

-RESEARCH ARTICLE-

SME's SUSTAINABILITY AND SUCCESS PERFORMANCE: THE ROLE OF GREEN MANAGEMENT PRACTICES, TECHNOLOGY INNOVATION, HUMAN CAPITAL AND VALUE PROPOSITION

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—Abstract—

Literature on the sustainability and success of SMEs is expanding at a rapid rate. Researchers have focused on various factors that affect the sustainability and success of small and medium-sized enterprises (SMEs). Still, little research has been conducted on the effects of these factors during the transformation process when SMEs move from conventional to sustainable business practices. This study's objective is to analyze the impact of green management practices, technological innovation, human capital, and value proposition on the sustainability and success of Saudi Arabian SMEs. 182 Saudi Arabian Small and Medium-Sized Enterprises (SME) employees provided data, including hospitality and tourism, beauty and cosmetics, textile, and manufacturing. Amos 16 was used to analyze the data using Structural Equation Modeling (SEM). According to the study's findings, green management practices, human capital, and technological innovation positively impact the sustainability and success of SMEs. However, the value proposition has no role in the SMEs' sustainability and success. The conclusions of this study will be helpful for policymakers and the management of SME transformation participants.

Keywords: Sustainability, Green management practices, Technology innovation, Human Capital

1. INTRODUCTION

Sustainable business operations have been a significant trend in the business world, and SME's have adopted sustainable business practices to give environmentally-friendly products to their customers and create an eco-friendly environment in other business procedures. Several factors, including intense rivalry, technical advancements ([Cherrafi et al., 2018](#)), and the company's commitment to enhancing financial performance, have

led to these modifications (Chu et al., 2018). In this regard, Dey et al. (2020) noted that, due to a lack of knowledge of the notion of sustainability, researchers and practitioners view sustainability as a cost-driving activity whose sole purpose is to examine environmental issues. However, Qiu et al. (2020) emphasized that the function of sustainability extends beyond environmental considerations and argued that sustainability also assists firms in enhancing their financial performance and worldwide market competitiveness.

Zollo et al. (2013) noted that the literature has focused on why businesses should adopt sustainable business models. Still, there has been less research on the transformation process from traditional business models to sustainable business practices. In addition, Schiederig et al. (2012) claimed that although the literature on eco-friendly or green and sustainable innovation has been rising, there is a lack of knowledge on how businesses go green and attain sustainability. These observations are supported by Samuel and Erik's (2018) assertion that a scant study has examined the idea of sustainability among firms that turn conventional products into green marketplaces.

Despite the scarcity of literature on the topic, it is essential to comprehend the elements that influence organizational sustainability during their transformation process and the effect of organizational sustainability on organizational success. Small and Medium-Sized Enterprises (SMEs) in the hotel and tourism, beauty and cosmetics, textile, and industrial industries are working on achieving sustainability and improved performance following the National Transformation Program in Saudi Arabia (Vision 2030). Numerous activities have been undertaken to change SME systems from analog to digital, including technological innovation and human capital development. In light of these considerations, the purpose of this study is to investigate the effects of various factors, such as human capital, technological innovation, value propositions, and green management practices, on the sustainability and success of small and medium-sized enterprises (SMEs) in Saudi Arabia during their transformation process.

2. LITERATURE REVIEW

Past academics have highlighted the significance of technological innovation and hypothesized that technological innovation aids in achieving organizational sustainability. In this context, Battisti et al. (2019) propose that technological innovation is the most critical factor in attaining organizational sustainability. In support of this, Kuncoro & Suriani (2018) asserted that technological innovation aids in achieving competitive advantage and sustainability for businesses. Moreover, according to Chatzoglou & Chatzoudes (2018), innovation strategy enables firms to deliver value to their clients, enhancing their value (Hermundsdottir et al., 2021). Boons and Ludeke (2013) elucidated the notion of sustainable innovation and noted that the concept is in its infancy and that scholars should investigate this topic. In addition, Ghaziani and Ventresca (2005) indicated that without technological innovation, companies may find

it difficult to achieve sustainability and that the consequences of new technologies are comparable to those of sustainability.

Moreover, innovation has similar effects on business sustainability to technological innovation (Boons et al., 2013). Boons and Ludeke (2013) also proposed that technological innovation is viewed as a market force to manage internal and external obstacles in new technology marketing. In addition, the business model bridges the gap between technology characteristics and commercialization strategies. Moreover, Selma et al. (2019) suggested that technological innovation aids in comprehending the various approaches to enhancing and bettering commercial operations.

