



Green Leadership: A Promising Strategy for Promoting Sustainable Entrepreneurship at Saudi Universities

Azala Mohammad Alghamdi

Department of Educational Administration and Planning, College of Education, Al-Baha University, Al Baha, Saudi Arabia



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ABSTRACT

This study aimed to reveal the role of the green leadership (GL) strategy in promoting sustainable entrepreneurship (SE) at Saudi universities from the perspectives of educational leadership experts. The study also examined the challenges Saudi universities face in implementing the GL strategy and provided suggestions to develop the application of GL at Saudi universities. According to this study, GL is a strategy that focuses on pro-environmental policies, provides sustainable initiatives, motivates followers toward a green environment, and improves their sustainable green creativity. A qualitative approach was utilized, interviewing 13 educational leadership experts at established and emerging Saudi universities. NVivo software was used to analyze the data. From the educational leadership experts' perspectives, the study findings indicated that the GL strategy plays a significant role in achieving SE at Saudi universities within many fields, such as training; teaching; research, development, and innovation; community service; infrastructure and educational equipment; administrative transactions; technology; maintenance and safety; and risk management. The study also revealed the three most prominent challenges Saudi universities face in implementing the GL strategy: organization and administration, finance, and culture. Moreover, the experts provided a set of suggestions to develop GL applications at Saudi universities. Finally, the study recommends adopting the GL as a significant strategy to achieve SE at established and emerging Saudi universities.

KEYWORDS

higher education leadership, entrepreneurial university, sustainability, educational leadership experts, qualitative approach, NVivo program

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1. Introduction

A green world requires green leadership (GL); thus, higher education institutions (HEIs) must match their leadership strategies with the globally shifting environmental backdrop via environmentally conscious practices. To live in a green world, organizations must rethink leadership and develop a new approach to dealing with environmental risks and ensuring sustainability (Taylor, 2022). GL is becoming more crucial in motivating organizations to become more environmentally friendly and to proactively solve environmental concerns (Zhong *et al.*, 2023). The growing desire to reduce environmental negative effects and positively contribute to the Earth's needs requires a promising strategy, such as GL (Shabeeb *et al.*, 2023). Therefore, GL includes all management practices and principles promoting social responsibility and environmental maintenance to live in a sustainable work environment. HEIs are the catalysts in fostering green practices, and they must achieve that using strategic, sustainable planning. HEIs produce more future leaders, policymakers, and decision-makers in sustainable development than any other sector of society (Alamri, 2018). Consequently, leaders, particularly those of HEIs, must learn how to encourage GL programs and initiatives and incorporate them into decision-making processes. Moving toward GL is one of the university's significant steps to achieving sustainable development and an urgent necessity to confront global and local challenges (Omar, 2018). GL is an emerging concept, as studies related to the environment and GL have become a serious topic (Arslan *et al.*, 2023; Chen and Chang, 2013; Mujahid, 2020).

Over the past few years, numerous sectors, including HEIs, have been greatly concerned with the issue of environmental sustainability. HEIs are crucial to shaping the mindset, attitude, and practices of professionals, students, stakeholders, and green leaders because they are the ultimate teaching and learning centers. According to Alshuwaikhat *et al.* (2016), HEIs significantly promote a sustainable

culture by serving as models and incubators for sustainable development. Sustainability aims to build a conscious generation that preserves natural resources and exercises a leadership role in maintaining environmental sustainability (Mujahid, 2020). Indeed, entrepreneurship has been identified as a method to generate economic gains; however, because the concept of sustainable development has emerged as an urgent issue affecting the existing global economy, it has been suggested that entrepreneurship should not be oriented exclusively on earning riches, which resulted in the birth of the sustainable entrepreneurship (SE) concept (Terán-Yépez *et al.*, 2020).

Ultimately, decision-makers should promote sustainable entrepreneurial processes that assist the environment (Alamri and Alorainni, 2020). Organizations, including HEIs, should emphasize environmentally sustainable business practices. For such changes to actualize and remain viable in the long run, GL must be emphasized to steer HEIs in the right direction. Therefore, the current study aims to (1) identify the role of the GL strategy in promoting SE at Saudi universities from the perspectives of educational leadership experts, (2) examine the challenges Saudi universities face in implementing the GL strategy, and (3) provide some suggestions to implement GL applications.

2. Research Problem and Questions

Demand for conferences and seminars has increased recently calling for environmental preservation and a shift toward GL. Despite these growing demands and studies on GL and SE, Middle Eastern countries still need more progress in this regard (Arslan *et al.*, 2023). As Mujahid (2020) states, Middle Eastern universities have made significant progress toward sustainability but still have a long way to go. In general, the 2021 United Nations report confirmed that the world is still far from the right track in achieving sustainable development goals. Due to the leading and significant environmental awareness

role played by the Kingdom of Saudi Arabia in the region, the Kingdom launched several promising initiatives—the Green Saudi Initiative, Saudi and Middle East Green Initiative, and Green Riyadh Project—that aim to achieve global climate goals and protect the environment by focusing on environmental sustainability to build a green future (Saudi and Middle East Green Initiatives, 2021). The Saudi Green Initiative aims to plant 10 billion trees and increase the area covered by a factor of 12. Since the announcement of the Green Saudi Initiative, 77 various programs have been established, with investments totaling more than 700 billion Saudi riyals to support these aims and generate sustainable growth (Saudi Vision 2030, 2016).

