

Sustainability of Local SME Engineering Firms in Saudi Arabia (Empirical study)

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Abstract: Recent years have witnessed more and more companies that integrate sustainability practices in their daily operations and activities, and to enhance these efforts and achieve sustainable development, it has become necessary for small and medium -sized startups also to participate in the sustainability process.

In light of the Kingdom's tendency to digital transformation, and its advantages in raising efficiency in work, productivity and flexibility in the application of technology services, small and medium companies face the challenge of adapting to digital transformation and the fulfillment of governance requirements, and we specify here by mentioning engineering offices, and the problems they face in the labor market, how economic variables, stagflation and financial crises affect the economic situation of these small and medium -sized companies in light of the laws and regulations that govern engineering offices in the Kingdom.

In line with these goals, companies of all sizes align their efforts with the most sustainable development goals related to their business while identifying areas where they can achieve positive returns. In addition, companies committed to the implementation of sustainable practices have greater opportunities to attract investors looking for opportunities that take into account the social dimensions of sustainable development, and customers who demand more transparency regarding the disclosure of their sustainability efforts.

This paper aims to investigate the Ranking and Impact of factors: (Leadership, Entrepreneurship, Laws and Regulations, Organization Culture and Technology) on the Sustainability of local SME Engineering Firms in Saudi Arabia. The results showed that the ranking of the Leadership factor occupies the largest percentage in terms of importance followed by Entrepreneurship and Laws and Regulation then Organization Culture and lastly is Technology, as for the impact leadership factor and technology have the highest positive percentage of 92%, followed by Entrepreneurship with 78%, Organizational culture 68%, while Laws and Regulations had a 62% negative impact.

Keywords: Saudi Arabia, sustainability, SMEs Engineering Firms, Digital Transformation.

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Introduction

Economic globalization is an opportunity for developed and developing countries to encourage them to prosper by increasing their participation in global trade. Success in global trade depends on the economic gains resulting from it. The 2016 World Trade Organization report stresses the importance of settling transactions for medium and small companies, and the importance of their participation in international trade, (Duygulu, et al. 2016).

The 2005 Global Technology Report also emphasized the role of the SMEs in economic development, and that they are a major driver of sustainable development in both developing and developed countries, a tool for addressing various development issues; such as poverty, unemployment and inequality, especially among women and youth, limited industrial capacity, slow growth and limited factors of production in developing countries, Trivedi, P. (2020).

SMEs are considered a way to maintain balanced growth and economic stability. According to the United Nations Sustainable Development Report 2009, women own 8 to 10 million small projects in developing countries, indicating that the SMEs are a vital income-generating sector for women in developing countries, SMEs employ about 50% of employment in developing countries and two-thirds of formal non-agricultural employment, Paley, J. (2016).

Some believe that small and medium companies are a driving force for developing economies and that multinational companies have a very important impact on small and medium companies due to their increasing growth in developing countries because they provide basic commodities at high prices, Chatterjee, S. and Kar, A.K.(2020).

1. An Overview of Small and Medium-sized Companies in the Kingdom of Saudi Arabia

The Small and Medium Enterprises Authority in the Kingdom of Saudi Arabia defines small and medium enterprises as “any independent enterprise with a commercial register of less than 249 employees and Less than 200 million Saudi riyals in revenue.”

According to the Ministry of Labor and Social Development, Saudi small and medium-sized companies contribute about 22 percent of the Kingdom's GDP, compared to 70 percent in some other countries, but it is higher compared to many countries of the Gulf Cooperation Council.

Small and medium-sized companies contribute about 12% of the volume of exports in Saudi Arabia. About 34 percent of Saudi workers work in small and medium enterprises (SMEs).

