

# **The Impact of Innovative Leadership Style on Enhancing Sustainable Behavior among Qatar University Students**

Prepared by

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## **Introduction**

Contemporary societies are experiencing a series of rapid environmental, economic, and social transformations, making it essential to adopt leadership styles capable of adapting to these changes and guiding institutions toward achieving sustainable development goals. In this context, innovative leadership emerges as a leadership approach that combines creative thinking with the ability to inspire others to develop new and unconventional solutions within a motivating and supportive environment that fosters renewal and development.

Innovative leadership plays a pivotal role in educational institutions, as it helps direct resources efficiently and creatively toward enhancing academic performance and improving the competencies of both students and educators. This type of leadership contributes to building a learning environment that is more responsive to contemporary needs and provides educational experiences that reinforce concepts of quality and sustainability (Noor, 2023).

At the same time, sustainable practices represent a fundamental pillar in achieving a balance between the use of current resources and safeguarding the rights of future generations. Universities constitute an ideal environment for embedding these concepts among students by instilling environmental and social values and strengthening individual and collective responsibility toward sustainability issues.

Accordingly, this research examines the impact of innovative leadership style on promoting sustainable behavior among students at Qatar University. It seeks to explore the extent to which innovative leadership approaches can enhance students' awareness and orientations toward more sustainable practices. The study focuses on analyzing the relationship between leadership behavior and educational practices that encourage students to adopt sustainability values in their academic and daily lives.

The importance of this study stems from its alignment with the priorities of Qatar National Vision 2030, which emphasizes building a knowledge- and innovation-based society capable of achieving comprehensive and sustainable development. Through this research, the study aims to provide recommendations that support the design of effective educational policies that enhance the role of leadership in stimulating positive change and preparing a generation equipped with the awareness and determination to build a more sustainable future.

## Research Problem

Modern educational institutions face increasing challenges related to environmental, social, and economic development requirements, prompting them to seek modern and effective leadership approaches compatible with these transformations. Within this framework, innovative leadership emerges as a contemporary approach that contributes to creating an educational environment that encourages creative thinking and the development of practices supporting sustainability within universities (Qatar Foundation, 2024). This leadership approach gains particular importance in universities, which bear the responsibility of preparing students with the awareness and skills necessary to contribute to sustainable development.

Despite the growing number of studies examining innovative leadership and sustainable behavior separately, the relationship between these two concepts within the university context in Qatar has not been sufficiently explored. Despite governmental efforts to achieve the goals of Qatar National Vision 2030, there remains a lack of studies examining how innovative leadership can enhance sustainability practices among students, who represent a key driver of future change.

In addition, training programs and sustainability awareness activities represent an important mediating variable that may influence the relationship between innovative leadership and sustainable behavior. Students' participation in such awareness programs may play an effective role in raising their awareness and motivating them to adopt sustainable practices.

Based on the above, this study aims to examine the relationship between innovative leadership and sustainable behavior among Qatar University students, with a focus on the role of training programs and awareness activities as a mediating factor in this relationship. The study seeks to provide insights that contribute to developing educational policies capable of strengthening universities' ability to promote a culture of sustainability among students and society as a whole.

## Research Questions

### Main Question:

What is the impact of innovative leadership style on promoting sustainable behavior among Qatar University students?

### Sub-questions:

1. To what extent does the university leadership at Qatar University adopt innovative leadership practices?
2. To what extent do Qatar University students practice sustainable behaviors within the university campus?
3. To what extent do training programs and awareness activities support the impact of innovative leadership on sustainable behavior among Qatar University students?

## Study Objectives

This study aims to achieve the following objectives:

1. Examine the impact of innovative leadership style on promoting sustainable behavior among Qatar University students.
2. Analyze the extent to which university leadership at Qatar University adopts innovative leadership practices.
3. Measure the level of sustainable behavior practiced among Qatar University students.
4. Explore the role of training programs and awareness activities in supporting the impact of innovative leadership on promoting sustainable behavior.
5. Provide practical recommendations to enhance the culture of innovative leadership and sustainability within the university environment in alignment with Qatar National Vision 2030.