Although GL and SE are recent trends, Saudi universities have initiatives in these areas and strive to contribute to achieving green campus and environmental sustainability. According to the 2023 UI GreenMetric World University Ranking on green campus and environmental sustainability, eight public Saudi universities joined the global rankings out of 1,183 world universities. Although Saudi universities were lower in the 2023 UI GreenMetric World University Ranking report than they were in the 2022 report, they achieved the following ranks: Qassim University ranked 62nd, Imam Abdulrahman bin Faisal University ranked 236th, King Faisal University ranked 270th, King Khalid University ranked 524th, King Saud bin Abdulaziz University for Health Sciences ranked 820th, Imam Mohammad ibn Saud Islamic University ranked 833rd, and Prince Sattam bin Abdulaziz University ranked 939th. Despite the growing number of Saudi universities attempting to achieve environmental sustainability, their programs are still in their infancy and require additional growth to create a complete institutional shift toward sustainability (Faraj, 2023). In the context of Saudi universities, Al-Sayed (2021) indicated that the reality of Saudi universities practicing their sustainability responsibilities was moderate and even tended to be weak. Alwakid *et al.* (2020) analyzed 21 Saudi cities from 2015 to 2018 and mentioned a lack of cultural awareness of sustainability. Meanwhile, Alamri and Alorainni (2020) remarked that leadership at universities has a fundamental role in the transition toward environmental sustainability. Alamri (2018) adds that the role of Saudi universities in the transition toward environmental sustainability is moderate and requires a lot of effort.

No previous study that addresses the role of the GL strategy in promoting SE at Saudi universities has been found. As stated by Shabeeb *et al.* (2023), despite the fact that green aspirations are a relatively new movement at Saudi universities, there is a lack of related research. According to Alshuwaikhat *et al.* (2016), sustainability projects are not given enough attention at Saudi universities, and sustainable finance management methods are not substantial. This shows that the topics of GL and SE are still in their infancy and require more university plans and projects. By reviewing the previous research, it was found that there is a gap in the subjects of GL and SE. As mentioned by Greco and de Jong (2017), addressing this gap is anticipated to motivate more institutions and individuals to participate in SE strategies. Therefore, the current study investigates the role of the GL strategy in promoting SE at Saudi universities from the perspectives of educational leadership experts, examines the challenges Saudi universities face when implementing the GL strategy, and provides suggestions to develop GL.

Therefore, the following questions were proposed:

- *RQ1:* What is the role of the GL strategy in promoting SE at Saudi universities from the perspectives of educational leadership experts?
- *RQ2:* What are the challenges Saudi universities face in implementing the GL strategy?
- *RQ3:* What are the suggestions for developing GL at Saudi universities?

3. Significance of the Study

GL and SE are recent orientations in educational leadership. Thus, the current study comes in response to the recommendations of international and local conferences that call for attention and focus on GL as a key component in achieving SE. It is expected that the results of this study will contribute to helping officials in the Ministry of Education and Saudi universities to understand the challenges facing the implementation of GL and its role in promoting SE, which, in turn, will contribute to endorsing the Saudi National Vision 2030, which focuses on the entrepreneurial role of universities. The current study is an addition to the leadership and management literature, as it investigates the role of the GL strategy in promoting SE at Saudi universities from the perspectives of educational leadership experts and examines the challenges Saudi universities face in implementing the GL strategy.

4. Literature Review

4.1 Green Leadership:

GL is a new management method in which leaders consider sustainability and climate change challenges in everything they perform. GL is one of the innovative techniques that organizations employ to foster a culture of sustainability and promote environmentally friendly behaviors and initiatives (Zhou *et al.*, 2021). This definition is supported by Begum *et al.* (2022), who argue that GL refers to leaders' actions and knowledge of the significance of environmental protection and their ability to encourage employees toward greener environments. Chen and Chang (2013) defined GL as leaders' behavior that motivates individuals to attain environmental goals and inspires them to perform beyond the anticipated performance standards. The GL style serves as a foundation for addressing the complexities of sustainability. As a result, entrepreneurial HEIs must only hire committed and knowledgeable leaders in environmental protection.

Despite the significance of GL, such an approach has certain limitations and challenges. The challenges influencing green intentions differ depending on certain contexts, such as methodological, cultural, and socioeconomic (Shabeeb *et al.*, 2023). In this regard, Leal Filho *et al.* (2020), Alwakid *et al.* (2020), and Al-Omari (2018) claim that HEIs struggle to implement GL due to the rigidity of administrative regulations, a lack of financial support, and unsupportive organizational cultures. Al-Omari (2018) mentions some administrative challenges facing Saudi universities, including the lack of incentives, the abundance of administrative work, and the rigidity of university restrictions and systems. Alwakid *et al.* (2020) present several cultural challenges that Saudi universities face in fostering green entrepreneurship and sustainability, including the lack of environmental awareness and green practices. Additionally, Leal Filho *et al.* (2020) argue that insufficient finances prevent the application of GL. Al-Sayed (2021) offered a strategy whose implementation helps to increase Saudi universities' responsibility for environmental sustainability and green trends.