1.1. Challenges faced by Small and Medium-sized Companies in the Kingdom of Saudi Arabia:

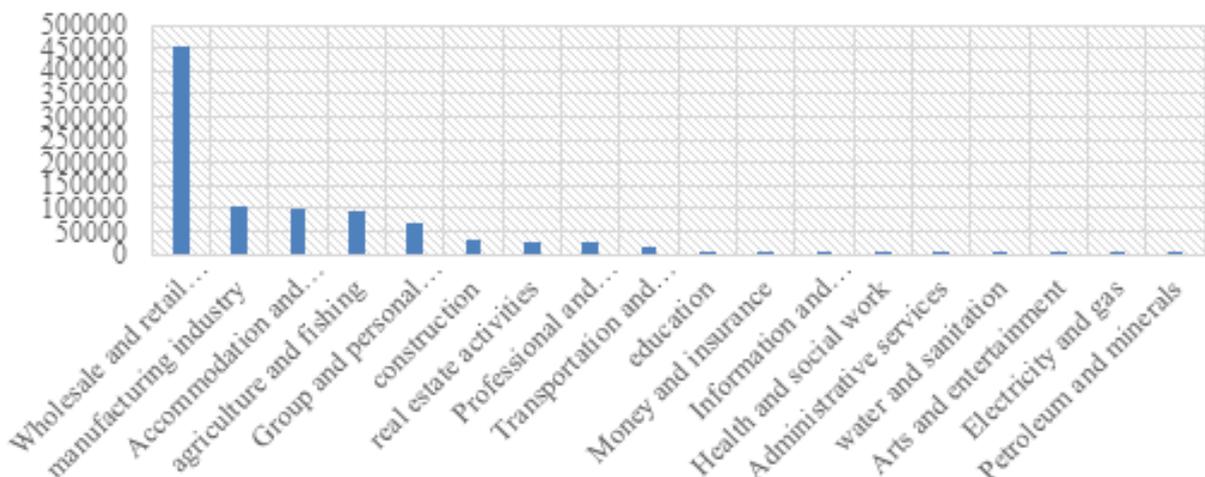
- 1.1.1. SMEs have been affected the most since the introduction of the Value Added Tax (VAT), largely due to the relatively high cost of sticking to the system.
- 1.1.2. The number of non-Saudi workers in the country has decreased by 6.2 percent in 2018, compared to 2017, which reached 9.98 million expatriates in 2018. The main reason for the decline in the number of expatriates is the rise in the cost of living, and the enforcement of the Saudization of Jobs Law.
- 1.1.3. Most of the small and medium-sized businesses have also stopped operating because of Saudization, inequity in the distribution of wages and skills required in the SME sector. In addition to having regulatory burden is one of the biggest obstacles for SMEs.

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- 1.1.4. Most of the ambitious small and medium companies are preparing economic feasibility studies in a random way to obtain loans and support, which led to the failure of many projects.
- 1.1.5. Medium and small companies face complications in administrative procedures and a weak ability to attract the necessary funds for financing.
- 1.1.6. One of the main challenges facing small and medium businesses is the lack of innovation, poor coordination and strict terms with a large organization. Moreover, sometimes they face issues of late payment and stress low cost, procurement, audit procedures by a larger organization hampering the growth of small and medium businesses.
- 1.1.7. It requires to provide financial resources by financial institutions for medium and small companies to have accurate data, which is not enjoyed by most medium and small companies, that causes an obstacle in the sustainability of financial resources, which leads to an increase financiers' costs, which are passed on as fees borne by small and medium-sized companies, N. Azyabi, et al. (2013).
- 1.1.8. Inadequate legal environment in case of default.
- 1.1.9. The most common obstacles facing SMEs are 32% related to information, 33% to administrative aspect, 53% to marketing and 65% to bureaucracy. According to Riyadh Chamber of Commerce (2016).
- 1.1.10. The annual survey of small and medium enterprises for the year 2019, issued by the General Authority for Statistics, revealed that the number of small and medium enterprises in the Kingdom amounted to about 949.9 thousand establishments.
- 1.1.11. The survey indicated that 47.7% of these establishments work in wholesale and retail trade, 10.9% of them are in manufacturing industries, 10.6% of them are in accommodation and catering, and 30.8% of them are in other activities, Ahmed, N., & Bakht, Z. (2010).

1.2. Benefits of promoting sustainability in the SME sector in Saudi Arabia

Shape 1: The Number of SMEs in Suadi Arabia



- 1.2.1. Improve economic performance.
- 1.2.2. Creating job opportunities in various geographical areas and productive sectors and assisting in the employment of large sectors of the workforce, including low-skilled workers, and providing opportunities for skill development.
- 1.2.3. It improves the balance of payments situation of the country by increasing exports.
- 1.2.4. Small and medium companies have the ability to respond quickly in making and implementing decisions. It does not require approval from the Board of Directors.
- 1.2.5. Small and medium-sized companies enable entrepreneurs to enhance the volume of supply and raise competitiveness.
- 1.2.6. Small and medium-sized companies contribute in achieving the goals of society through environmental practice and sound and good work and the establishment of good collective relations, Taddei, C. and Dele'colle, T. (2012).

1.3. Sustainability of SME in Saudi Arabia

The Brundtland Commission report in 1987 clarified the concept of sustainable development as “Meet the needs of the present without compromising the ability of future generations to meet their needs” Brundtland Commission, (1987). The concept is based on two basic conditions: limited resources and human need. In the field of entrepreneurship, sustainable development is defined as “meeting the needs of stakeholders without compromising their ability to meet their needs in the future (Hubbard, 2009).

As Savitz and Weber (2006) explained, a sustainable company is “a company that generates profits for its shareholders while caring for the environment and providing a better life for those with whom it interacts.” Thus, sustainability emphasizes balancing the needs and profits of stakeholders and protecting the environment.

Meeting the daily needs of human beings and business entities must be compatible with their natural and social environments, where nature provides the resources for food, drink, shelter and health, and in industry, to create new products for human needs.

While businesses provide goods and services for profit; society provides labor required to get salaries, wages, and customers whose consume goods and services to continue to live, so investors get the necessary credit return. The interrelationship between the environment and business is required, Wadström, P. (2019).