Choi (2014) suggested that, among the various elements that affect organizational success, sustainability is the most significant factor and that, to achieve sustainability, organizations should concentrate on their value proposition. In addition, Grewatsch and Kleindienst (2017) argued that sustainability depends not just on environmental considerations but also on unique processes, such as value proposition. According to Morris et al. (2005), the concept of the value proposition as unique corporate values is utilized by organizations as a sustainable competitive advantage. Sustainable value propositions require a trade-off between improved product and service performance, according to Boons and Ludeke (2013).

In addition, Rajesh and Makhmooor (2016) argued that the business model is deemed more efficient and is supported by the value proposition. Moreover, Youngan et al. (2019) highlighted that sustainability with a value proposition assists firms in achieving performance objectives. To acquire a competitive advantage, businesses should establish distinctive practices, human capital, and eco-innovations. Specifically, organizations may not be able to reach their sustainability objectives without human capital.

Samuel and Erik (2018) stated that previous scholars do not understand the notion of green innovation and that green management practices cannot be effectively implemented without a deeper grasp of green innovation. In addition, P. Naruetharadhol et al. (2021) found that SMEs are less likely to engage in eco-friendly procedures, making them less eco-innovative; without eco-innovation, SMEs may be unable to implement green management practices. Further, they suggested that green management techniques enable small and medium-sized enterprises (SMEs) to become more eco-innovative and that by adopting eco-innovative practices, SMEs tend to achieve sustainability. When small and medium-sized enterprises (SMEs) implement green management practices, their primary objective is to achieve success via sustainability, which is impossible without green management practices and eco-innovation. Moreover, Khan et al. (2019) indicated that eco-innovation might impact company performance in environmental performance, which is impossible without organizational sustainability. Therefore, we can argue that green management practices influence the sustainability of an organization, which in turn contributes to its success.

3. HYPOTHESIS

H1: SME's sustainability (OS) mediates the relationship between green management practices (GMP) and SME's success performance (OSP).

H2: SME's sustainability (OS) mediates the relationship between human capital (HC) and SME's success performance (OSP).

H3: SME's sustainability (OS) mediates the relationship between value proposition (VP) and SME's success performance (OSP).

H4: SME's sustainability (OS) mediates the relationship between technology innovation (TI) and SME's success performance (OSP).