## Significance of the Study

### First: Practical Significance

This study holds significant practical importance as it provides a clear framework for higher education institutions, particularly Qatar University, on how to adopt innovative leadership practices that contribute to promoting sustainable behavior among students. Based on the study findings, training programs and awareness workshops can be developed to increase awareness of sustainability within the university environment and encourage students' active participation in environmental and social initiatives. The study also provides educational decision-makers with accurate data to support the formulation of modern policies grounded in innovative leadership to improve academic and behavioral performance. Furthermore, the study contributes to preparing a generation of students capable of addressing future challenges through adopting sustainable and responsible practices both inside and outside the university campus.

### Second: Scientific Significance

The scientific significance of this study lies in enriching the theoretical framework related to the impact of modern leadership styles on students' behaviors within universities, with particular emphasis on the Qatari context. The study contributes to bridging a noticeable knowledge gap in the research literature concerning the relationship between innovative leadership and sustainable behavior, thereby providing a solid scientific foundation for future studies in this field. It also opens new avenues for developing specialized leadership models suited to the educational environment in Qatar, supporting the achievement of sustainable development goals and strengthening universities' role as leading institutions in innovation and sustainability. Through these contributions, the study offers valuable input to the academic community and provides

knowledge tools that support both research advancement and practical application in leadership and sustainable behavior fields.

### **Research Hypotheses**

Based on the study objectives and in an effort to examine the relationships among the study variables, the following null hypotheses were formulated to test the extent to which innovative leadership style, training programs, and awareness activities influence the promotion of sustainable behavior among Qatar University students:

- **Null Hypothesis One (H0-1):** There is no statistically significant effect at the significance level ( $\alpha \leq 0.05$ ) of innovative leadership style on promoting sustainable behavior among Qatar University students.
- **Null Hypothesis Two (H0-2):** There is no statistically significant effect at the significance level ( $\alpha \leq 0.05$ ) of innovative leadership style on students' participation in training programs and awareness activities at Qatar University.
- **Null Hypothesis Three (H0-3):** There is no statistically significant effect at the significance level ( $\alpha \leq 0.05$ ) of training programs and awareness activities on promoting sustainable behavior among Qatar University students.
- **Null Hypothesis Four (H0-4):** There is no statistically significant effect at the significance level ( $\alpha \leq 0.05$ ) of innovative leadership style on promoting sustainable behavior among Qatar University students when training programs and awareness activities act as a mediating variable.

### **Research Variables and Model**

This study is based on three main variables aimed at analyzing the impact of innovative leadership on sustainable behavior among Qatar University students.

#### **Independent Variable**

Innovative leadership style, which refers to leadership practices that stimulate creativity and encourage the adoption of new ideas and solutions. These include fostering creative thinking, adopting innovative teaching approaches, and providing an educational environment that supports innovation.