For a deeper understanding of the significance and challenges facing GL, understanding the primary dimensions of this leadership approach is essential. Al-Zawahreh *et al.* (2019) and Zhou *et al.* (2021) identified three dimensions of GL that focus on sustainability: sustainable management, sustainable initiatives, and sustainable procedures. In these three dimensions, sustainability was the common denominator, meaning that management must be sustainable in all its transactions, initiatives must be sustainable in serving the current and next generation, and the procedures and processes in GL must be sustainable. For further clarification,

sustainable management is a dimension that focuses on unconventional leadership, whose interest goes beyond human and material resources, tackling environmental and social issues. The sustainable initiatives dimension means providing green, sustainable, and eco-friendly initiatives, while the sustainable procedures dimension refers to the methods a leader performs to promote the sustainability of society, the environment, and the economy (Al-Zawahreh *et al.*, 2019). Mohammadi *et al.* (2023) support these ideas by demonstrating that organizations can only foster a culture of sustainability by balancing green initiatives, systems, and processes. Begum *et al.* (2020) connected the success of the GL approach to innovation and transformational governance. Environmental practices are evolving throughout time, and the most effective way to comprehend and embrace them involves GL. Finally, leaders must be aware that embracing GL might cause them to become overwhelmed, and in some cases, there might be inadequate resources to support this style of leadership. Therefore, green leaders must take into account the challenges that they might face and work to confront them in order to achieve the sustainability goals.

4.2. Sustainable Entrepreneurship:

Entrepreneurship and sustainability are terms and orientations that both hold weight, as there are numerous calls to apply them in all fields, such as the economic and educational fields, but when they are combined into *sustainable entrepreneurship*, they become stronger and more influential. Schaltegger and Wagner (2011) defined SE as implementing sustainability innovations aimed at the mass market to benefit society more. The concept of SE has always been linked to providing sustainable services for the longevity of future generations, but it must be considered that the needs of future generations change, and therefore, the concept of longevity must be replaced by the impact of the SE field (Greco and de Jong, 2017). Farny and Binder (2021) described the SE concept as a combination of sustainable development and entrepreneurship. Regarding HEIs, Wagner *et al.* (2021) define SE as the incorporation of sustainable practices and principles in entrepreneurial and business activities inside a university's facilities.

In HEIs, the significance of SE lies in its crucial role in creating competent future leaders who can handle complicated educational and societal issues. From another perspective, Kummitha and Kummitha (2021) argue that an entrepreneurial mindset is crucial to encouraging more environmentally conscious practices. Furthermore, teaching and training SE at HEIs promotes the development of future green, innovative ideas, resulting in a sustainable framework to address issues such as sustainable development (Sargani *et al.*, 2020). Thus, HEIs must promote SE in many facets of education, such as teaching, training, and research, because SE instills the proper knowledge and skills within future green leaders, enabling them to address complicated global issues and bring a positive reputation to the university, which can, in turn, attract more students, funding, and strategic partnerships. Ultimately, HEIs can embrace SE to create a better society and help universities expand and become more recognizable.

Most previous studies on SE have agreed on three SE dimensions: social, economic, and environmental (Elkington, 1994; Farny and Binder, 2021; Lu *et al.*, 2021; Schaltegger and Wagner, 2011). Elkington (1994) provided the triple bottom line framework, which assumes that the three sustainability dimensions—social, economic, and environmental—are all of equal importance and preference. Social entrepreneurship revolves around developing intelligent and innovative solutions that can address social issues, such as inequality in education, poverty, and unfair healthcare access. Consequently, HEIs can implement a few eco-friendly practices to address these

concerns and achieve financial and social sustainability. The second dimension of SE is economic entrepreneurship, which entails job creation for economic development while considering sustainability effects on the environment and society (Starchenko *et al.*, 2021). This dimension focuses on responsible wealth accumulation and ethical business activities. Finally, environmental entrepreneurship is about creating businesses that focus on ecological sustainability through resource efficiency, reduced ecological footprints, and green innovation (Lu *et al.*, 2021). Therefore, HEIs must focus fairly and equally on applying the three dimensions of SE to achieve their sustainability goals and provide a green and sustainable environment suitable for current and future generations.

5. Methodology

The current study adopted a qualitative approach, which entails studying a phenomenon by collecting data from individuals and places related to the research topic. Qualitative research enables more accurate information as well as access to the thoughts and feelings of participants, which contributes to understanding hidden meanings more clearly through studying their experiences (Creswell, 2003; Gray, 2021). In addition, qualitative research can help researchers understand how and why certain behaviors occur. This is unlike quantitative research, which focuses mainly on the quantitative determination of a phenomenon without delving into its natural context (Sutton and Austin, 2015).

6. Data Collection and Study Sample

The qualitative approach allows the researcher to select individuals who are expected to have rich information that enriches the subject of the study and helps the researcher to more deeply understand the research problem and answer its questions (Creswell, 2003). Thus, the study sample was selected using a purposive sampling method. Since the aim of this study was to reach a clear and in-depth understanding of GL's role in achieving sustainable leadership in Saudi universities, 13 educational leadership experts who met certain criteria were selected. First, a participant must be an expert in educational leadership and management at one of the Saudi universities, whether established or emerging, meaning that he/she must have the rank of professor, associate professor, or assistant professor. Second, a participant must have at least four years of experience in a leadership position.