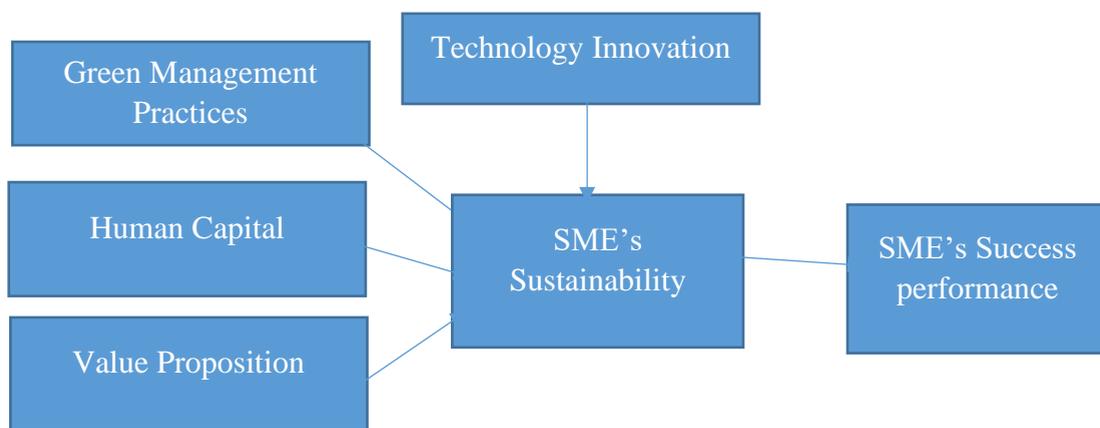


Figure 1: Conceptual Framework

4. METHODOLOGY

Since this study aims to empirically analyze the impact of human capital, value propositions, green management practices, and technological innovation on SMEs' sustainability and success performance, this section will focus on these factors. In this investigation, quantitative methods, notably probability sampling, were employed. In particular, a stratified random sampling approach was employed to choose the sample. A survey questionnaire was utilized to collect data from employees working in various SMEs in Saudi Arabia, such as tourism and hospitality, retail, beauty and cosmetics, textile, and fitness centers. A total of 250 questionnaires were sent out, of which 187 were returned, and 5 were rejected because they were incomplete. In all, 182 completed questionnaires were utilized for the study. Amos-16 was utilized to evaluate the data and test model fit with the measurement and structural model using Structural Equation Modeling (SEM). [Bhatti and Veera \(2015\)](#) recommended that SEM is the most effective statistical method when the study's goal is to test the model with mediation and evaluate

the nature of each path. Consequently, SEM was employed to conduct a path analysis and test measure and structural model fit for Amos-16.

5. MEASUREMENTS

Green management practices were measured using 6 items adopted from [P. Naruetharadhol et al. \(2021\)](#). Scale items include 1. "I believe our firm prioritizes promoting clear objectives and long-term environmental plans," 2. "I believe that our firm prioritizes to promote requirements for suppliers and distributors, based on environmental criteria," 3. "I believe our firm prioritizes to promote green knowledge infusion among employees," 4. "I believe that our firm prioritizes to promote the 3Rs concept (e.g., Reduction, Reuse, and Recycling)," 5. "I believe that our firm prioritizes promoting environmental management systems (for example, ISO 14,000/14,001 and others)," and 6. "I believe that our firm prioritizes promoting green training programs." The value proposition was measured using 5 items that were developed by [Rajesh and Bashir \(2016\)](#). Scale items include 1. "We continuously seek to differentiate our products concerning our competitors," 2. "We have created more USPs for product/ services than our competitors," 3. "We have added more features to the offerings than our competitors," 4. "We continuously seek new ideas to make our products easy to use," and 5. "We seek to bring new value-added services than our competitors." Human Capital was measured using 2 items developed by [Rajesh and Bashir \(2016\)](#). Scale items include 1. "We seek to find new ways to improve the skill set of the employees," and 2. "We have developed new ways to improve the efficiency of our people."

Organization success performance was measured using 4 items adopted from [Chen et al. \(2009\)](#). Scale items include 1. "We have enhanced the sales and profitability of the firm." 2. "We have achieved profit objectives," 3. "We have achieved sales objectives," and 4. "We have achieved market share objectives." Technology innovation was measured using 9 items adopted from [Lee et al. \(2014\)](#). Scale items include 1. "We can produce products with novelty features," 2. "We use the latest technology for new product development," 3. "The speed of new product development is fast enough/competitive," 4. "We have enough new products introduced to the market," 5. "We have new products which are first-in-market (early market entrants)," 6. "We are technologically competitive," 7. "We use up-to-date/new technology in the process," 8. "We are fast in adopting process with the latest technological innovations," 9. "The company's process, techniques, and technology change rapidly." Finally, organizational sustainability was measured using 5 items adopted from [Gelhard and Von Delft \(2016\)](#). Scale items include 1. "We are the first that offer environmental-friendly products/services at the marketplace," 2. "Our competitors consider us a leading firm in the field of sustainability," 3. "We develop new products/services or improve existing products/services that are regarded as sustainable for society and the environment" 4. "Our reputation in terms of sustainability is better than the sustainability reputation of

our competitors," 5. "Compared to our competitors, we more thoroughly respond to societal and ethical demands."

6. ANALYSIS AND RESULTS

Table 1. Reliability of the Scale

Constructs	Internal Consistency
SME's Success Performance (SME's SP)	0.78
SME's Sustainability (SME's S)	0.71
Green Management Practices (GMP)	0.77
Human Capital (HC)	0.76
Value Proposition (VP)	0.75
Technology Innovation (TI)	0.80

Table 1 shows that all scales' reliability is above 0.6 (Hair et al., 2007) , indicating that all scales have higher internal consistency.

