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Integrating sustainable leadership in Malaysian higher education: Effective strategies for implementation and impact

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Abstract This study aims to investigate sustainable leadership practices within higher education institutions, emphasizing capacity building, diversity, conservation, strategic distribution, building objectives, and innovation. The objective is to examine the theoretical frameworks and practical applications of these practices, highlighting a shift toward more adaptive strategies. The research employs a quantitative methodology, utilizing a convenience sample from a public higher education institution in Malaysia. The Cronbach's alpha reliability test indicates good internal consistency and significance. The correlation coefficient, represented by an R value of 0.273, suggests a moderately strong positive correlation between the dependent variable and the predictors. The results reveal the importance of incorporating sustainable leadership practices into institutional culture and decision-making processes to ensure long-term success and competitive advantage. The study concludes by emphasizing the gradual process of implementing sustainable leadership practices and the necessity for organizations to prioritize their adoption for sustained effectiveness and impact. The practical implications of this research are significant, as they provide a roadmap for institutions to integrate sustainable leadership practices into their operations, thereby enhancing their long-term success and competitive advantage.

Keywords: understanding, leadership style, decision making, effectiveness

1. Introduction

The concept of sustainable leadership emerged during the 2000s and is characterized by the fundamental integration of learning and leadership. This integration is a cornerstone for sustainable leadership, representing its essence and facilitating educational change (Lee, 2017a). However, some researchers have focused on a leader's personal and physical qualities and behavior, whereas others have focused on the interactions between a leader and his or her subordinates, and other researchers have presented which circumstances influence the actions of leaders toward the organization (Taşçı &Titrek, 2019). Furthermore, sustainable leadership, which begins with the characteristics of the individual, demonstrates that these traits extend to greater levels, such as organizations and society. In other words, sustainable leaders are those who maintain equilibrium between the economic, social, and environmental sectors (Visser &Courtice, 2011). In other words, numerous types of leadership theories have arisen in accordance with each period, place, position, time, and condition in the course of human history (Taşçı & Titrek, 2019). In addition, sustainable leaders engage and motivate subordinates, define the working environment, and link subordinate requirements to those of the organization, thus enhancing the sustainable performance of employees and the organization as a whole (Gjerde &Ladegård, 2019). However, on the basis of Ali et al. (2019) the greatest challenge facing university administrators is ensuring the future viability of higher education institutions, primarily because it requires a concerted effort to maintain the institution's pride, staff efficacy, and efficiency in upholding global education standards.

Many leaders in higher education institutions may have a limited understanding of sustainable leadership practices and their potential benefits due to a lack of awareness (Aung &Hallinger, 2022). To enhance understanding and knowledge, training sessions and awareness programs aimed at educating leaders about sustainable leadership practices and their significant contributions toward achieving the institution's sustainability objectives are recommended (Savage et al., 2015). In addition, the process of incorporating sustainable leadership practices into the institutional culture necessitates substantial effort and coordinated endeavors (Liao, 2022). There is a clear gap in understanding about sustainable leadership implementation and its characteristics, values, ideologies, and effects on learning outcomes (Sharma, 2019). The research objective focuses on investigating the level of awareness and understanding of sustainable leadership practices among higher education leaders. Our main focus during the study was on performing a comprehensive literature analysis to uncover areas where previous research had gaps, specifically in terms of how faculty leaders apply sustainable leadership practices.

To cultivate sustainability within the institution, it is imperative to develop comprehensive strategies and policies that articulate explicit sustainability goals aligned with the institution's mission and values. The development of leadership competencies is essential for managing changes, navigating the educational organization environment, and adapting to various cultures and task functions (Beram et al., 2023). Moreover, sustainable leadership principles should be seamlessly integrated into strategic plans and decision-making processes. However, leaders guide organizations toward sustainability through adaptive learning, which helps address conflicts and complexities stemming from social, economic, and environmental factors. To address sustainability challenges, which include the leader's perspective, behavior, and context in which follower relationships are formed, these leaders should have competencies in systems thinking and demonstrate innovative thinking (Leal Filho et al., 2020). Sustainable leadership in higher education can be described through two main themes: the qualities that leaders should possess and their commitment to sustainability, including questioning established norms. Additionally, it emphasizes the need for global educators. The "institutional middle" of sustainability leadership underscores the importance of universities addressing knowledge transmission to raise political awareness regarding sustainable development and nation-building (Salihu et al., 2020).

