	37.0%	17.3%		
3-The performance in general has improved during the last five years.	F	15	33	18	36	95	136	67	5.10	1.62
	%	3.8%	8.3%	4.5%	9.0%	23.8%	34.0%	16.8%		
Overall (PI)									5.06	1.45

(Source: primary data)

Internal performance of SMEs (IP)

An improvement in the technology used for product development is witnessed among majority of Manufacturing SMEs in Yemen (27.8% = SWA, 30.5% = A, and 18.5% = SA), it can be concluded with a weighted average score of 5.08 that there is a low level of technology improvement has been observed among manufacturing SMEs in Yemen. Customer satisfaction with respect to techniques and process has improved among majority of manufacturing enterprises (23.5% = SWA, 30.3% = A, and 18% = SA), it can be concluded with a weighted average score of 5.07 that there is a low level of betterment in customer satisfaction levels with respect to the processes and techniques adopted by the manufacturing SMEs in Yemen. Reduction in the defective products is experienced by majority of manufacturing SMEs (27.5% = SWA, 32.5% = A, and 16.3% = SA), it can be concluded with a weighted average score of 5.13 that there is a low level of reduction in the defect rate of the products among manufacturing SMEs in Yemen.

The internal performance in general is found to have improved among majority of the sampled SMEs (28.3% = SWA, 31.8% = A, and 13.8% = SA), it can be stated (with a weighted average score of 5.01) that there is a low level of improvement witnessed in the internal performance among manufacturing SMEs in Yemen. With an overall weighted average of 5.07, it can also be concluded that there is a low level of improvement in the internal performance among manufacturing SMEs in Yemen (Table 5).

Table 5 **Descriptive statistics - Internal performance of SMEs**

Statements		SD	D	SWD	N	SWA	A	SA	Mean	S.D.
1-Technology for new product development has improved.	F	22	22	24	37	99	122	74	5.08	1.66
	%	5.5%	5.5%	6.0%	9.3%	24.8%	30.5%	18.5%		
2-Customer satisfaction has improved regarding techniques and processes.	F	17	27	21	48	94	121	72	5.07	1.63
	%	4.3%	6.8%	5.3%	12.0%	23.5%	30.3%	18.0%		
3-Defective product rate have reduced.	F	17	13	35	30	110	130	65	5.13	1.54
	%	4.3%	3.3%	8.8%	7.5%	27.5%	32.5%	16.3%		
Ratio of 4-performance in general has improved in the company.	F	17	25	27	36	113	127	55	5.01	1.57
	%	4.3%	6.3%	6.8%	9.0%	28.3%	31.8%	13.8%		
Overall (IP)									5.07	1.39

(Source: primary data)

Learning growth and performance (LGP

The level of employees happiness and loyalty has seen a major improvement among majority of manufacturing SMEs (28.8% = SWA, 27% = A, and 15.8% = SA), a weighted average score of 4.97 indicates that there is a very low level of improvement in employee loyalty and their happiness is appreciated by manufacturing SMEs in Yemen.

Maintaining information about their customers has improved among majority of manufacturing SMEs (29.8% = SWA, 29.3% = A, and 13.5% = SA), it can be concluded with a weighted average score of 4.97 that there is a very low level of improvement is found in the customers information maintained for realizing optimal performance among manufacturing SMEs in Yemen.

A reduction in the rate of employee turnover has been experienced by majority of manufacturing SMEs (27.5% = SWA, 31% = A, and 12.3% = SA), it can be concluded with a weighted average score of 4.90 that there is a very low level of reduction in employee turnover symbolizing failure on the part of the manufacturing SMEs in Yemen to sustain their competency/manpower.

There is an improvement in employees' suggestions among majority of manufacturing SMEs in Yemen indication of higher degree of employee engagement (28.3% = SWA, 28% = A, and 14.8% = SA), a weighted average score of 4.99 ≈ 5.00 indicates that there is little improvement in employees' suggestions/engagement among manufacturing SMEs in Yemen exhibiting that the enterprises are in a position to realize prolific opportunities moderately. It can be concluded with an overall weighted average score of 4.96 that there is a low level of learning growth performance among manufacturing SMEs in an underdeveloped economy like Yemen (Table 6)