Table 2: Demographic Profile

Demographics	No. of Supervisor/Managers	Percentage
Gender		
Male	137	75.2
Female	45	24.7
Age		
18-28 years	66	36.2
29-39 years	94	51.6
40 and above	22	12.0
Education		
Diploma	91	0.50
Graduates	64	35.1
Masters	27	14.8
Others	0	0
No. of years of Experience		
less than 5	109	59.8
6-10	68	37.3
11 and above	5	2.7

6.1 Notes for the Model

Table 3. Computation of Degree of Freedom (Default Model)

Number of distinct sample moments	1037
Number of the distinct parameter to be estimated	347
Degree of freedom (1158-297)	690

Table 4. Measurement Model Fit

Overall Model Measure	Overall Model Score	Acceptable Model Fit	Acceptable Baseline
CFI	0.951	Passed	≥ 0.90
AGFI	0.887	Passed	≥ 0.80
RMSEA	0.017	Passed	< 0.10
CMIN/DF	2.19	Passed	< 3
TLI	0.904	Passed	≥ 0.89
IFI	0.910	Passed	≥ 0.90

Table 5. Structural Model Fit

Overall Model Measure	Proposed Model	Acceptable Model Fit	Acceptable Baseline
CFI	0.90	Passed	≥ 0.90
AGFI	0.901	Passed	≥ 0.80
RMSEA	0.019	Passed	< 0.10
CMIN/DF	2.87	Passed	< 3
TLI	0.923	Passed	≥ 0.89
IFI	0.917	Passed	≥ 0.90

Table 6. Summary of Effects

Variables	Direct Effects	Indirect Effects	Total Effects
GMP --> SME's S	0.101	-----	0.101
HC --> SME's S	0.257	-----	0.257
VP --> SME's S	0.211	-----	0.211
TI --> SME's S	0.230	-----	0.230
GMP --> SME's SP	0.161	-----	0.161
HC --> SME's SP	0.267	-----	0.267
VP --> SME's SP	0.260	-----	0.260
TI --> SME's SP	0.137	-----	0.137
SME's S --> SME's SP	0.284	-----	0.284
GMP --> SME's SP	-----	0.357	0.357
HC --> SME's SP	-----	0.297	0.297

VP --> SME's SP	-----	0.390	0.390
TI --> SME's SP	-----	0.311	0.311

Table 7. Result of Analyses and Hypotheses

Hypotheses		P-value	t-value	Accept or Reject
H1	SME's sustainability (SME's S) mediates the relationship between green management practices (GMP) and SME's success performance (SME's SP).	0.051	3.01	Accept
H2	SME's sustainability (SME's S) mediates the relationship between human capital (HC) and SME's success performance (SME's SP).	0.043	3.27	Accept
H3	SME's sustainability (SME's S) mediates the relationship between value proposition (VP) and SME's success performance (SME's SP).	0.241	1.21	Reject
H4	SME's sustainability (OS) mediates the relationship between technology innovation (TI) and SME's success performance (SME's SP).	0.019	2.89	Accept

Results of this study indicated that SME's sustainability (SME's S) mediates the relationship between Green management practices (GMP), Human capital (HC), Technology Innovation (TI), and SME success performance (SME's SP). Therefore, H1, H2, and H4 are accepted. In addition, the results of this study reported that SME's sustainability (SME's S) does not mediate the relationship between value proposition (VP) and SME's success performance (SME's SP). Therefore, H3 is rejected.

7. DISCUSSION

Since businesses have acknowledged the significance of sustainable business practices, the concept of organizational success through sustainable practices has been in a growth phase. In this context, academics feel that organizational sustainability is equally important to small and medium-sized enterprises (SMEs) as it is to large enterprises; nevertheless, little study has been conducted to determine how sustainable business practices affect SMEs' success. Even while earlier research has identified numerous elements that influence the sustainability of major firms, little research has been conducted to investigate the relevance of these factors in organizational change from conventional to sustainable practices. Therefore, this study aims to investigate the impact

of green management practices, technological innovation, human capital, and value propositions on the success and sustainability of small and medium-sized enterprises (SMEs).

This study found that the association between green management practices and SME success performance is mediated by SME sustainability. In other words, green management practices enable small and medium-sized enterprises to attain sustainability, which in turn aids their success or performance. This study supports the paradigm of eco-innovation by [P. Naruetharadhol et al. \(2021\)](#) and [Khan et al. \(2019\)](#). They argued that eco-innovation is not limited to environmental initiatives but encompasses all sustainable business practices that assist companies in attaining sustainability and enhancing performance. Therefore, this study's findings also imply that when small and medium-sized enterprises (SMEs) embrace green management techniques, they tend to develop eco-friendly products and services that help them attain sustainability and enhance performance. In this context, [Albort-Morant et al. \(2016\)](#) argued that open eco-innovation or green management methods assist SMEs in enhancing their core competencies and environmental image. Therefore, the participation of the SME in eco-innovation processes and the implementation of green management techniques aid in achieving sustainability and enhancing success.