1.3.1 Measurements of SMEs’ Sustainability

As previously explained in terms of the three dimensions of sustainable development, natural, social and economic, Hart and Milstein (2003) establish a framework for measuring the sustainable value of business, this framework takes into account the internal and external issues of companies, in addition to their current and future issues, such as pollution and consumption and waste that requires pollution prevention.

External and current interests place great emphasis on the needs of civil society and stakeholders for transparency and communication; External and future interests are also linked to the problem of increasing global population, poverty and inequality, which requires companies to have a vision of sustainability, Xiu, L., et al. (2017).

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To operationalize sustainability, companies must develop an appropriate business strategy. Companies must make adjustments not only to their investments, but also to the shape of the policy, vision and mission. Sustainability is more than just focusing on the natural environment, but also considering the economic and social sustainability of businesses Wehrbach, (2009).

Regarding sustainability, Lawrence et al. (2006) took a sample of 811 SMEs in New Zealand, comparing sustainability practices between small, medium and large-sized businesses. Supported environmental practices included policies, programs and systems, waste management and reporting, recycling programs, social concerns, employee training and education, and they found that although SMEs had social concerns, most of them did not have formal environmentally friendly reporting. Borja et al (2009) emphasized that the lack of sustainability reporting guidelines was one of the main obstacles facing SMEs in implementing sustainability.

2. Literature Review

2.2. SME (Small and Medium-sized Enterprises)

Increasing concerns about environmental, social, and economic issues are given high priority Sancha, Wong, Gimenez Thomsen, (2016). In this regard, practitioners and researchers alike have taken an interest in the field, Linnenluecke, Russell, & Griffiths, (2009), which aims to identify activities that contribute to a sustainable balance. The relationship of this balance to aspects of social, environmental and economic performance, as well as interrelationships while addressing the organizational system as a whole and its primary business owners, Lozano, 2012; Lozano, Carpenter, & Huising, (2015).

Several research studies have been conducted regarding sustainability. For example, Adamas and Frost (2008) examined key performance indicators for measuring sustainability and observed that organizations incorporate both environmental and social indicators into strategic planning and decision-making. AnsKolk (2008) also demonstrated how a company incorporates sustainability reporting alongside corporate governance.

Khan and others. (2011) also studied sustainability trends on the part of Bangladeshi banks and ensured that information about society was given more attention.

Omran and Owe (2014) investigated the importance of sustainability and concluded that business stakeholders compel companies to demonstrate transparency, effective governance, and accountability by disclosing corporate sustainability. While Ibrahim et al. (2015) investigated management practices, Pacho et al. (2013) examined the relationship between sustainability disclosure, capital, and future performance, and concluded that there is a negative relationship between sustainability disclosure and the cost of capital, while there is a positive relationship between expected future performance and the quality of sustainability reports.

Mahmes (2016) notes that there is a significant correlation between a company's environmental disclosure and economic performance. Mahmoud and Orazalin (2017) studied the relationship between the company's board of directors and sustainability reports and found that the size and gender diversity of the board of directors is an important factor in determining the scope and quality of sustainability information.

Loannou and Serafeim (2017) emphasized the impact of sustainability disclosure on companies' practices and assessments. The Swarnapali, Nayana (2018) study on corporate sustainability reports also revealed that there is a positive relationship between sustainability reports and company value.

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Since the 1990s, the concept of sustainability has become a widespread concern in the business community. This integration of environmental and social aspects with profit Elkington, (2004) has become closely related to management practices and decision-making, Drake & Spinler, (2013) and also reflects the concept of the idea of long-term planning and impact assessment, Bansal & DesJardine, (2014). In this regard, Robèrt et al., (2002); Seuring & Müller, (2008) explained that organizational sustainability is a set of strategies and business practices that contribute to sustainable development while supporting social and environmental aspects in the long term while achieving the economic requirements of profitability and growth at the same time.

2.3. Business Sustainability Factors

In this study we identified five factors that has been chosen based on previous studies in the context of business success and sustainability these five factors were the most repeating ones , they will be used to measure business sustainability in SME engineering firms in Saudi Arabia, they will be addressed in literature reviews as follows:

2.3.1. Entrepreneurship

Entrepreneurship begins with work, finding available opportunities, identifying and following them up, and evaluating feasibility. During the eighties and beyond, research began to study what entrepreneurs do rather than focusing on personality. While there is no specific definition of the concept of "entrepreneurship", Venkataraman explained that arriving at a distinct field of entrepreneurship research, as an academic field aimed at discovering and exploiting profit opportunities.

Several papers have examined the differences between entrepreneurs and non-entrepreneurs Gartner (1985: 696).

The difference between entrepreneurs and non-entrepreneurs and/or small business owners, is innovation. Where the entrepreneur is characterized by creating an activity, through an innovative mix of resources aimed at profit.

Since 1990, the focus has been on behavioral and cognitive pillars rather than personality traits. In recent years, studies of entrepreneurship have focused largely on opportunities as they are at the core of our understanding of the phenomenon, Hills & Shrader (1998:2). Hills, Shrader, and Lumpkin (1999: 2) also considered opportunity recognition to be a distinctive application of the creative process. Morris and Jones (1999: 73) emphasized that entrepreneurship has behavioral components.