Table 6 **Descriptive statistics - learning growth performance**

Statements		SD	D	SWD	N	SWA	A	SA	Mean	S.D.
1-Employee happiness has been improved during the last five years.	F	25	15	26	48	115	108	63	4.97	1.62
	%	6.3%	3.8%	6.5%	12.0%	28.8%	27.0%	15.8%		
2-Gathering information about customers has improved.	F	22	18	25	45	119	117	54	4.97	1.58
	%	5.5%	4.5%	6.3%	11.3%	29.8%	29.3%	13.5%		
3-Employee turnover rate has reduced.	F	26	17	32	42	110	124	49	4.90	1.63
	%	6.5%	4.3%	8.0%	10.5%	27.5%	31.0%	12.3%		
4-Number of employee suggestions have increased.	F	19	15	29	53	113	112	59	4.99	1.55
	%	4.8%	3.8%	7.3%	13.3%	28.3%	28.0%	14.8%		
Overall (LGP)									4.96	1.32

(Source: primary data)

3.2 Analysis of variance

This section investigates the analysis of variance through using Independent Sample t Test and One Way ANOVA test. The reason for choosing these two parametric tests is that they are suitable for testing variance in the performance variables due to achieving the required assumptions. The assumptions include having a sufficient sample size (400), testing the homogeneity of variance in the sample by using Levene Test which yielded that homogeneity is achieved in the data, ad finally the normal distribution of the data which is achieved by testing the skewness and kurtosis values which were found to be ranging between 2 and -2 indicating that the data did not exhibit a remarkable departure from the normality area.

Differences in SMEs performance based on enterprises' characteristics

This section presents a variance analysis concerning the characteristics of enterprises (SMEs) in Yemen. In essence, the objective of this section is to ascertain whether there exists a significant variance in SME performance based on differences in the characteristics of enterprises. To achieve this goal, we employ Independent Sample t-Tests and One Way ANOVA for an in-depth examination of such variances.

The table provided below presents relevant statistical information. It includes the sample size within each category (N), the mean score of responses corresponding to each category (Mean), the F-values resulting from One Way ANOVA (F), and the associated probability values to determine the statistical significance of the tests (p).

The table below (Table 7) exhibits the results of investigating the difference in the performance of manufacturing SMEs when they are evaluated according to the enterprises' characteristics. As shown in the table, the results show that there is no significant difference observed in the performance of manufacturing SMEs when they are evaluated based in period of establishment; which implies that whether the enterprises are old or new during the past decade, they do not have any significant difference observed in their performance.

On the other hand, the scope of operation is seen to play a significant role in the difference in the performance of manufacturing SMEs, as the p-value of applying one-way ANOVA is found to be less than 0.05, which indicates that the performance of manufacturing SMEs differs according to the differences in the scope of operation. Further, the Post Hoc test indicates that the difference is due to the performance of enterprises functioning in the domestic environment, which differs from the performance in the national and international environment.

When investigating the performance based on the field of manufacturing as well as the employee count, the results show that there is no significant difference in the performance of manufacturing SMEs when they are evaluated according to the field of manufacturing and the number of employees as the p-values of one way ANOVA are 0.21 and 0.96 respectively which indicates that the field of manufacturing and the number of employees do not have any statistically significantly influence on the performance of manufacturing SMEs.

Table 7 **Differences in SMEs performance based on enterprises' characteristics**

Variable		N	Mean	F	p
Establishment year	1991 - 2000	101	5.0106	2.058	0.129
	2001 - 2010	182	5.1189		
	2011 - 2020	117	4.8297		

Scope of operation	Domestic	354	5.1576	27.194	0.000
	National	26	3.8984		
	International	20	3.7821		
Manufacturing field	Food processing	115	5.0422	1.511	0.211
	Plastic	57	4.8409		
	Appliances	108	5.1825		
	Construction and others	120	4.8940		
Employees count	Up to 20 employees	116	5.0222	0.091	0.965
	Up to 40 employees	51	5.0770		
	Up to 60 employees	103	4.9861		
	More than 60 employees	130	4.9824		

(Source: primary data)
Note: $P < 0.05$ we reject H_0, $p > 0.05$ we fail to reject H_0. Testing hypothesis is at 5% significance level

This leads to conclusion that when evaluating the performance of manufacturing SMEs in Yemen according to the enterprises' characteristics, only the scope of operation is found to influence in differentiating the performance among the different scopes of operations, while no difference in performance is observed based on the other characteristics; which are, year of establishment, manufacturing field, and the number of employees.