This study's findings also indicate that technological innovation helps small and medium-sized enterprises attain sustainability, which influences their performance further. In other words, the relationship between technology innovation and SME success performance is mediated by SME sustainability. This study's findings confirm [Hermundsdottir & Aspelund's \(2020\)](#) and [Battisti et al. \(2019\)](#)'s arguments that technological innovation is a crucial driver for SME success and sustainability. Therefore, when SMEs adopt technology and improve business practices, such as the organizational changes made during the time of Covid-19, most SMEs in Saudi Arabia have adopted digital platforms to produce products and services that make them more sustainable and improve their performance. The participation of SMEs in technological innovation enables them to face internal and external problems, deliver competitive products and services to customers, and enhance their core strengths, resulting in sustainability, improved performance, and market success.

Human capital is essential to the growth and development of any firm. Human capital has a beneficial effect on the longevity and success of small and medium-sized enterprises, according to the present study's findings. Sustainability mediates the relationship between human capital and SME success, indicating that small and medium-sized enterprises (SMEs) must focus on human capital to achieve success and sustainability. The significance of these findings is that it is impossible to adopt any sustainable practice without a professional and knowledgeable workforce, regardless of the type and nature of sustainable practices. Similarly, value propositions play an essential role in achieving sustainability; however, surprisingly, the results of this study

indicate that value propositions have no effect on the sustainability of SMEs, but weak direct effects were found between value propositions and SMEs' success performance. This study's findings accord with those of [Youngan et al. \(2019\)](#), who suggested that value propositions play a crucial role in attaining corporate objectives. In other words, a value proposition may not aid corporations in reaching sustainability, but it aids SMEs directly in achieving their objectives. In addition, the conclusions of this study are consistent with those of [Boons and Ludeke \(2013\)](#), who asserted that firms must have a value proposition to attain sustainability. All of the targeted SMEs were in the process of transitioning from conventional to sustainable business methods. Therefore the level of sustainability could be a plausible explanation for these contradicting results. Additionally, the value proposition may positively impact an SME's sustainability once it has achieved complete sustainability, as opposed to throughout the transformation process.

8. THEORETICAL AND PRACTICAL IMPLICATIONS

Similar to earlier studies, this one has both theoretical and practical consequences. The current study experimentally investigated the provided conceptualizations of previous studies on technology innovation, human capital, green management practices, and value proposition within the framework of the SME transformation process. Consequently, the outcomes of this study contribute to the expansion of knowledge by giving empirical evidence for these perspectives and conceptualizations. In addition, this study validated the measuring scales by testing them in a completely different research context than had been employed in previous studies. These findings show that the accepted measurement scales are trustworthy and valid when utilized in various study contexts. The conclusions of this study showed, from a practical standpoint, that management in SMEs should implement green management practices and encourage staff to engage in eco-innovation, as this will assist SME's improving their eco-image and obtaining a competitive edge. To achieve sustainability and success, small and medium-sized enterprises (SME) managers should participate in technological innovation, such as digitalization and business processes. Lastly, the management and policymakers of SMEs should encourage employees to participate in skills development to increase human capital, as SMEs may not be able to attain sustainability and success without a trained workforce.

9. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Limitations are necessary for all research since they allow future researchers to develop and validate the findings. The primary disadvantage of this research is the limited sample size, which makes it difficult to generalize the results to a larger population. Therefore, future research should aim for a bigger sample size to confirm the current study's results and generalize them to larger populations. In analyzing the effects of predictors on the sustainability and success of SMEs, the current study did not account for SME kinds and levels of transformation. There is a chance that each type of SME has distinct

transformational levels and requirements. For instance, SMEs in the hospitality and tourism sectors may have lower requirements for technology innovation and possibly higher requirements for green management practices.

In contrast, SMEs in the manufacturing sector may require a more significant commitment to green management practices and less technological innovation. In addition, each SME may change at different stages. Therefore, future research should concentrate on specific categories of SMEs, as in the preceding example, focusing on whether the SMEs are active in tourism and hospitality, manufacturing, or other industries. Future research should replicate the current study design in countries with diverse situations and needs to validate the current study's conclusions further.

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