#### **Mediating Variable**

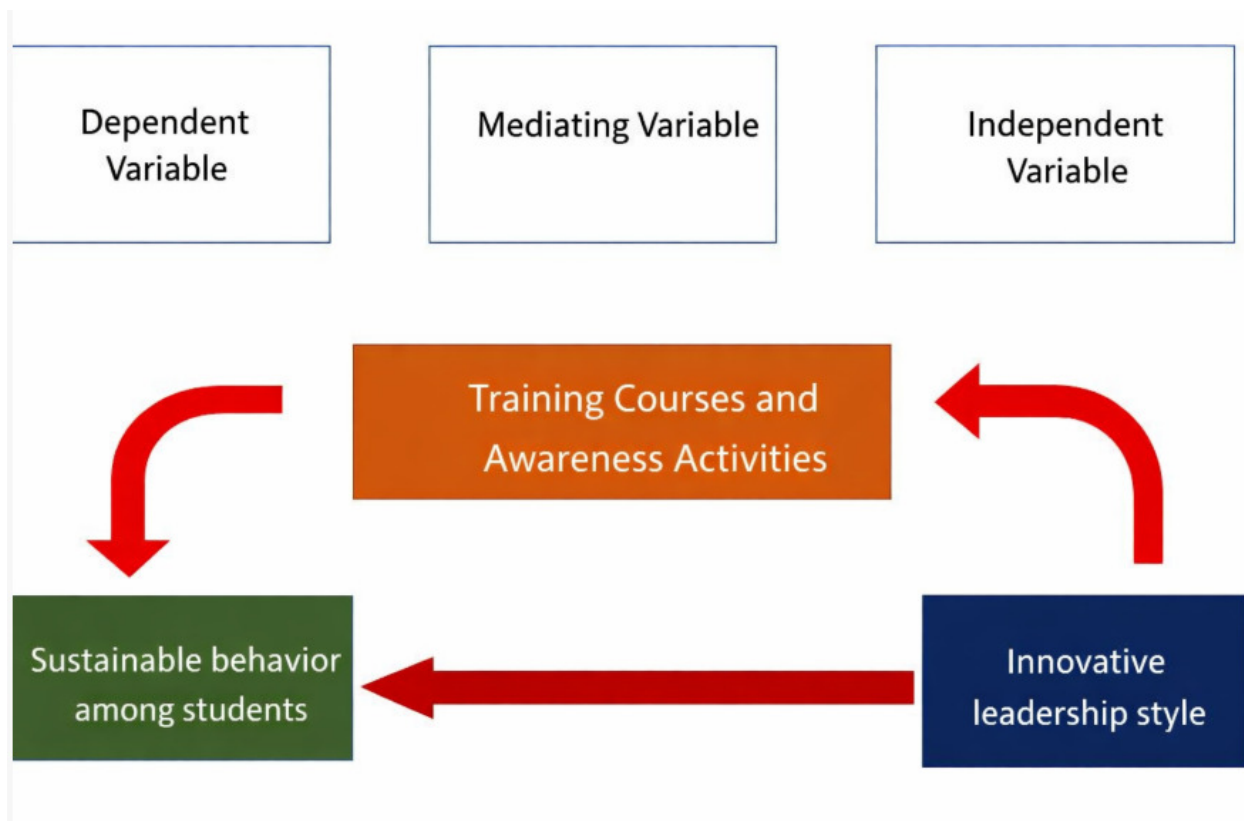
Training programs and awareness activities, which include students' participation in sustainability-related workshops and courses, as well as the extent to which they benefit from awareness activities that promote environmental awareness and practices.

#### **Dependent Variable**

Students' sustainable behavior, which reflects the extent to which students adopt positive

environmental practices, including reducing plastic use, recycling, and participating in university environmental initiatives.

The study model assumes a direct effect of innovative leadership on sustainable behavior, in addition to the mediating role of training programs and awareness activities in strengthening this effect.



**Figure (1): Research Model**

Source: Prepared by the researcher based on previously cited literature.

### Research Boundaries

#### Temporal Boundaries:

The study was conducted during the Fall/Summer semester of 2025, from April to June 2025.

#### Spatial Boundaries:

The research was limited to a sample of Qatar University students, with data collected solely within the university environment.

#### Subject Boundaries:

The study examined the impact of innovative leadership style on promoting sustainable behavior among Qatar University students, focusing on the role of training programs and awareness activities as a mediating variable influencing this relationship.

## **Research Terminology**

This research focuses on the theoretical dimension through defining and discussing the main concepts, including innovative leadership, sustainable behavior, training programs and awareness activities, and Qatar University. Clear and detailed explanations of each concept are provided, along with an analytical discussion of their dimensions and significance, in order to clarify their role in building the theoretical foundation of the study. These concepts are addressed in Chapter Two, which presents the theoretical framework and previous studies.