Differences in SMEs performance based on managers' characteristics

This section presents the variance analysis according to the characteristics of managers and owners of SMEs in Yemen. In other words, this section aims to identify if there is a significant variance in the performance of SMEs according to the variance in the characteristics of managers. This implies investigating the difference in the performance that is led by the difference in the demographic characteristics. To achieve this, Independent Sample t-Test and One Way ANOVA are used to study such variance.

The table below exhibits the statistics related to the same. It shows the size of the sample in each category in the sample (N), the mean score of responses according to each category (Mean), the t values, which is the t statistics values generated by Independent Sample t-Test (t), the F values generated by using One Way ANOVA (F), and the probability value to identify the significance of the test (p).

For further variance investigation, the following table (Table 8) exhibits the results of investigating the performance of manufacturing SMEs in terms of the characteristics of owners/managers. As shown in the table, nature of ownership plays a significant role in the performance of the enterprise, as the difference in the reported performance is statistically significant, we can conclude that the performance is slightly better when it is influenced by the nature of ownership. However, when the same is evaluated based on the experience of managers, the results show that there is no significant difference in the performance when impacted by the experience of managers; this means that the experience of managers does not play a significant role in determining the performance of the enterprises.
When evaluating the performance based on the qualification of managers, the results show that there is no significant difference reported in the performance when based on their qualification, which indicates that the performance reported is independent of the qualification of the managers be it the one with secondary education, diploma or postgraduation.

On the other hand, it is observed that the position at which the manager discharges his rule significantly influences the performance of manufacturing SMEs. Different decisions are taken at different levels and each decision is directed towards a specific vision. The Post Hoc test indicates that the difference observed is between the categories of general managers and department managers.

Finally, when the performance is evaluated against the age of owners/managers, the results indicate that there is a significant difference in the performance of manufacturing SMEs; the Post Hoc test indicates that the difference is due to the category to which a manager is associated i.e. one who are less than 30 years, who are between 31 and 40, and between 41 and 50. This makes it obvious that over a period of time, managers become more proficient/efficient and that makes their decisions and actions rational and thereby enhance the performance of manufacturing SMEs.

Table 8 **Differences in SMEs performance based on managers' characteristics**

Variable		N	Mean	t	F	p
Ownership	Yes	146	5.1404	1.681		0.047
	No	254	4.9303			
Experience	one to five years	149	4.9132	-	0.844	0.431
	five to ten years	193	5.0415			
	More than ten years	58	5.133			
Qualification	Secondary Education	6	4.6905	-	1.048	0.371
	Diploma (Mini Degree)	110	5.1708			
	Batchelor degree	233	4.9411			
	Postgraduate	51	4.9916			
Position	General manager	144	5.2267	-	3.638	0.013
	Department Manager	61	4.6569			
	Executive manager	48	5.0521			
	Administrative supervisor	147	4.9223			
Age	Less than 30 years	35	4.3204	-	4.3	0.005
	31 - 40 years	167	5.0804			
	41 - 50 years	178	5.055			
	More than 50 years	20	5.1679			

(Source: primary data)
Note: $P < 0.05$ we reject H_0, $p > 0.05$ we fail to reject H_0. Testing hypothesis is at 5% significance level

This leads us to the conclusion that the performance of manufacturing SMEs in Yemen is not influenced by the experience and qualification rather significantly influenced by the nature of stake or ownership, position and the age of managers.

This also leads us to partially reject the second hypothesis - "There are no significant differences in adopting decision making practices and the performance among managers of Yemeni manufacturing SMEs when they are evaluated according to the demographics of managers and SMEs"; since no significant difference is observed in adopting DMPs among manufacturing SMEs when evaluated in terms of all the demographic characteristics of managers as well as the enterprises.

4 DISCUSSION

The study aimed to investigate the performance of manufacturing SMEs in Yemen. The results indicated a low level of performance growth and improvement during the last five years, as the overall mean score of the four variables of SMEs performance range from 4.94 to 5.06 out of seven. This implies that there is room for improvement when it comes to improving the business performance in the SMEs sector. This might be attributed to the unstable condition experienced by the economy of Yemen (Saleh & Manjunath, 2020b). Establishing an authority that is directly related to supervising and guiding small and medium enterprises where providing such support and guidance can facilitate the possibility of developing the performance of manufacturing SMEs through maintaining a conducive business environment and providing sufficient incentive and protection for SMEs to function and compete for the chances of achieving competitive advantages and economic development in the business sector (Saleh & Manjunath, 2020c; Saleh, et al., 2021).