The status quo of sustainable leadership clarifies the path he might traverse professionally and emotionally after discovering himself with the aid of a new idea, as defined by the concept of philosophical leadership (Hategan & Hategan, 2021). Ferdig (2007) agreed with this perspective and emphasized the importance of leaders prioritizing actions that extend beyond their own personal interests, and leadership practices constitute a flexible and realistic approach (Bhattacharyya, 2019). However, on the basis of Avery and Bergsteiner (2011 a,b) the concept of sustainable leadership can be described as a perspective on leadership characterized by its humanistic approach.

Sustainable leadership provides educational institutions with a competitive advantage (Hallinger & Suriyankietkaew, 2018). However, sustainable leadership provides opportunities for organizations in the form of innovation, continuous improvement, a sustained competitive edge, and long-term success (Iqbal et al., 2020). Many educational organizations view sustainable leadership as an opportunity for more innovation and a successful strategy for long-term success, continuous improvement, and sustained competitive advantage (Al-Zawahreh et al., 2019). Recently, the concept of sustainable leadership has arisen in the literature.

Sustainable leadership differs from traditional leadership in that it focuses considerably greater emphasis on long-term prosperity than on short-term profitability. It highlights the leader's responsibility in supporting outcome production and ensuring that such outcomes are created continuously (Lee, 2017b). The outcomes emphasize a full shift in thinking that begins with a fundamental challenge to the conventional dependence on senior administrators as "agents of change" for sustainability leadership to a new perspective on leadership as a shared learning process, that is, sustainability leadership as a "subject of change" with importance given to a communal, inclusive, and dialogical process focused on crucial concerns of sustainability (Kolenick, 2017). Sustainable leadership enables leaders to increase their knowledge and skills in the management of human resources and organizational resources and provides invaluable chances for educational leaders to network and support one another in achieving not only present but also future organizational objectives (Silalaiy et al., 2018).

2. Materials and Methods

Through this research, the positive and important effects of sustainable leadership as a shared learning process have been identified, and a successful method for long-term success, continuous development, and sustained competitive advantage has been provided. Thus, such leadership has the ability to significantly promote organizational growth and improvement (Silalaiy et al., 2018). Sustainable leadership has been used in a variety of situations and contexts. Lambert (2011, 2012), Kantabutra and Saratun (2013) explore sustainable leadership in the education sector via an organizational level of analysis. Furthermore, Hargreaves andFink (2004), Lambert (2011), Kantabutra andSaratun (2013), and Davies (2007) using an organizational level of analysis, researched sustainable leadership in the educational sector. Several underlying concerns must be examined across the various frameworks. This perspective emphasizes the importance of fostering a collaboration through shared values, visions, and convictions. However, these findings demonstrate that the foundation of sustainable leadership can be learned and shared. There are several underlying concerns that must be investigated across all frameworks. Individuals and organizational processes are the two categories that divide the topics. There are opportunities for leaders and people to grow within individual parts, including succession planning.

Sustainable leadership in higher education refers to the practice of guiding organizations with an emphasis on long-term planning and vision. When sustainable practices are integrated into the organizational culture, decision-making procedures, and overall strategic direction, it goes beyond conventional leadership methods. Leaders in higher education who prioritize sustainability often emphasize the importance of long-term planning and a forward-thinking mindset. To ensure the institution's ongoing relevance, it is important to guarantee its resilience and carefully consider the potential impact of decisions on future generations.

2.1. Model of kantabutra and saratun (2013)

The framework contributes to various benefits, including enhanced brand and reputation integrity, increased employee satisfaction, robust financial operations ensuring organizations' short-term survival, improved long-term value for owners and shareholders, and greater long-term value for various stakeholders (Kantabutra & Saratun, 2013). Table 1 shows the sustainable leadership practices in higher education institutions. The type of capitalist activity in a particular region affects the relative ease or difficulty of implementing sustainable practices.

The type of capitalist activity in a particular region affects the relative ease or difficulty of implementing sustainable practices. The six tangible leadership characteristics are commonly known as the practices of leadership sustainability (Kantabutra & Saratun, 2013). In addition, these methods produce a well-maintained organization, utilize minimal resources, and enhance the performance and reputation of the organization (Kantabutra & Avery, 2011). This leadership practice hierarchy, however, comprises deliberate directives for encouraging sustainability. The flow of these behaviors occurs at all levels, not just from top to bottom and vice versa (Rehman et al., 2019).