2.3.2. Leadership

Much time and effort has been expended to uncover the common features of leadership over several centuries. Thomas Carlyle stated in 1847, that universal history, is what man has accomplished in this world, as Carlyle explained in his "Great Man Theory" that leaders are born and that only those men with heroic potential can become leaders. American philosopher Sidney Hooke deepened Carlisle's view further and highlighted the influence that the man of events can have versus the man who makes the events (Dobbins & Platz, (1986). However, subsequent events revealed that this conception of leadership was morally unacceptable, as was the case with Hitler, Napoleon, and the like, then leadership theory developed into a reflection of certain traits that visualize leadership potential. The literature indicates that leaders put personal interests aside for the benefit of the group. The leader focuses on the needs and inputs of workers in order to turn everyone into a leader by empowering and motivating them House & Aditya, (1997). Yockel (1989) presented three different leadership styles. Employees who work under democratic leadership are highly satisfied, creative and

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motivated. Regardless of the presence or absence of the leader; they also maintain good relations with the leader, while the autocratic leader focused on a greater amount of production.

Feidler & House (1994) mentions two new leadership styles that focus on performance effectiveness. These researchers saw that the most important consideration is people, public relations, initiation, organizational structure, and production behaviors. Concern for production behaviors were very vital variables. He also indicated the amount of trust and intimacy that the leader instills in his subordinates. Several researchers have suggested three types of leaders (authoritarian, Democratic and recessive). Without the involvement of the subordinates, the autocratic leader makes the decisions, the recessive leader allows the subordinates to make the decision and thus takes no real leadership role other than the democratic leader who reaches out to his subordinates and then makes his decision. "It was further assumed that all leaders could fall into one of these three categories."

2.3.3. Organizational Culture

Organizational culture is a set of values, behavior patterns, and beliefs that unconsciously drive the members of the organization to make decisions, Ortega-Parra & Sastre-Castillo, (2013). Schneider et al. (2013) that organizational culture is a set of standards that represent the work environment, and these standards play a role in the actions of members to achieve organizational goals. Organizational culture is the way in which members of an organization interact with each other and with other stakeholders, Simoneaux & Stroud, (2014). Yirdaw (2016) explained that organizational culture is the material that combines non-human resources and human resources in an organization to form teamwork and good performance.

Peters and Waterman have ranked 46 companies in the USA based on their organizational culture. In 1985, Schein further noted the importance of organizational culture in relation to organizational performance by dividing organizational culture into three parts: assumptions, artifacts, and values. As defaults represent important informal rules in the organization. Artifacts are the tangible elements of organizational culture, values represent organizational structures, beliefs of organization members and their business strategy. These three elements play an effective role in maintaining an organizational culture Childress, (2013); Schein, (1985). In 1992, Kotter and Heskett conducted research on more than 200 companies in the USA and concluded that there is a strong relationship between organizational culture and business performance. In 2011, Flamholtz and Randle contributed additional knowledge in the field of organizational culture towards business performance with practical examples from companies in the USA, Europe, China and other countries. In 2013, Sharma and Good conducted a pilot study to measure the impact of organizational culture on organizational performance. The results of the study were that organizational culture is an important component of organizational performance and competitive advantage. In addition to the mentioned basic studies, several books and articles have contributed to the development of organizational culture theory Childress, (2013). However, Nwibere (2013) pointed out that there is a lack of theoretical support for enhancing managers' knowledge in the area of effectiveness of organizational culture to enhance company business performance.

2.3.4. Laws and Regulations

According to the United Nations, the rule of law is where all “persons, institutions and entities, public and private, including the state itself, are responsible for laws publicly promulgated, equally enforced and independently adjudicated, consistent with international human rights norms and standards.” The United Nations postulates that implementing the rule of law requires “measures to ensure adherence to the principles of the rule of law, equality before the law, accountability before the law, fairness in

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the application of the law, separation of powers, and participation in decision-making” to ensure legal certainty, avoid arbitrariness, and procedural and legal transparency.

Regulations allow small business owners to act in certain ways, as well as place restrictions on them. The protection and enforcement of property and contracts are perhaps the most obvious regulatory enablers. By enabling small businesses to spread assets for trade and giving those legal remedies in the event of default by business partners, property and contracts provide small businesses with the means and confidence to set up and operate businesses. International studies of economies at different stages of market development demonstrate, for example, that where equity is most effective, firms reinvest their profits but do not otherwise, Johnson et al. (2002), contract law can enhance dynamic cooperation and efficiency Arigti, et al., (1997), consumer protection laws may stimulate business (Parker 2007), moreover, state-provided contract enforcement facilitates international trade, Ackerman, (2006); Leeson (2008).

2.3.5. Technology

Technology and innovation have an important role in achieving comprehensive sustainable development. Studies prepared before the formulation of the 2030 Agenda for Sustainable Development and after its approval have shown the extent of the contribution of science, technology and innovation.