## **Theoretical Framework and Previous Studies**

### **Innovative Leadership**

Innovative leadership is considered a leadership approach that enables leaders to provide creative solutions and unconventional ideas aligned with the nature of work and its changing requirements. Leaders continuously seek to develop work mechanisms by applying practical and implementable ideas that improve the work environment and support the achievement of organizational goals (Al-Zawahreh, 2018). Innovative leadership also reflects a leader's ability to adopt flexible and creative methods in managing daily organizational activities to enhance performance efficiency and achieve tangible results aligned with institutional needs (Abu Ajwa, 2018).

In the same context, innovative leadership focuses on empowering individuals within the organization to contribute new ideas and develop effective solutions to improve internal processes, thereby enhancing performance efficiency and contributing more broadly to community service (Al-Qassous, 2004). It represents an approach based on building collaborative and trust-based working relationships, adapting work methods to organizational developments while providing a supportive environment for idea exchange and openness to diverse perspectives and suggestions (Najm, 2003).

From another perspective, innovative leadership is viewed as a managerial approach characterized by a clear future vision and innovation capability, alongside leaders' confidence in themselves and their teams, readiness to embrace change, and willingness to experiment with unconventional work mechanisms beyond traditional management patterns (Imad Al-Din, 2003).

The researcher considers innovative leadership to encompass any new practice or idea not previously tested within the work environment. It represents an entry point for providing innovative solutions that go beyond traditional approaches. The researcher also believes that leadership innovation does not emerge in isolation but often begins with individual initiatives proposed by proactive and responsible individuals, whether they hold leadership positions or work within effective organizational teams.

The researcher further emphasizes that such innovative ideas emerge within a motivating work environment that allows experimentation with new solutions, where individuals test ideas

themselves before transferring them to colleagues to enhance collective performance. Accordingly, innovative leadership is defined as:

*The ability to propose new ideas and practices not previously implemented, emerging from individual efforts and self-initiatives aimed at improving work methods and developing organizational performance, whereby these ideas are tested within an active work environment and later disseminated for the benefit of the organization as a whole.*

### **Sustainable Behavior**

Sustainable environmental behavior refers to a set of actions consciously and intentionally performed by individuals to preserve the planet's natural and social resources and ensure their continuity for future generations. Individuals engaged in such efforts strive to create an environment that allows balanced and equitable resource use while considering environmental, economic, and social dimensions. Research indicates that such individuals demonstrate key characteristics, including commitment to environmental protection, rational consumption, mutual consideration of interests, and adherence to fairness principles in resource utilization. Strong evidence also suggests a close relationship among behaviors that support environmental sustainability (Ahmed Badr, 1998).

Sustainable behavior can also be defined as a set of conscious daily actions undertaken by individuals to preserve natural resources and ensure their availability for future generations. This behavior includes organized strategies such as waste reduction, efficient use of water and energy, and promoting social responsibility within the university environment.

### **Training Programs and Awareness Activities**

Training programs are organized sets of educational activities planned by institutions to improve or develop participants' skills and capabilities. These programs aim to achieve specific objectives through carefully designed educational content, effective training methods, and the provision of necessary human and material resources, along with performance monitoring and evaluation mechanisms to ensure successful implementation. Such programs are conducted within defined timeframes to achieve targeted academic or professional outcomes aligned with organizational goals (Qasim, 2011).

Training programs and awareness activities can be described as planned educational initiatives aimed at developing individuals' capabilities and deepening their understanding in specific fields, such as environmental conservation and related practical skills. These programs aim to enhance participants' ability to adopt positive daily practices that support environmental sustainability. Activities include training sessions and practical workshops that provide participants with direct opportunities to experience effective methods for protecting and reusing natural resources in innovative ways.