Table 1 Sustainable leadership framework for higher education institutions.

Name	Summary
Aim at a long-term view	Educational leaders should maintain a long-term perspective and strive to strike a balance between immediate and long-term viewpoints.
People development	Institutions prioritize specific skills and develop their staff's capabilities through in-house and other training methods that strongly support employees' ongoing development.
A strong institutional culture	A university should build a strong culture of shared values. This culture guides staff on how to behave and encourages performance in accordance with expectations.
Innovation	Innovation plays a crucial role in driving both scientific advancements and economic growth. Disruptive innovation specifically focuses on making changes to product designs.
Social, environmental commitment	A commitment to social and environmental issues is a foundational element of an organization. Educational organizations often prioritize these commitments, influenced by their leaders who set the right example and inspire moral behavior in others.
Morality behavior	Educational institutions that operate transparently, ethical methods can maintain the trust of stakeholders. Morality and ethical behavior could promote university sustainability in increasingly diversified ways.

Sources: Kantabutra and Saratun (2013).

2.2. Model of lambert (2011)

Lambert (2011) proposed a framework for sustainable leadership that emphasizes the importance of ethical and responsible decision-making in organizational leadership. Lambert (2011) highlighted the importance of the social aspect of the link in sustainable leadership, which enhances followers' position due to its significance in stakeholder management. Notably, "*If sustainable leadership is to have any measurable impact on the organization, it needs commitment from all elvels of the organization to create a culture in which leadership skills can be developed"* (Gerard et al, 2017). Table 2 shows the sustainable leadership practices as in general. Sustainable leadership as a strategy for enhancing learning organization.

Sustainable leadership as a strategy for enhancing learning organization. It was suggested that Lambert's (2011) framework of sustainable leadership would serve as a more applicable model for the secondary education sector. Lambert (2011) formulated a sustainability leadership model that is intricately tailored to this specific context. The conceptualization of this model was influenced by the frameworks proposed by Hargreaves and Fink (2004) and Davies (2007). This model was utilized in field research to determine its validity, whether such a tool helps enhance educational leadership potential, and to what extent its parts are being implemented. Lambert's framework highlights the significance of sustainability and responsible leadership for an organization's long-term success and stakeholder well-being. please rephrase the sentence into academic sentence. Lambert's model of sustainable leadership is a valuable resource for leaders who want to create and sustain successful organizations.

2.3. Model of hargreaves and fink (2006)

Hargreaves andFink (2004) model of sustainable leadership is based on a model of sustainable leadership in which educational institutions' leadership capabilities are enhanced. Hargreaves andFink (2004) provide a model for the development of sustainable organizations on the basis of seven principles. Some attributes are not influenced by the level of education (primary, secondary, or postcompulsory), as evidenced by an analysis of established models. Consequently, sustainable leaders must exercise extreme caution when making decisions that affect the interests of a large number of individuals within organizations, and they must make every effort to preserve organizational fairness. For example, "doing the right thing" is a crucial aspect of long-term leadership (Lee, 2017b).

Table 3 shows the understanding of seven priciples sustainable leadership approches. According to Hargreaves and Fink (2006), sustainable leaders are concerned with the organization's long-term success and guarantee that their employees are constantly learning.

Table 2 Sustainable leadership framework.

Name	Summary
Builds capacity of staff	Provides opportunities for personnel to develop leadership and management capabilities and learn best practices.
Strategic Distribution	It empowers personnel at every level to engage in leadership initiatives that drive long-term advancement.
Consolidates	It aims to meet the community's learning requirements through collaborative efforts.
Builds long-term objective from shortterm goals	Assists in aligning the organization's long-term goals with the short-term objectives set by funding agencies.
Diversity	By embracing diversity, we can gain insights and promote social cohesion and inclusion.
Conserves	Honor the past and draw lessons from it in order to build a better future.

Source: Lambert (2011)

Table 3 Hargreaves and fink seven-principles approach to sustainable leadership.