These criteria were set to obtain more accurate and beneficial information to answer the study questions. A semi-structured interview tool was used to collect data from each expert separately and attain more accurate information about the study subject. The interview tool helped reveal participants' thoughts and impressions about the study subject, which would have been difficult to achieve through other methods (Gray, 2021). This study used Zoom, face-to-face, and phone interviews. The interviews ranged from 30 to 50 minutes in length and were audio-recorded and verbatim-transcribed after obtaining consent from the participants. Table 1 shows the participants' data in the qualitative data collection. The study utilized codes to indicate participants' gender, type of university, academic rank, and participant number. For instance, symbol no. 1 (M/EsU/FP) represents the participation of participant No. 1, a male who is working at an established university as a full-time professor.

Table 1: A Summary of Participants in Qualitative Data Collection

Participants No.	Gender		Type of university		Academic rank	
	Label	Code	Label	Code	Label	Code
1	Male	M	Established university	EsU	Full professor	FP
2	Female	F	Emerging university	Emu	Assistant professor	ASP
3	Male	M	Emerging university	Emu	Assistant professor	ASP
4	Female	F	Established university	EsU	Full professor	FP
5	Male	M	Established university	EsU	Associate professor	ACP
6	Female	F	Emerging university	Emu	Associate professor	ACP
7	Male	M	Emerging university	Emu	Full professor	FP
8	Female	F	Established university	EsU	Full professor	FP
9	Female	F	Established university	EsU	Assistant professor	ASP
10	Male	M	Established university	EsU	Associate professor	ACP
11	Female	F	Emerging university	Emu	Associate professor	ACP
12	Female	F	Emerging university	Emu	Assistant professor	ASP
13	Male	M	Established university	EsU	Associate professor	ACP

6.1. Ethical Considerations:

The study received approval from the Human Research Ethics Committee at Al-Baha University. Consent was obtained from all participants in this study, and there was a commitment to maintaining the participants' privacy and clarifying their rights to withdraw from the research at any stage. Before each interview, verbal consent was obtained to utilize a digital voice recorder. None of the participants withdrew from the study. The study participants were also informed that their names would not be mentioned in any way. Along with the relevant details regarding the goals, significance, and duration of the study, the participants were also given a time estimate for the interview to avoid taking too much time.

6.2. Trustworthiness:

According to previous studies, there are four standard, essential quality criteria to measure credibility and trustworthiness when conducting qualitative research: credibility, dependability, transferability, and confirmability (Korstjens and Moser, 2018; Nazar *et al.*, 2022; Noble and Smith, 2015; Stahl and King, 2020). Table 2 summarizes how these four quality criteria were measured in the current study.

Table 2: A Summary of Quality Criteria Measurement to Maintain the Trustworthiness of Qualitative Data and Findings

Quality criteria	Measurement
Credibility	Prolonged engagement Conducting the interviews, analyzing data, and in-depth interviews with educational leadership experts. Spending sufficient time with participants and building trust with them Delving deeply into the data.
	Triangulation Diversifying the times and locations of data collection Data triangulation (educational leadership experts who work at different Saudi universities, either established or emerging ones, with diverse levels of leadership experience).
	Member checking Providing transcript copies to the participants and requesting them to check for correctness.
Dependability	Audit trail Every step of the study process was documented, including decisions, adjustments, and unexpected challenges.
Transferability	In-depth description Selecting a purposive, adequate sample for the study. Presenting a clear explanation of data collection and analysis. Comprehensive details on the characteristics of the study sample perspectives and experiences were provided via quotes. Discussions of the study findings and recommendations for future research were also presented.
Confirmability	Objectivity The study findings were based on the participants' perspectives and no individual biases or personal motivations of the researcher. Confirmability is assured when credibility, dependability, and transferability are all met (Guba and Lincoln, 1989).

7. Data Analysis

In the current study, NVivo, Version 14, was utilized for the analysis of interview data, and thematic analysis of the qualitative data was also used by organizing and classifying it into groups using the following six steps, which helped achieve a broader understanding of the data (Braun and Clarke, 2006).

Step 1: Becoming Familiar with the Data

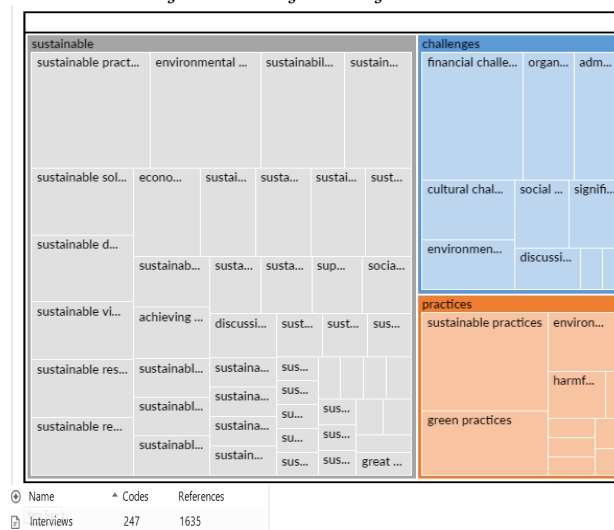
At this stage, the researcher conducted interviews with experts in educational leadership and management at Saudi universities. Before importing interview data into the NVivo software, it was perused and

re-read up to three times to ensure the researcher was familiar with the content. The first reading involved going through the interviews to ensure all questions were fully answered. The second reading involved perusing the interview data to remove errors, thus increasing the quality of the coding. Finally, the interview data was read through to identify general data patterns relative to the research questions. Once the researcher became familiar with the interview data, it was imported into the NVivo software.