When investigating the variance in the performance, the nature of ownership notably emerges as a significant determinant of SME performance. The statistically significant differences in performance attributed to ownership structure suggest that varying ownership types bring distinct advantages or strategies that influence the enterprise's performance positively.

Conversely, the analysis reveals that the experience and qualification of managers do not exhibit a statistically significant impact on SME performance. This finding challenges the commonly held belief that managerial experience and qualifications are key drivers of success in the SME sector. Instead, it suggests that other factors, such as decision-making processes and strategic vision, may play a more substantial role in determining an SME's performance. Moreover, the study's observation that the position held by a manager significantly influences SME performance underscores the importance of the managerial role itself in shaping the company's trajectory.

Additionally, the age of owners/managers emerges as a significant factor in SME performance, with differences observed across age categories. This implies that, over time, managers tend to become more proficient and efficient in their decision-making and actions, which positively impacts the SME's performance.
This creates an earnest need to pay due attention to developing and empowering the management of SMEs as the strategic orientation and intendency of managers to go beyond the routine towards enhancing the business performance in their enterprises. Educational institutions can play a significant role in orienting future managers and entrepreneurs with the required knowledge and skills that empower them to look into a bright future associated with data driven decision and strategic planning for the business to reach the desired objectives (Saleh et al., in press)

The findings of the study aligns with the findings of relevant previous studies. Collectively emphasizing the significance of specific factors in determining enterprise performance. Inconsistently with the results of Blackburn et al. (2013), the age and size of an enterprise emerge as dominant factors influencing performance of SMEs. Wang et al. (2022) highlight the significance of deep-factor heterogeneity within top management teams, resonating with the study's focus on factors that are associated with the performance. Additionally, Danes et al. (2007) discuss gender-related differences in personnel management, mirroring the research's exploration of gender of managers as a moderating factor in enterprise responses to disruptions. Akpan and Amran (2014) emphasize the importance of board composition. The consistency of the study findings with these studies reinforces the relevance of management characteristics diversity in determining SMEs performance. Lastly, the findings are also consistent with (Aragón-Sánchez & Sánchez-Marín, 2005) regarding the distinct management characteristics and their differential impacts on SMEs performance, reinforcing the idea that a enterprises' strategic orientation plays a pivotal role. Overall, the consistency with these studies further strengthens the validity and relevance of the research findings in understanding the multifaceted dynamics of enterprise performance.

Optimizing the performance of Yemeni SMEs creates the need for a collaborative effort involving diverse stakeholders, including SME managers, owners, policy makers, incubators, and non-governmental organizations (NGOs), to address the such factors contributing to their success, and for the general improvement of the SME sector (Saleh & Manjunath, 2021).

CONCLUSIONS

The findings of the study indicated low extent of business performance among manufacturing SMEs in Yemen. Further, The findings revealed that the scope of operation, age and position of managers in addition to owning a share of enterprises significantly contribute to the variance in the business performance among manufacturing SMEs.

Small and medium-sized enterprise (SME) proprietors and managers require a heightened understanding of strategies to enhance SME performance. Both owners and managers hold certain responsibilities, as do government authorities. Increased focus has the potential to yield enhancements in SME performance. The presence of a specialized overseeing entity can greatly ease business performance among SMEs. Additionally, official departments and institutions should offer guidance and assistance to bolster activities and overall business performance within the SME sector.

The findings of this study hold valuable implications for SME managers and owners not only in Yemen but also in economies sharing similar characteristics. By highlighting the achievable levels of performance through effective management, these results offer actionable insights for SME stakeholders. Furthermore, this research underscores the importance of SMEs in lower-income economies, urging authors and scholars to explore and recognize their pivotal role in fostering economic development and enhancing the welfare of communities in these contexts.

The limitation of the study is summarized by studying the aspect of manufacturing enterprises, hence including service enterprises may yield different results. Further, the study did not take into consideration the management style of managers in SMEs, hence, further research can measure the association between management style/practices with the performance of enterprises.

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