Name	Summary
Depth	Leadership is defined by caring for others and a passion for learning. Deep learning surpasses narrow accomplishments and superficial assessments
Length	It ensures that the most valuable aspects of existence continue to exist and advance under successive leaders.
Breadth	It thrives and relies on the collective leadership of multiple individuals, rather than being solely dependent on one person in a superior position.
Justice	It refrains from attracting the most exceptional pupils or instructors from neighboring establishments, nor does it thrive by detrimentally affecting others. In contrast, it actively engages in collaboration.
Diversity	Acquire knowledge and understanding from a range of different backgrounds, promoting the integration and unity of society.
Resourcefulness	Identify, acknowledge, and cultivate exceptional abilities at the beginning stages of a person's professional journey.
Conservation	Embrace the wisdom of the past to forge a more promising future.

Sources: Hargreaves and Fink (2006)

According to Hargreaves and Fink (2006), sustainable leaders are concerned with the organization's long-term success and guarantee that their employees are constantly learning.

This shows a leader’s sustainable performance and effectiveness with respect to educational institutions. Leaders' performance is sustained and lifelong in institutions (Hargreaves and Fink, 2006). Sustainable leadership approaches include employee appreciation, a shared vision, social responsibility, and amicable labor relations and substantially increase long-term performance (Avery & Bergsteiner, 2011 a,b). Nevertheless, according to Hargreaves & Fink (2006), persistent performance involves establishing sustainable content or values, designing and developing effective leadership, transferring leadership skills, promoting social justice, creating a variety of situations to support creativity, and determining which historic values and practices merit preservation. However, Hargreaves and Fink (2006) highlighted the fact that sustainable leaders are proactive in addressing the issue of social justice. In addition to instructing a leader's successors, leadership succession necessitates the dissemination of leadership throughout the institution's professional community.

Through this research, the positive and important effects of sustainable leadership as a shared learning process have been identified, and a successful method for long-term success, continuous development, and sustained competitive advantage has been provided. Thus, such leadership has the ability to promote organizational growth and improvement significantly (Silalaiy et al., 2018). Sustainable leadership has been used in a variety of situations and contexts. Lambert (2011, 2012), Kantabutra and Saratun (2013) explore sustainable leadership in the education sector via an organizational level of analysis. Furthermore, Hargreaves andFink (2004), Lambert (2011), Kantabutra andSaratun (2013), and Davies (2007), using an organizational level of analysis, researched sustainable leadership in the educational sector. Several underlying concerns must be examined across the various frameworks. This perspective emphasizes the importance of fostering collaboration through shared values, visions, and convictions. However, these findings demonstrate that the foundation of sustainable leadership can be learned and shared. Several underlying concerns must be investigated across all frameworks. Individuals and organizational processes are the two categories that divide the topics. There are opportunities for leaders and people to grow within individual parts, including succession planning.

2.4. Sustainable leadership

Sustainable leadership is a source of competitive advantage for education organizations. Sustainable leadership provides opportunities to organizations in the form of innovation, continuous improvement, a sustained competitive edge, and long-term success (Iqbal et al., 2020). Sustainable leadership creates an environmental vision through cultural changes and networking with various stakeholders to cope with climate change; therefore, it is deemed the crux of green initiatives and ecological performance at the organizational level (Al-Zawahreh et al., 2019). Sustainable leadership has been used in a variety of situations and contexts. Hargreaves and Fink (2006), Lambert (2011, 2012), Kantabutra and Saratun (2013), and Davies (2007) explore sustainable leadership in the education sector via an organizational level of analysis. Some underlying issues require study throughout the various frameworks. The themes can be divided into two categories: individuals and administrative processes.

2.5. Sustainable leadership practices

2.5.1. Capacity building

To foster long-term leadership practices, organizations actively participate in capacity-building efforts at both the organizational and social levels. The concept of capacity building encompasses the transformation of employees' attitudes and behaviors, along with the provision of vital skills and mentality, all with the purpose of attaining sustainable development in the organization (Iqbal & Ahmad, 2021). To achieve sustainable leadership, a deep understanding of how it fosters both creativity and adaptability is crucial. These qualities are necessary to effectively meet the new objectives associated with sustainable development. In fact, linked emphasis on human resource management, capacity building, education, training, and higher education emphasizes the importance of leadership in helping individuals adopt sustainable practices. It focuses on increasing capacity at the organisational (such as professional development and training) and societal (such as education, higher education, and student) levels. This demonstrates how important capacity building is to implement the shift to sustainability (Avery & Bergsteiner, 2011 a,b). Building an organization's capacity involves changing the attitudes and behaviors of employees. It also includes developing new leaders who have the necessary knowledge and skills to achieve sustainable development goals (Dalati, 2017). Building capacity and promoting sustainable change are the two main goals of sustainable leadership. In line with a focus on long-term outcomes, continual capacity building is combined with vision articulation (Dalati, 2017). Thus, sustainable leadership involves promoting change within institutions, especially in higher education. Efforts to enhance leadership and management skills are more effective when they focus on providing opportunities and motivation for staff to develop their abilities rather than relying solely on capacity building through work shadowing.