The level of bifurcation and complexity of development. Once the level of complexity and complexity in the sustainable development goals became clear, science, technology and innovation are seen as a critical tool to achieve these goals in the context of the knowledge revolution and the acceleration of technological progress.

Since technology and innovation stimulate productivity, inclusive economic growth and sustainable development, they may contribute to finding solutions to the most pressing social, economic and environmental challenges in the world, especially in the Arab region. An integrated approach must be based on innovation, which has taken many forms and models since the beginning of economic globalization and the information and communication revolution at the end of the last century.

3. Data Source and Methodology

To study the feasibility of sustainability within small and medium-sized enterprises in the Kingdom of Saudi Arabia, a questionnaire was made for employees and managers in small and medium-sized enterprises and the following variables were taken to be measured.

The study population consists of employees and managers in small and medium-sized Saudi engineering companies, and a random sample method was used in Saudi companies and the distribution of questionnaires, of which 50 were answered, shown in the following table:

3.1. The Demographic Data

Table 1: Gender

Demographic	Male	Female	Total	Sample Percentages
Gender	39	11	50	100%

Table (1) shows the demographic data for the research sample, the female’s percentage is 22%, and the male is 78%.

Table 2: Age

Demographic	Percentages	Number
12:17	4%	2
18:24	16%	8
25:34	50%	25
35:44	22%	11
45:54	6%	3
55:64	2%	1
65:74	0%	-
75+	0%	-
S.DV	0.16	8.24
AVR	0.17	8.33

Table (2) shows the ages of the sample members, it turns out that 50% of the sample members are in the age group 25:34, followed by the age group between 35: 44.

Table 3: Education

Demographic	Percentages	Number
High school	10%	5
Diploma	2%	1
Bachelor	52%	26
Master	22%	11
Doctorate	12%	6
other	2%	1
S.DV	0.17	8.60
AVR	0.17	8.33

Table (3) shows the education level of the sample members, it obvious that 52% of the sample members with bachelor’s degree, followed by master’s degree with 22%.

Table 4: Company Size

Demographic	Percentages	Number
(Small)10:49 Emp.	38%	19
(Medium)50:249 Emp.	24%	12
(Large)249+ Emp.	38%	19
S.DV	0.07	3.30
AVR	0.33	16.67

Table (4) shows the company size of the sample members, the largest proportion is 38% of the sample members working for large size companies the same percentage is for the small size companies, and the last one is medium sized companies.

Table 5: Company Old

Demographic	Percentages	Number
0:5 years	32%	16
6:10 years	20%	10
10+ years	48%	24

S.DV	0.11	5.73
AVR	0.33	16.67

Table (5) shows the company old of the sample members, the largest proportion is 48% of the sample members working for company with more than 10 years old, followed by companies that operate between 6: 10 years with 10%.

Table 6: Position

Demographic	Percentages	Number
Owner	16%	8
CEO	2%	1
Employee	54%	27
Academic	8%	4
Consultant	8%	4
Oher	12%	6
S.DV	0.22	10.98
AVR	0.24	12.00

Table (6) shows the position of the sample members, 54% are employee, 8% owners.

Table 7: Experience

Demographic	Percentages	Number
Junior (0:2)	34%	17
Senior (3:5)	26%	13
Manager (6:10)	22%	11
Executive (10+)	18%	9
S.DV	0.05	2.49
AVR	0.27	13.67

Table (7) shows the experience years of the sample members, 34% are junior and 26% are senior.

3.2. Analysis of Ranking the Factors of Sustainability in SMEs in Saudi Arabia

After analyzing the study data, the researcher reviewed it in preparation for its treatment by converting the verbal answers to numerical by using SPSS program, where the answer was given very important to unimportant from 1: 5 degrees according to the degree of importance of the criterion in the company. The necessary statistical treatment of the data was carried out by extracting the arithmetic averages, the standard deviation of the sustainability factors under study, and the alpha coefficients were used to examine the power of the study and the Pearson correlation coefficients to check the validity of the study variables.

Table 8: Ranking the Factors of Sustainability in SMEs in Saudi Arabia

	Sustainability Factors	1st		2 nd		3 rd		4th		5th		S.DV	AVE
A1	Entrepreneurship	11	22%	4	8%	2	4%	8	16%	25	50%	8.12	10
A2	Leadership	21	41%	10	20%	11	22%	8	16%	0	0%	6.72	10
A3	Laws and Regulations	11	22%	6	12%	9	18%	14	28%	10	20%	2.61	10
A4	Organizational Culture	5	10%	24	48%	6	12%	8	16%	7	14%	7.07	10
A5	Technology	3	6%	6	12%	22	44%	12	24%	8	16%	6.58	10.2

Table (8) shows the results of the survey regarding the degree of importance of the sustainability factor for employees of small and medium-sized engineering companies in the Kingdom of Saudi Arabia. It was found from the results of the survey that the Leadership factor has the largest percentage in terms of importance, followed by the Entrepreneurship and Laws and Regulations, after that is the Organizational Culture and, in the end, comes the Technology factor with an importance of 6% and Standard deviation 6.2.