## **Integration of the Three Concepts**

The conceptual framework explains how innovative leaders enhance students' sustainable behavior by supporting training programs and awareness activities. In other words, these programs act as a catalyst linking leadership and sustainable behavior by motivating students to transform ideas into tangible environmental actions.

## **Qatar University**

Qatar University is one of the leading higher education institutions in the State of Qatar. Established in 1973, it aims to provide high-quality education and promote scientific research. The university focuses on developing national competencies through academic and research programs that meet local and global requirements while supporting sustainable development orientations (Qatar University, 2024). It also seeks to actively contribute to national capacity building and foster innovation in alignment with the objectives of Qatar National Vision 2030.

## **Previous Studies**

A review of previous studies revealed increasing interest in innovative leadership and its role in developing institutional performance and promoting positive behaviors within educational and organizational settings. These studies addressed the concept from multiple perspectives, including human resource sustainability, academic performance, organizational values, decision-making, and job engagement, in addition to its relationship with environmental behavior and sustainable development.

Several recent studies (Al-Obaidi et al., 2024; Al-Omari, 2023; Al-Koni, 2022; Al-Harashah, 2022) indicated a positive relationship between innovative leadership and several important organizational outcomes, such as human resource sustainability, achievement culture, job engagement, and self-management. These findings confirm the role of innovative leadership in improving institutional effectiveness and enhancing individual performance. Other studies (Nada & Abu Samra, 2024; Noor, 2023; Al-Shahrani, 2018) showed that the level of innovative leadership practices in educational institutions generally ranged from moderate to high, while highlighting the need to further develop leadership practices that support creativity and innovation.

Regarding sustainability and environmental behavior, studies by (Zdouri, 2024; Abat Allah & Maroush, 2024) demonstrated that adopting environmentally responsible behavior within institutions directly contributes to achieving sustainable development goals. Studies examining students' environmental awareness (Shabib, 2024; Al-Ma'afa, 2020) also indicated that environmental awareness levels still require enhancement through educational programs and university activities.

Some studies focused specifically on educational environments. Findings from (Moonsrikaew&Chansirisira, 2020; Sharratt, 2016) showed that innovative leadership represents

a key factor in developing educational institutions, enabling them to adapt to change and improve performance quality. Jabrini (2016) confirmed a positive relationship between innovative leadership and effective decision-making, while Mueller et al. (2011) noted that adopting creative ideas may sometimes face social resistance despite their importance in promoting effective leadership.

Despite the diversity of these studies, most focused on academic leaders or institutional employees, while the direct relationship between innovative leadership and sustainable behavior among university students remains limited, particularly within the Arab and Gulf contexts, and more specifically in the State of Qatar. Hence, the importance of the current study emerges in addressing this research gap by exploring the impact of innovative leadership on promoting sustainable behavior among Qatar University students.

### **Research Gap**

Recent literature shows growing interest in innovative leadership, particularly regarding its ability to improve performance and foster productive work environments. However, this research trend has largely focused on educational institutions from an administrative perspective and on the roles of academic leaders and faculty members, without deeply examining the impact of such leadership on students themselves. Consequently, a gap exists in studies investigating whether innovative leadership styles effectively contribute to shaping sustainable positive behaviors among students on university campuses.

Similarly, research addressing sustainable behavior has often examined it in non-educational contexts, such as environmental or industrial sectors, resulting in limited attention to student behavior as an important field deserving investigation and analysis. Furthermore, research in this area remains limited in the Gulf region in general, and in Qatar in particular, highlighting the need for studies examining the relationship between innovative leadership and sustainable student behavior to better understand the educational and social dimensions of this relationship within the local university environment.

Accordingly, this study seeks to address this gap by exploring the impact of innovative leadership in fostering sustainable behavior among Qatar University students.