2.5.2. Diversity

Diversity is an essential element that promotes social and broad understanding, as it allows us to learn from a variety of cultures. Sustainable leadership fosters the growth of diverse forms of teaching and learning by promoting networking and cohesion among its constituents, which in turn advances the cause and facilitates the acquisition of knowledge (Dalati et al., 2017). In addition, the development of a social environment characterized by diversity results in the formation of numerous cohesive and interwoven layers, each contributing to the overall fabric of the community. The act of preservation, which emphasizes the fundamental elements of the past and strives to further its progress, is crucial in constructing a more promising future (Lambert, 2020). Learn from diversity, creating social inclusion and cohesion (Hargreaves & Fink, 2004). According to Dalati et al. (2017), the organization staff's responses regarding the diverse principles within the institution reveal that the institution is more focused on creating a social environment consisting of many layers, which are coherent and integrated. However, there seems to be less emphasis on providing all employees with opportunities to work in other departments within the organization. According to Hargreaves and Fink (2006), diversity is fundamental and should be integrated into the sustainable leadership model for general further education colleges. The mission of further education is increasingly about student welfare as much as it is about education.

2.5.3. Conservation

According to Hargreaves and Fink (2006), the concept of conservation better encompasses the principles of continuous improvement, emphasizing the preservation of the past to inform the institution's future developments. Conservation involves remaining on the fundamentals of the past and working on its development to create a better future (Lambert, 2012). Thus, a sustainable leader wants to maintain the important values that support both ethical leadership and responsible leadership. Some elements that they normally contain are honesty, openness, responsibility, and social as well as environmental duties. The long-term orientation thus defines conservation in sustainable leadership. Leaders are advised to shun the quick wins that endanger the future sustainability of any organization.

2.5.4. Strategic distribution

It facilitates the involvement of individuals at all levels of the organization in leadership. Activities leading to enduring progress are consistently valued, ensuring that aspiring leaders feel empowered and motivated to pursue strategic goals (Lambert, 2011). In the planning process, it is essential that power and decision-making are not confined to a select few (Dalati et al., 2017)Strategic distributions define the roles and responsibilities related to sustainability at every level of the organization, including the executive team, managers, and employees. It ensures the integration of sustainability in strategic planning processes, aligning short-term actions with long-term sustainability goals.

2.5.5. Building objectives

When addressing targets, a long-term objective is created from shortlisted goals, and alignment between the organization's long-term objectives and the objectives imposed by funding agencies is fostered (Lambert, 2020). As mentioned by Davies (2009), there needs to be a balance between short- and long-term objectives, with a clear link between the two: short-term objectives should directly contribute to the implementation of long-term goals. Furthermore, generally, further education institutions should scrutinize how their short-term goals function as building blocks toward the vision of long-term objectives for the organization. Develop a strategic plan aligned with the institution's vision, mission, and values. To categorize short-term goals under academic excellence, support them with research papers demonstrating community engagement, and establish long-term goals for financial sustainability. It is crucial to clearly define the institution’s mission and values so that faculty, staff, and students can collaborate toward a common purpose. Ensuring that the mission and values incorporate a commitment to sustainability, social accountability, and integrity.

2.5.6. Innovation

Innovation practices are achieved through leadership within the workplace. Leadership, innovation, and creativity represent active manifestations within the growing research sectors. In addition, by discovering the benefits of embracing sustainability concepts, organizations can enhance innovation and gain a competitive edge (Davies, 2007). Sustainable leadership, coupled with employee innovation, plays a crucial role. A culture that fosters creativity, innovation, and thinking outside the box should be established. Recognizing and rewarding innovative initiatives from faculty, staff, and students is essential.