Step 2: Generating Initial Codes

This second phase involved creating initial codes using the automatic feature in the NVivo software, and the captured findings are shown below (Figure 1). When using coding references, general codes comparing the number of coded items, including codes for the sustainable term (sustainability issues, environmental sustainability, sustainable practices, sustainable initiatives, and sustainable vision), codes related to the challenges of implementing GL (e.g., financial, administrative, cultural, organizational, environmental, and regulatory), and practice-related codes (e.g., sustainable and green practice), were retrieved. When adjusting the hierarchy chart to focus on the items coded, additional codes—including, but not limited to, sustainable solutions, sustainable development, sustainable resources, sustainable community projects, sustainable research, sustainable buildings and applications, economic sustainability, and SE—were retrieved as shown in Figure 1. Using descriptive coding, the interview data was initially coded using the hierarchy chart and reached 247 codes with 1,635 references, as shown in Figure 1.

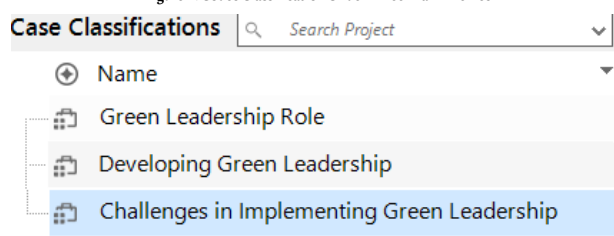
Figure 1: Initial Coding of Data Using NVivo Software



Step 3: Searching for Themes

In the third stage, after running the NVivo software, numerous themes were extracted. However, all 247 codes were arranged and classified into three main themes, as presented in Figure 2.

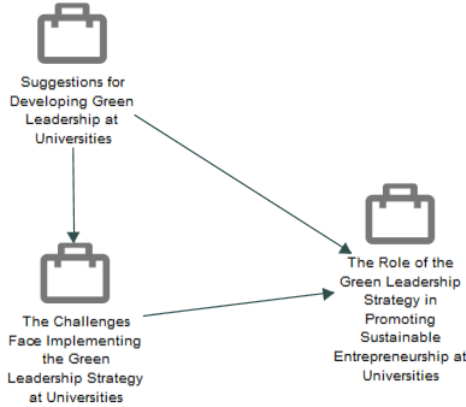
Figure 2: Codes Classification Under Three Main Themes



Step 4: Reviewing Themes

In the fourth stage, the themes were classified into three broad categories: the GL role, the challenges of implementing GL, and developing GL. The relationships between these categories were also explored, as presented in Figure 3.

Figure 3: Thematic Map That Displays the Relationships Among Themes.



Step 5: Defining Themes

In this step, it is clear that the three themes are directly linked to one another, as illustrated in Figure 3. For instance, the theme of suggestions for developing GL is directly linked to the role of the GL strategy in promoting SE at Saudi universities. When suggestions for developing GL at Saudi universities are adopted and implemented, there is a higher possibility of an enhanced GL strategy, thereby promoting SE at these institutions. The theme of challenges faced when implementing the GL strategy at Saudi universities has a direct link to the theme of the role of the GL strategy in promoting SE at these universities. As challenges faced when implementing the GL strategy at Saudi universities increase, there is a higher likelihood that the role of the GL strategy in promoting SE at these universities will be thwarted. Finally, the theme of suggestions for developing GL at Saudi universities is indirectly linked to the theme of the role of the GL strategy in promoting SE at these universities. Those suggestions are aimed at addressing challenges faced when implementing the GL strategy at Saudi universities, thereby increasing their role in promoting SE.

Step 6: Writing-Up

In the last step, a final report was produced to explain the results of the data analysis. This report aimed to provide adequate discussions that answer the research questions. Figure 4 illustrates all the main themes in the analysis with nodes.

Figure 4: Main Themes in the Analysis With Nodes

Name	Files	References
The Role of the Green Leadership Strategy in Promoting Sustainable Entrepreneurship at	1	24
sustainable practices	1	6
safe maintenance practices	1	1
practices conflict	1	1
internal practices	1	1
harmful practices	1	1
green practices	1	6
friendly practices	1	1
environmental practices	1	5
educational practices	1	1
administrative practices	1	1

Suggestions for Developing Green Leadership at Universities	1	108
sustainable vision	1	5
sustainable topics	1	1
sustainable teams	1	1
sustainable teaching methods	1	3
sustainable solutions	1	4
sustainable services	1	1
sustainable risk management	1	1
sustainable resources	1	5
sustainable research	1	3
sustainable projects	1	1
sustainable progress	1	2
sustainable procedures	1	1
sustainable environment	1	1
sustainable development	1	4
sustainable decisions	1	2
sustainable cooperation	1	1
sustainable community service projects	1	2
sustainable change	1	2
sustainable buildings	1	3
sustainable applications	1	4
sustainable agriculture	1	1
sustainable actions	1	3
sustainability technology	1	1
sustainability principles	1	2
sustainability issues	1	7
The Challenges Faced when Implementing the Green Leadership Strategy at Universities	1	29
social challenges	1	2
significant challenge	1	2
regulatory challenges	1	1
previous challenge	1	1
organizational challenges	1	3
financial challenges	1	7
environmental challenges	1	3
discussing sustainability challenges	1	1
cultural challenges	1	4
administrative challenges	1	5
sustainable problem	1	1
sustainable practices	1	6
sustainable plan	1	2
sustainable needs	1	1
sustainable mobility	1	1
sustainable materials	1	1
sustainable leadership	1	5
sustainable innovation	1	1
sustainable initiatives	1	6
sustainable infrastructure	1	2
sustainable facilities	1	1
sustainable events	1	1
sustainability consultations	1	1
supporting sustainability	1	1
social sustainability	1	1
maintaining sustainability	1	1
including sustainability	1	1
great sustainability	1	1
environmental sustainability	1	7
economic sustainability	1	3
discussing sustainability challenges	1	1
achieving sustainability	1	2