Figure 1: Study Variables Path

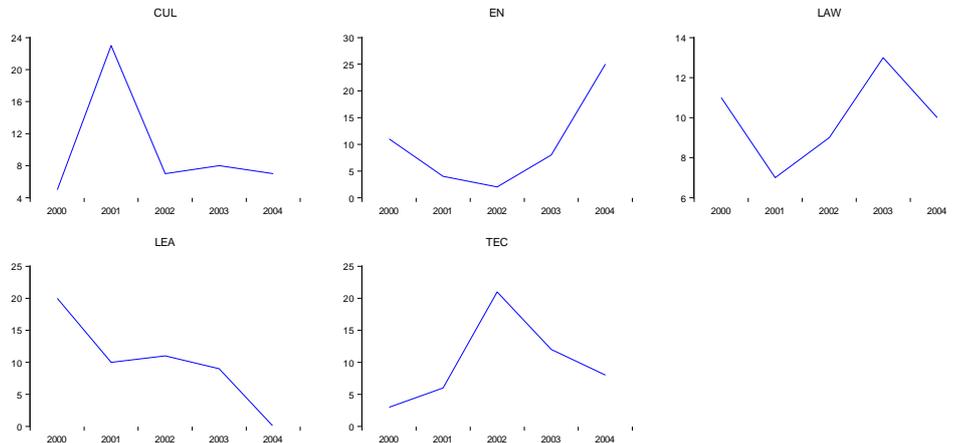


Figure (1) was designed using E- views program, it shows the random distribution of the five factors under the study.

Table 9: Descriptive Statistics

	ORG.	ENTR.	LAW.	LEAD.	TECH.
Mean	10.00000	10.00000	10.00000	10.00000	10.00000
Median	7.000000	8.000000	10.00000	10.00000	8.000000
Maximum	23.00000	25.00000	13.00000	20.00000	21.00000
Minimum	5.000000	2.000000	7.000000	0.000000	3.000000
Std. Dev.	7.348469	9.082951	2.236068	7.106335	6.964194
Skewness	1.415795	0.984732	0.000000	-8.65E-17	0.764635
Kurtosis	3.146862	2.572727	2.050000	2.450985	2.302317
Probability	1.674890	0.846115	0.188021	0.062795	0.588631

Table (9) indicates the preliminary analysis of the quantitative data is the most essential analysis. It is used to measure the features of data among the variables, it presents the preliminary results of the sustainable factors, showing that the average range of measurement for these variables is 10 for all variables. Furthermore, leadership’s maximum value is 20, while the minimum value is 0.

Table 10: Correlation Matrix

Covariance					
Probability	LEAD	ENTER	LAW	CULTURE	TECH
LEADERSHIP	1.000000				

ENTERPRENTURE	-0.565484	1.000000			

	0.3205	-----			
LAWS AND REGULATION	0.094398	0.258492	1.000000		
	0.8800	0.6746	-----		
ORG. CULTURE	-0.100535	-0.374555	-0.715082	1.000000	
	0.8722	0.5345	0.1746	-----	
TECHNOLOGY	-0.207113	-0.414984	0.000000	-0.234484	1.000000
	0.7382	0.4872	1.0000	0.7042	-----

Table (10) shows the correlation matrix which is used to estimate relationships between variables. This test determines the highest and lowest level of correlation between the variables.

3.3. Analysis of Factors’ Positive and Negative Impact on Organization

This analysis measures the positive and negative degree of applying sustainability factors in engineering offices in the Kingdom.

Table 11: Positive and Negative Impact of the Factors

	Sustainability Factors	Positive		Negative		S.DV	AVE
A1	Entrepreneurship	39	78%	11	22%	14	25
A2	Leadership	46	92%	4	8%	21	25
A3	Laws and Regulations	18	36%	32	64%	7	25
A4	Organizational Culture	34	68%	16	32%	9	25
A5	Technology	46	92%	4	8%	21	25

Table (11) display’s the positive and negative impacts, leadership factor and technology have the highest positive percentage of 92%, followed by Entrepreneurship with 78%, Organizational culture 68%, while Laws and Regulations had a 62% negative impact.

4. Results and Discussion

From the previous analysis of employees’ opinions about small and medium engineering companies in the Kingdom of Saudi Arabia, the following was found regarding the five factors affecting the sustainability of engineering SMEs:

4.1. Leadership

According to the statistical analysis of the opinions of the employees, it was found that leadership is the largest positive influence on the organization among the five factors thus it is ranked as first, where 92% of workers confirmed that leadership is a strong positive influence for the organization with a standard deviation of 21, 41% of the workers indicated that leadership has a role in the sustainability of companies small and medium size with a standard deviation of 6.72.