2.6. Methods

Our study population consisted of 2,415 lecturers from public higher education institutions in Malaysia. We determined a sample size of 150 respondents. The lecturers, representing various departments, served as the primary unit of analysis. To assess the questionnaire's validity, a pilot test was conducted with 30 respondents, approximately 10% of our intended sample size, as suggested by Creswell and Creswell (2017). Given the challenges associated with data collection from the institution, we distributed 250 questionnaires. Unfortunately, 100 questionnaires were excluded because of incomplete data, such as missing demographic details or incomplete Likert scale responses.

The questionnaire comprised sections on demographic information (e.g., gender, age, academic level, teaching experience, and tenure at the institution) and sustainable leadership practices (the dependent variable). Data collection was facilitated through an online platform, Questionnaire, with dissemination via social media channels. For data analysis, SPSS version 28 was employed. Internal consistency and reliability were evaluated via Cronbach's alpha. Multiple regression analysis was used to examine the relationship between tenure at the institution and sustainable leadership practices.

This method enables us to predict the value of the dependent variable on the basis of the independent variables, thereby providing a comprehensive understanding of sustainable leadership practices in higher education institutions.

3. Results

3.1. Demographic

In the table 4, shows the sumarry of demographic profile, greater percentage of female participants (52.7%) than male participants (47.3%) responded.

In the table 4, a greater percentage of female participants (52.7%) than male participants (47.3%) responded. In terms of age distribution, most respondents were aged 45--54 years (38.7%), followed by those aged 35--44 years (34.0%). The participants aged 55 years and above composed 20.0% of the sample, whereas those aged less than 35 years composed 7.3% of the sample. The highest level of education attained by most participants was a doctorate, surpassing other qualifications. However, the majority of participants had 6–10 years of work experience (40.7%), followed by those with 16–20 years of experience (30.7%). The participants with 11–15 years of experience accounted for 12.0% of the sample, whereas those with more than 20 years of experience accounted for 16.7%. In terms of professional experience within the institution, the largest group of participants reported having 16–20 years of experience (30.7%), followed closely by those with 6–10 years of experience (28.0%). Those with 11–15 years of experience constituted 15.3% of the sample, whereas 9.3% of the participants

had 5 years or less. The table 5, Cronbach's alpha values for the study variables, shown in Table 1, are crucial for assessing the reliability of the survey instrument used in this study.

Table 4 Summary of respondents' demographic profile.

Gender	Male	47.3%	71
	Female	52.7%	79
Age	Below 35 years old	7.3%	11
	35-44years old	34.0%	51
	45-54 years old	38.7%	58
	55 years old and above	20.0%	30
Education	Diploma	0%	0
	Bachelor Degree	0%	0
	Masters Degree	0%	0
	PhD Degree	150%	150
	Others	0%	0
Teaching experience	6-10 years	40.7%	61
	11-15years	12.0%	18
	16-20 years	30.7%	46
	More than 20 years	16.7%	25
	5 years and less	9.3%	14
Working in Institution	6-10 years	28.0%	42
	11-15 years	15.3%	23
	16-20years	30.7%	46
	More than 20 years	16.7%	25

Table 5 Reliability statistics

Variables	Cronbach's alpha	N of items
Capacity building	.90	4
Diversity	.91	5
Conservation	.90	4
Strategic distribution	.96	4
Building objectives	.88	4
Innovation	.82	3

Cronbach's alpha is a widely used measure of scale reliability, indicating how consistently each item in a test measures the same concept or construct. In this study, both variables had Cronbach's alpha values exceeding the cutoff value of 0.8. This is significant because it suggests a high level of reliability. Higher Cronbach's alpha values indicate stronger internal consistency, and values above 0.7 are generally considered acceptable in social science research. The fact that the measurement tools in this study achieved values greater than 0.8 strongly supports their dependability. Consequently, the researcher asserts that these tools provide highly reliable data that are suitable for thorough analysis and testing. A succinct summary of the regression model's functionality may be found in Table 6's Model Summary.

Table 6 Model summary results.