8. Findings

The participants were asked several questions to reveal their perceptions about the role of the GL strategy in promoting SE at Saudi universities. In addition to the participants' views of the challenges facing the application of GL at Saudi universities and preventing them from achieving their goals, the participants were also asked about their suggestions for the development of the application of GL at Saudi universities. As seen in Figure 4, the data analysis and coding revealed three main themes that can be summarized as follows:

Theme 1: The Role of the GL Strategy in Promoting SE at Saudi Universities

- The role in the training field: Most of the interview participants agreed that the GL strategy plays a key role in promoting SE at Saudi universities in the training field. Interview participant No. 1 (M/EsU/FP) mentioned the adoption of sustainability principles in all aspects of training and that

encouraging innovation and thinking related to environmental issues promotes GL. The analysis revealed that 0.26 percent of the 25.64 coded references indicated that GL plays a role in the training field upon the provision of sustainable resources for training, such as using recycled paper to reduce energy consumption and carbon emissions. Participants in the interviews believed that the GL strategy should be employed across Saudi universities, either established or emerging ones, to ensure trainees develop eco-friendly practices and to minimize the associated consequences of non-environmentally friendly practices associated consequences, including, but not limited to, carbon emissions resulting in the devastating global warming menace. Without such training, stakeholders are more likely to remain environmentally unconscious, and the above issues would remain.

- The role in the teaching field: The GL strategy, as explained by the interview participants, plays a crucial role in the teaching field. Among the 25.64 percent referenced codes, 0.26 percent revealed that adopting online teaching techniques helps reduce one's energy consumption, minimizing carbon emissions. For instance, participant No. 8 (F/EsU/FP) stated that when teachers adopt online teaching methods, they are less likely to use paper and transportation, whose production leads to significant carbon emissions. Roughly 0.14 percent of the 25.64 percent coded references indicated that the GL strategy impacts teaching methods and educational and curricular environments to significantly promote sustainability. For instance, 0.23 of the 25.64 percent coded references indicated that instructional programs should incorporate educational materials on sustainable development, environmental conservation, climate change, and socioeconomic sustainability. In comparison, 0.32 percent of the 25.64 coded references revealed the significance of supporting practices promoting recycling in educational materials encouraging hands-on learning and practical applications of environmental concepts, and fostering critical thinking and sustainable problem-solving. Overall, the interview responses indicated how the GL strategy is transforming the teaching field to ensure entrepreneurship sustainability.
- The role in the research, development, and innovation field: The GL strategy also plays a vital role in the research, development, and innovation field, as demonstrated by 0.21 percent of the 25.64 referenced codes. Notably, 0.23 percent of the 25.64 percent of the referenced codes revealed that the leaders could play a pivotal role in directing and encouraging research and innovations focused on environmental challenges and developing sustainable solutions. Equally, such leaders motivate sustainable research by inspiring faculty members and researchers to conduct research focusing on environmental and sustainability issues, as indicated in 0.23 percent of the 25.64 referenced codes. They also focus more on the development of sustainable technology by encouraging the university's research and innovation teams to develop new technology and innovations that provide environmental sustainability, as illustrated in 0.29 percent of the 25.64 referenced codes. The above findings revealed increased interest in supporting sustainable entrepreneurial processes in research, development, and innovation.
- The role in the community service field: The GL strategies apply in the community service field to enhance entrepreneurship for sustainability. From the 25.64 percent referenced codes, 0.53 percent revealed that GL can enhance the university's SE in the field of community service by directing services toward sustainability. Interview participant No. 11 (F/Emu/ACP) stated that leaders can direct community service efforts to focus on projects and programs that promote environmental, social, and economic sustainability. Strengthening community cooperation is another area highlighted by 0.29 percent of the 25.64 referenced codes. Participant No. 11 (M/Emu/ASP) affirmed that green leaders can strengthen cooperation and partnerships with local communities and non-governmental organizations to develop sustainable community service projects. According to the participants, Saudi universities should prioritize GL for SE in the community service field.
- The role in the infrastructure and educational equipment: In 0.25 percent of the referenced codes, GL was deemed critical in developing sustainable infrastructure and educational facilities. According to interview participant No. 1 (M/EsU/FP), leaders supporting the strategy play a vital role in directing and enhancing the university's efforts to develop sustainable infrastructure and environmentally friendly educational facilities. They can equally promote environmental standards and sustainability in the design and construction processes of university buildings and other infrastructure. Their efforts can be directed toward using environmentally friendly building materials and designing sustainable buildings in terms of energy use, water management, and waste disposal.