4.2. Entrepreneurship

With regard to the entrepreneurship, according to the statistical analysis, the workers see that entrepreneurship is the second positive influence on the organization after leadership among the five factors thus is it ranked as second, as 78% of workers confirmed that entrepreneurship is a strong

positive influence for the organization with a standard deviation of 14, where 22% of the workers indicated that entrepreneurship is not important To achieve sustainability in small and medium-sized companies with a standard deviation of 8.12.

4.3. Laws and Regulations

As for the regulations and laws, according to the statistical analysis of the employees, we find that the it has a positive effect 46% on the organization, and 22% of the workers indicated that the regulations and laws are important to achieve sustainability in small and medium-sized companies with a standard deviation of 2.61 thus it is ranked as third, we have to note here that the percentage of the impact is 64% negative impact indicates that the majority of the population surveyed are not happy with rules

4.4. Organizational Culture

Organization culture captured 68% of employees’ opinions as a positive factor affecting the organization with a standard deviation of 9, and 10% of workers indicated that it is important to achieving sustainability in small and medium companies, this means it is the fourth most important factor

4.5. Technology

Technology accounted for 92% of employees’ opinions as a positive factor affecting the organization with a standard deviation of 21, and 6% indicated that it is important with a standard deviation of 6.58, thus the technology factor is the fifth most important factor.

From the previous results, we find that the leadership factor is the most important as it has the highest number of supporters due to having a good employer that has leadership skills and makes the employees feel at ease while doing the job assigned, followed by the second most important factor which is entrepreneurship due to the nature of the problem solving and thinking out of the box, followed by the third most important factor laws and regulations because it preserves the right of the employees and owner and guides them but most of them saw this factor having a negative impact because it is related to money where if mistakes were made it will be costly, the fourth factor is organizational culture which is the organization beliefs and values and the way they behave, the fifth most important factor is technology, even though it has a high positive impact, still the majority ranked it as fifth as they see it as a must have and already available resource.

Conclusion:

This paper aims to investigate the sustainable factors (Leadership, Entrepreneur, Laws and Regulations, Organization Culture and Technology) for local SME engineering Firms in Saudi Arabia. The results showed that:

- **The Ranking of the degree of importance, Leadership factor occupies the largest percentage in terms of importance followed by Entrepreneurship and Laws and Regulations, then Organization Culture, and finally, the Technology factor.**
- **The Positive and Negative impacts, Leadership factor and Technology have the highest positive percentage of 92%, followed by Entrepreneurship with 78%, Organizational culture 68%, while Laws and Regulations had a 64% Negative impact.**

The questionnaire method was applied by distributing a sample of 50 employee of SME engineering firms in Saudi Arabia, and by analyzing the data, the result confirmed the impact of these five factors

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on the sustainability of engineering firms in Saudi Arabia, where the greatest impact according to the survey was leadership followed by entrepreneurship, and technology came in the last factors.

5. References

1. Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. *The Leadership Quarterly*, 15, 5–32.
2. Blair F, Wrigh D. (2012). Implementing sustainable procurement. In: *European Pathway to Zero Waste & Resources Action Programme (EPOW)*. Oxfordshire: European Pathway to Zero Waste, Waste & Resources Action Programme.
3. Blair F, Wrigh D. (2012). Implementing sustainable procurement. In: *European Pathway to Zero Waste & Resources Action Programme (EPOW)*. Oxfordshire: European Pathway to Zero Waste, Waste & Resources Action Programme.
4. Bonito, A.; Pais, C. (2018). The Macroeconomic Determinants of the Adoption of IFRS for SMEs. *Span. Account. Rev.*, 21, 116–127, doi:10.1016/j.rcsar.2018.03.001.
5. Borga, F., A. Citterio, G. Noci and E. Pizzurno, (2009). Sustainability report in small enterprises: Case studies in Italian furniture companies. *Business Strategy and the Environment*, 18(3): 162-176.
6. Burlea-Schiopoiu, A.; Mihai, L.S. (2019). An Integrated Framework on the Sustainability of SMEs. *Sustainability*, 11, 6026, doi:10.3390/su11216026.
7. Cravo, T.; Gourlay, A.; Becker, B. (2012). SMEs and regional economic growth in Brazil. *Small Bus. Econ.*, 38, 217–230, doi:10.1007/s11187-010-9261-z.
8. DEFRA. (2006). *Procuring the Future - The Sustainable Procurement Task Force National Action Plan*. London: Department for Environment, Food and Rural Affairs [cited 2015 Mar 16]. Available from: <http://www.sustainable-development.gov.uk/publications/procurementactionplan/documents/full-document.pdf>
9. Edwards, T.; Delbridge, R.; Munday, M. (2005). Understanding Innovation in Small and Medium-Sized Enterprises: A Process Manifest. *Technovation*, 25, 1119–1127, doi:10.1016/j.technovation.2004.04.005.
10. Fifka, M. (2012). The development and state of research on social and environmental reporting in global comparison. *Journal für Betriebswirtschaft*, 62(1), 45-84.
11. Geron B, Gunasekaran A, Spalanzani A. (2012). Sustainable supply management: an empirical study. *Int J Production Econ.* 140:168–182.
12. HogeForster, M. (2014). Future Challenges for Innovations in SME in the Baltic Sea Region. *Procedia Soc. Behav. Sci.*, 110, 241–250, doi:10.1016/j.sbspro.2013.12.867.
13. Hubbard, G., (2009). Measuring organizational performance: Beyond the triple bottom line. *Business Strategy and the Environment*, 18: 177-191. DOI 10.1002/bse.564.
14. Islam MM, McMurray AJ, Siwar C, Fien J. (2014). Sustainable procurement in the Malaysian Organisations: practices, barriers and opportunities. *J Purchasing Supply Manage.* 20:195–207.
15. Marimon, F., del Mar Alonso-Almeida, M., del Pilar Rodríguez, M., & Alejandro, K. A. C. (2012). The worldwide diffusion of the global reporting initiative: What is the point? *Journal of Cleaner Production*, 33, 132–144.