Model summary[b]				
Model	R	R square	Adjusted R square	Std. error of the estimate
1	.273[a]	.075	.068	.242

a. Predictors: (Constant), Working in this institution
b. Dependent Variable: DV

R, R square, adjusted R square, and the standard error of the estimate are important measures. The correlation coefficient is represented by the R value, which is 0.273. This suggests that there is a moderately strong positive correlation between the dependent variable and the predictors. The percentage of the dependent variable's variation that the model can account for is indicated by the R square value, which is 0.075. This finding indicates that the predictors in the model account for 7.5% of the variance in the dependent variable. When several predictors are included, the adjusted R square value is slightly lower at 0.068, which accounts for the number of predictors in the model and provides a more realistic indication of the explanatory power of the model. This modification is crucial because it keeps the model's predictive power from being

overestimated. Finally, the average separation between the observed values and the regression line is indicated by the standard error of the estimate, which is 0.242. A model that fits the data more precisely is indicated by a reduced standard error. In summary, the model explains a moderate amount of the variance in the dependent variable with a moderate correlation, and the standard error of 0.242 indicates how accurate the predictions are. The main elements of Table 7 concerning multicollinearity are analyzed above.

Table 7 Multicollinearity.

	Unstandardized coefficients		Standardized coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity	
Model	Beta	Std. Error	Beta			Lower bound	Upper bound	Tolerance	VIF
1 (constant)	4.229	.053		79.144	0.000	3	4.334		
Workingin this institution	-054	.016	-273	-3.456	0.001	.085	-.023	1.000	1.000

3.2. Dependent variable: DV

The main elements of Table 7 concerning multicollinearity are analyzed above. The actual values of the predictors in the regression equation are represented by the unstandardized coefficients (Beta and Std. Error), where the Std. Error is the average distance that the observed values fall from the regression line. This standardization of the standardized coefficients (Beta) results in dependent and independent variable variances of 1, which makes it possible to compare the relative strengths of the effects of each predictor. For the purpose of testing whether a coefficient differs from zero, the t statistic and sig value represent the p value and the t statistic, respectively. A low p value (< 0.05) suggests that the null hypothesis can be rejected. The range in which the true population parameter for B sits inside, with a 95% confidence level, is provided by the 95.0% confidence interval. Multicollinearity can be diagnosed with the aid of collinearity statistics (variance inflation factor (VIF) and tolerance). A low tolerance number denotes strong multicollinearity. Tolerance is the percentage of a predictor's variance that cannot be explained by the other predictors. High multicollinearity is indicated by a variance inflation factor (VIF) value greater than 10, which is the reciprocal of tolerance.

"Working in this institution" has an unstandardized coefficient (B) of -0.054 and a standard error of 0.016. There is a negative correlation between the independent variable and the standardized coefficient (Beta), which is -0.273. The model's predictor is significant, as indicated by the statistically significant t value of -3.456 and p value of 0.001. The significance of the predictor is further demonstrated by the 95.0% confidence interval for B, which does not include zero and spans from -0.085--0.023. According to the collinearity statistics, this predictor has no multicollinearity because the tolerance value is 1.000 and the VIF is 1.000, which both support this finding. The tolerance and VIF values of 1.000 show that "Working in this institution" is a significant predictor in the model, with no evidence of multicollinearity. The dependent variable appears to decline as the value of this predictor increases, according to the negative coefficient.

4. Discussion

This study hypothesized that working in this institution influences sustainable leadership practices. The results support the hypothesis, revealing a significant relationship between the institution's characteristics and the adoption of sustainable leadership practices. However, the negative beta coefficient (-0.54) suggests that certain aspects of the institution may inversely affect the implementation of these practices. To better understand this, it is essential to compare the findings with previous research and explore the implications.

Several studies have highlighted the influence of institutional environment, culture, and policies on leadership behavior. For example, Dalati et al. (2017) found that organizational culture plays a crucial role in shaping leadership styles, particularly when it comes to fostering sustainability. In this study, the negative beta coefficient indicates that some institutional characteristics may hinder the adoption of sustainable leadership. This could be due to factors such as resistance to change, hierarchical organizational structures, or a lack of resources dedicated to sustainability initiatives. Similarly, Hargreaves and Fink (2006) argue that sustainable leadership requires a deep alignment between leadership practices and the organization’s values, suggesting that misalignment could negatively impact sustainability efforts.