- The role in the administrative transactions: From the interview responses, 0.42 percent of the coded references indicated that adopting sustainable administrative practices is a role played by the GL strategy. According to interview participant No. 1 (M/EsU/FP), leaders supporting the GL strategy can promote sustainable administrative practices in all aspects of university work. They adopt environmentally friendly practices in maintenance, promoting a shift toward eco-friendly methods in university maintenance operations. Equally, they adopt safety maintenance practices and provide a healthy and safe job environment for individuals to enhance occupational safety and health at the university. They offer training programs on sustainable environmental practices and how to handle hazardous materials safely to preserve the environment during maintenance operations.
- The role in technology: GL is vital in the field of technology. In 0.29 percent of the referenced codes, it was noted that the GL strategy plays a role in developing sustainability technology. Leaders supporting the strategy encourage the university's research and innovation teams to develop new technology and innovations that contribute to environmental sustainability. For instance, interview participant No. 4 (F/EsU/FP) mentioned that the GL strategy could aid the development of new technologies for renewable energy, clean technology, and the effective management of environmental resources.
- The role in maintenance and safety: In 0.31 percent of the referenced codes, the participants highlighted the significance of universities' green leaders in promoting occupational health and safety. Participant No. 13 (M/EsU/ACP) mentioned that green leaders enhance occupational safety and health at the university by adopting safe maintenance practices and providing a healthy and safe work environment for workers. In 0.35 percent of the referenced codes, it was noted that GL encourages the adoption of environmentally friendly practices in maintenance, whereby leaders can promote the shift toward environmentally friendly practices in university maintenance operations.
- The role in risk management: The GL strategy's role in risk management was also illustrated by the interviewees, with 0.26 percent of the 25.64 coded references showing that the strategy works by developing sustainable procedures and policies to analyze and evaluate environmental, social, and economic risks and take the necessary measures to deal with them sustainably. Notably, 0.23 percent of the 25.64 coded references indicated the strategy offers guidance and supports planning for sustainability in risk management, whereby leaders can guide and plan for the university to be an introduction to sustainable risk management. The leaders equally encourage the application of sustainability principles in risk analysis and assessment processes and making sustainable decisions based on the results, as illustrated in 0.23 percent of the 25.64 percent of the coded references.

Theme 2: The Challenges to Implementing the GL Strategy at Saudi Universities

- Organizational and administrative challenges: Various administrative and organizational factors that hinder the successful implementation of the GL strategy were noted by the participants. For instance, 0.25 percent were associated with resistance from some individuals who believe that sustainable changes may add additional burden or complexity to existing operations, and 0.26 percent highlighted the need for employee awareness and training to fully understand the benefits and urgency of sustainable development. All these challenges combined make it difficult to fully implement the GL strategy at Saudi universities.
- Cultural challenges: According to the participants, implementing the GL strategy is hindered by cultural heritage and customs, as highlighted in 0.16 percent of the 25.64 coded references. Some cultural heritage and customs may conflict with sustainable practices, preventing their implementation across the different university levels. In this regard, cultural concerns must be addressed if the GL strategy is to succeed at Saudi universities. However, participant No. 9 (F/EsU/ACP) pointed out that cultural aspects and green transformation exist in our Islamic religion and religious culture, which makes the cultural challenge less influential compared to other challenges. The interviews indicated that sustainable initiatives may require joint cooperation and coordination among different departments and changes in existing policies and procedures, as shown in 0.22 percent of the 25.64 coded references. As indicated in 0.47 percent of the coded references, participants believed cultural factors to be a challenge across universities and that this harmful practice of the public toward preserving the environment represents a significant challenge to implementing the GL strategy and achieving entrepreneurship and environmental sustainability.

- Financial challenges: Budgetary pressures in allocating the necessary resources to implement sustainable initiatives and projects at Saudi universities were also cited by the interviewees, as indicated in 0.22 percent of the 25.64 coded references. Similarly, the interviewees revealed the challenge of transition costs. In 0.26 percent of the 25.64 referenced codes, it was revealed that implementing sustainable initiatives and projects, such as investing in new technologies and systems or improving green infrastructure, can have additional costs. Some interviewees, as illustrated in 0.15 percent of the 25.64 percent referenced codes, indicated that investing in GL and sustainability issues may take longer to realize a tangible return. Such fears delay universities in championing the implementation of the GL strategy for sustainability.

Theme 3: Suggestions for the Development of GL at Saudi Universities

- According to the interviewees, the biggest challenge hindering the implementation of GL at Saudi universities could be the lack of awareness and education on sustainability issues and the importance of GL, as illustrated in 0.33 percent of the 25.64 percent coded references. As shown in 0.31 percent of the coded references, the reason behind prioritizing this challenge is that awareness and knowledge about environmental issues and sustainability are the basis for driving individuals and groups to take sustainable actions and adopt green practices. In this regard, 0.42 percent of the interviewees in the coded references recommended organizing awareness campaigns, educational workshops, and seminars on environmental and sustainability issues, in addition to including sustainable topics in school curricula and providing training and support to faculty and leadership to adopt green practices. In such events, sustainability challenges can be discussed, and green practices can be offered as solutions. As indicated in 0.24 percent of the referenced codes, there is a need to form sustainable teams of students, faculty members, and university leaders to work on applying green principles in all aspects of university life.