16. Masurel, E., (2007). Why smes invest in environmental measures: Sustainability evidence from small and medium-sized printing firms. *Business Strategy and the Environment*, 16(3): 190-201. Available from <http://0-proquest.umi.com.library.ecu.edu.au/pqdweb?did=1219966481&Fmt=7&clientId=7582&RQT=309&VName=PQD>
17. Meath, C.; Linnenluecke, M.; Griffiths, A. (2016). Barriers and Motivators to the Adoption of Energy Savings Measures for Small and Medium-Sized Enterprises (SMEs): The Case of the Climate Smart Business Cluster Programme. *J. Clean. Prod.*, 112, 3597–3604, doi:10.1016/j.jclepro.2015.08.085
18. Najul, L. N., Chakraborty, T. K., & Maji, S. G. (2017). Corporate sustainability performance and financial performance: Empirical evidence from Japan and India. *Management and Labour Studies*, 42(2), 1-19.
19. Ntwoku, H.; Negash, S.; Meso, P. (2017). ICT Adoption in Cameroon SME: Application of Bass Diffusion Model. *Inf. Technol. Dev.* 23, 296–317, doi:10.1080/02681102.2017.1289884
20. Pérez-López, D., Moreno-Romero, A., & Barkemeyer, R. (2015). Exploring the relationship between sustainability reporting and sustainability management practices. *Business Strategy and the Environment*, 24(8), 720-734.
21. Qiao, P.H.; Ju, X.F.; Fung, H.G. (2014). Industry Association Networks, Innovations, and Firm Performance in Chinese Small and Medium-Sized Enterprises. *China Econ. Rev.* 2014, 29, 213–228, doi:10.1016/j.chieco.04.011.
22. Schipper, J., J.S. Chanson, F. Chiozza, N.A. Cox, M. Hoffmann, V. Katariya, J. Lamoreux and A.S.L. Rodrigues, (2008). The status of the world’s land and marine mammals: Diversity, threat, and knowledge. *Science*, 322: 225-230. Available from <http://www.sciencemag.org/content/322/5899/225.full.pdf> [Accessed 20 Nov 2011]
23. Srour I, Chong WK, Zhang F. (2012). Sustainable recycling approach: an understanding of designers’ and contractors’ recycling responsibilities throughout the life cycle of buildings in two US cities. *Sustainable Dev.* 20:350–360.
24. The Guardian. (2015). Saudi Arabia green decree brings hopes of sustainability. *The Guardian*, UK [updated 2014 May 12; cited 2015 Mar 21]. Available from: <http://www.theguardian.com/sustainable-business/saudi-arabia-green-construction-oil-sustainability-environment>
25. Tutterow, V. (2014). Embedding sustainability into small and medium-sized manufacturing enterprises. Arlington, VA: Virginia Tech, Center for Leadership in Global Sustainability (CLiGS).
26. Wang G, Côté R. (2011). Integrating eco-efficiency and eco-effectiveness into the design of sustainable industrial systems in China. *Int J Sustainable Dev World Ecol.* 18:65–77.
27. Xu, J., & Li, J. (2019). The impact of intellectual capital (IC) on SMEs performance in China: Empirical evidence from non-high tech vs high-tech SMEs. *Journal of Intellectual Capital*, 20(4), 488-509
28. Zailani S, Jeyaraman K, Vengadasan G, Premkumar R. (2012). Sustainable Supply Chain Management (SSCM) in Malaysia: a survey. *Int J Production Econ.* 140:330–340

29. Belz, F.M., & Binder, J.K. (2017). Sustainable Entrepreneurship: A Convergent Process Model. *Business Strategy and the Environment*, 26(1), 1-17. <https://doi.org/10.1002/bse.1887>
30. Camilleri, M.A. (2017). *Corporate sustainability, social responsibility, and environmental management: an introduction to theory and practice with case studies*. Springer.
31. Hoque, I. (2013). Upgrading status of light engineering clusters in Bangladesh: an analysis. *D.U. Journal of Marketing*, 16(2), 1-16
32. Ahmed, N., & Bakht, Z. (2010). The light engineering industry in Bangladesh: A case study. *Institute of Development Studies*, 1-8