The findings of this study align with existing literature that suggests leadership practices are context-dependent. Studies by Avolio and Bass (2004) highlight that transformational leadership, often associated with sustainability, thrives in environments that support innovation and collaboration. In contrast, more rigid, traditional institutions may struggle to implement such practices, which could explain the negative relationship observed in this study. Moreover, research by Fullan (2011) emphasizes the importance of leadership that fosters collaboration and systemic thinking, both of which are necessary for sustainable leadership. The negative beta in this study might indicate a lack of these factors within the institution, leading to less effective implementation of sustainable leadership practices.

The findings suggest that the institution may need to address structural or cultural barriers that prevent the successful adoption of sustainable leadership practices. Previous research suggests that institutions with flatter hierarchies, more participatory decision-making processes, and a culture of continuous learning are more likely to foster sustainable leadership (Senge, 2006). By promoting these elements, the institution could overcome the challenges indicated by the negative beta coefficient and create an environment more conducive to sustainable leadership.

To effectively integrate sustainability into their core mission and vision, higher education institutions (HEIs) should adopt sustainable leadership practices. These practices include embedding sustainability in mission and vision statements; HEIs should ensure that their mission and vision statements reflect a commitment to sustainability. This alignment ensures that sustainability principles guide all institutional activities, decision-making processes, and strategic planning efforts (Visser &Courtice, 2011). To develop comprehensive sustainability policies, policies that address the environmental, social, and economic dimensions of sustainability should be formulated and implemented (Reza, 2016). These policies should provide clear guidelines and objectives for sustainability initiatives across campus operations, academics, and community engagement. Interdisciplinary collaboration should be promoted, fostering collaboration among faculty, staff, and students to advance sustainability research and practice (Segovia-Pérez et al., 2019). Encourage cross-departmental projects and initiatives that address complex sustainability challenges from multiple perspectives measuring and reporting sustainability performance: implementing robust mechanisms for measuring and reporting sustainability performance (Aleixo et al., 2018). Established frameworks and metrics are used to track progress, identify areas for improvement, and celebrate achievements.

Sustainability reports should be published regularly to maintain transparency and accountability (Alghamdi et al., 2017). Leveraging technology for sustainability and utilizing technology and innovation to increase sustainability efforts. Investment in green technologies, energy-efficient infrastructure, and sustainable campus operations (Taşçı &Titrek, 2020). The use of digital platforms for sustainability education and awareness should be encouraged. supporting sustainability research, providing funding and support for sustainability research initiatives Encouraging faculty and students to conduct research that addresses pressing sustainability issues and contributes to the development of innovative solutions (Segovia-Pérez et al., 2019). Promoting social equity and inclusion and addressing social equity and inclusion as integral components of sustainable leadership. Develop initiatives that promote diversity, equity, and inclusion within the institution, ensuring that sustainability efforts benefit all members of the community (Thakhathi et al., 2019). By implementing these recommendations, HEIs can effectively integrate sustainability into their institutional frameworks, fostering a culture of sustainability and leadership that addresses global challenges. By adopting these recommendations, higher education institutions can strengthen their commitment to sustainable leadership, fostering a more sustainable and resilient future. These actions enhance institutional sustainability practices and prepare graduates to become sustainability leaders in their respective fields.

In conclusion, this paper delves into the theoretical frameworks surrounding sustainable leadership and synthesizes key aspects influencing it both internally and externally. It provides a coherent understanding of these concepts for analysis. The implications are significant, particularly in operationalizing sustainable leadership in practice, as organizational culture and leadership approaches transform. While sustainable leadership offers substantial advantages, its implementation is gradual, requiring a shift toward sustainable practices and culture. Therefore, organizations must prioritize the adoption of sustainable leadership practices to ensure long-term effectiveness and impact. Sustainable leadership in higher education refers to the practice of guiding organizations with an emphasis on long-term planning and vision. When sustainable practices are integrated into the organizational culture, decision-making procedures, and overall strategic direction, it goes beyond conventional leadership methods. Leaders in higher education who prioritize sustainability often emphasize the importance of long-term planning and a forward-thinking mindset. To ensure the institution's ongoing relevance, it is important to guarantee its resilience and carefully consider the potential impact of decisions on future generations.

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Ethical Considerations

This is quantitative research study based on survey questionnaire with 150 individuals. All factors of protecting participants were taken into consideration and all of the collected information were confidential.

Conflict of Interest

The authors declare no conflicts of interest.

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