9. Discussion

9.1. The Role of the GL Strategy:

From the educational leadership experts' perspectives, the GL strategy plays a significant role in achieving SE at Saudi universities in numerous fields, such as training; teaching; research, development, and innovation; community service; infrastructure and educational equipment; administrative transactions; technology; maintenance and safety; and risk management. For instance, the GL strategy plays a key role in the training and teaching fields. The universities train individuals to become environmentally conscious. Sustainable training materials and topics are often emphasized. Previous research findings also indicated the role of GL in training people to become environmentally conscious. For instance, Ahuja *et al.* (2023) noted that employees are trained in environmental control. The study revealed that green training moderated the mediated association between pro-environmental and environmental leadership behaviors. Green leadership influences the teaching field, as it determines the instructional methods to use, such as online teaching methods with minimal energy consumption and reduced carbon emissions. Moreover, it supports the use of educational materials for the topics of sustainable development, climate change, environmental conservation, and sustainability. Previous scholars have highlighted the role of GL in teaching platforms. Kensler and Uline (2016) indicated that green schools could be utilized as teaching tools to extend the model of social–ecological awareness and practices among students.

Similarly, the GL strategy shapes the fields of technology; research, development, and innovation; and community service. The current study findings revealed that the GL strategy's pivotal role in leading and encouraging research and innovations focused on environmental challenges and developing sustainable solutions. Previous research has also revealed the role of GL in research, development, and innovation. Al-Serhan (2020) researched green

transformational leadership, the sustainability of business development, and green innovation technology's mediating role and found that green practices in business operations preserve the environment and motivate other people to adopt such practices in their business development cycles. In the area of community service, GL helps direct community service efforts to focus on projects and programs promoting economic, environmental, and social sustainability. Previous research by Darvishmotevali and Altinay (2022) noted that combining servant leadership that focuses on community service and green human resource management practices inclined toward protecting the community and environment reduces environmental concerns.

Finally, the GL strategy influences the administration, maintenance, and safety and risk management fields. In the fields of administrative transactions maintenance and safety, GL is essential. Such leaders promote sustainable administrative practices, such as adopting environmentally friendly maintenance practices, which fosters a shift toward eco-friendly methods in university maintenance operations. These leaders also encourage a healthy and safe work environment for workers to enhance occupational safety and health at the university. Previous research has also highlighted the distinct role of GL in administration, maintenance, and safety. Ahmed *et al.* (2021) indicated that green practices, such as using energy-saving lights and solar energy, are used by maintenance departmental leaders to minimize energy consumption. Similarly, GL shapes risk management outcomes, as highlighted in previous research studies. For instance, Lee *et al.* (2014) noted that green reporting helps leaders identify supply chain gaps during risk assessment. In this regard, GL has been viewed as a key strategy in identifying risks for proper planning and mitigation.

9.2. GL Strategy Implementation Challenges:

Organizational, administrative, cultural, and financial challenges to the implementation of the GL strategy were common discussion topics among the interviewees. Various organizational factors, including employee resistance and the increased burden due to the need for employee training, hinder the successful implementation of the strategy. Furthermore, when the sustainable practices outlined in the strategy conflict with cultural customs and heritage, resistance to its adoption may increase. Finally, due to the high transition costs involved in adopting new technologies and systems or improving green infrastructure, organizations are often hesitant to progress. Previous research studies have also highlighted numerous challenges to the full realization of the GL strategy. Leal Filho *et al.* (2020) indicated that a lack of resources, administrative support, expertise, funding, and interest from the employees in the green initiatives limits the chances of their full implementation. The previous findings confirm the current findings, emphasizing that GL cannot be successful without addressing such inevitable barriers. Al-Omari (2018) mentioned some administrative challenges, including the lack of incentives, the abundance of administrative work, and the rigidity of university restrictions and systems. Additionally, Alwakid *et al.* (2020) confirmed the significance of cultural traits, including environmental awareness and environmental practices, in fostering green entrepreneurship and sustainability.

9.3. Suggestions to Develop GL:

The current study highlights various strategies that Saudi universities can adopt to develop GL. Saudi universities should host educational seminars, workshops, and awareness campaigns on environmental and sustainability issues to address these problems. Furthermore, it is recommended that sustainable subjects be incorporated into school curricula and that staff and management obtain support and

guidance in adopting green practices. Along with this, they ought to organize long-term groups of academics, staff, and students to focus on implementing green ideas into every facet of university life. Previous studies also advocate different strategies to develop GL. Leal Filho *et al.* (2020) indicated that the involvement of high administration, engagement in community partnerships and projects, and improving public relations help develop GL.

10. Recommendations

The current study recommends the following based on its findings:

- Adopting GL as a considerable strategy to achieve SE at Saudi universities, both established and emerging ones;
- Spreading awareness of GL and SE in all areas of academic work at Saudi universities through lectures, seminars, and research projects; and
- Strengthening cooperation and partnerships with local and community bodies and organizations related to sustainability to exchange knowledge and experiences and implement joint projects.

11. Future Research

Although the current study examined a significant and modern strategy in the field of leadership, more qualitative research is needed on the many variables that can enhance SE in HEIs, such as employees' green behavior, organizational culture, green human-resource-management practices, and organizational sustainability.

Biography

Azala Mohammad Alghamdi

Department of Educational Administration and Planning, College of Education, Al-Baha University, Al Baha, Saudi Arabia, 0500035177, amotlaq@bu.edu.sa

Azala Alghamdi is an associate professor of educational leadership in higher education. She is Saudi Arabian and works as a vice chair of the Educational Administration and Planning Department. She has worked as an assistant supervisor of Innovation and Entrepreneurship at Al-Baha University. Her research interests include higher education leadership, entrepreneurial leadership, and innovation in higher education. She has published many research papers in international peer-reviewed journals.

(ORCID): <https://orcid.org/0009-0003-7464-8918>

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