### **Research Methodology**

This study adopted the **descriptive correlational approach** as a research framework appropriate for examining the impact of innovative leadership style on promoting sustainable behavior among Qatar University students. This approach allows for describing the nature of relationships and analyzing the extent to which innovative leadership influences students' adoption of sustainable behaviors. The study also examines the mediating role of training programs and awareness activities in explaining the effect of innovative leadership on promoting sustainable behavior.

## **Study Population and Sample**

### **Study Population**

The study population consisted of all Arabic-speaking students at Qatar University across all academic disciplines and colleges, including students enrolled at all academic levels (Bachelor's, Master's, and Doctoral programs), aged 18 years or older and officially registered at Qatar University.

### **Study Sample**

The study sample refers to the group participating in the research (the representative group) whose responses can be generalized to the entire study population. Various sampling methods exist depending on the nature of the study; in this research, stratified random sampling was adopted as the most suitable method for achieving the study objectives.

The sample included 169 male and female students from Qatar University representing different academic levels (Bachelor's, Master's, and PhD programs), diverse disciplines, and both genders. The research instrument was distributed electronically through a dedicated online link, and all distributed questionnaires were retrieved, achieving a 100% response rate. This high response rate strengthens the representativeness of the sample and supports the generalizability of the study findings.

The study sample thus represents a selected group reflecting the broader study population, allowing reliable conclusions and generalization of results based on the collected data.

### **Data Collection Methods**

The study relied on a questionnaire as the primary tool for collecting primary data to measure the impact of innovative leadership style on promoting sustainable behavior among Qatar University students.

### **Secondary Sources**

Secondary sources such as books, published research, scientific references, and abstracts were used to support the theoretical framework of the study, in addition to previous studies addressing innovative leadership style and sustainable behavior.

### **Primary Sources**

The study relied on the research measurement scale as its primary data source, which served as a tool for collecting the opinions of the study sample regarding the impact of innovative leadership style on promoting sustainable behavior among Qatar University students.

## Research Measurement Instrument

After reviewing theoretical literature and previous studies related to the research topic, the researcher developed a research instrument aligned with the study objectives and capable of providing accurate answers to its research questions. Based on prior studies addressing the research variables, three main scales were designed:

- A scale measuring **innovative leadership style**, consisting of five items.
- A scale measuring **students' sustainable behavior** at Qatar University, consisting of five items.
- A third scale measuring the **role of training programs and awareness activities** as a mediating variable, also consisting of five items.

## Development of the Research Instrument

The researcher designed the research instrument specifically to examine the impact of innovative leadership style on developing sustainable behavior among Qatar University students.

Participants were selected from Arabic-speaking university students across various colleges and disciplines at the Bachelor's, Master's, and PhD levels, provided they were at least 18 years old.

The instrument development was based on an in-depth review of relevant previous research and an analysis of tools used in similar studies. Accordingly, the instrument was designed to align with the nature of the research problem and the objectives of the current study.

The research instrument consisted of **two main sections**:

### Section One:

Personal information of participants, including:

- Gender
- Academic level
- Specialization

### Section Two:

Included three main dimensions:

- **Dimension One:** Innovative leadership style (5 items).
- **Dimension Two:** Students' sustainable behavior (5 items).
- **Dimension Three:** Training programs and awareness activities as a mediating variable (5 items).

These dimensions were constructed to ensure comprehensive coverage of all aspects related to the study topic while providing reliable data suitable for analysis.

The researcher adopted the **five-point Likert scale** to measure participants' responses as follows:

Response Option	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Score	5	4	3	2	1

### 3.7 Validity and Reliability of the Research Instrument

#### Instrument Validity

The preliminary version of the study instrument (Appendix 1), developed to measure the impact of innovative leadership style on promoting sustainable behavior among Qatar University students, was presented to the study supervisor at the College of Business and Economics, Qatar University, as a subject-matter expert reviewer.

The purpose of this procedure was to ensure that the instrument accurately measured what it was designed to measure and to verify the accuracy of its content and the relevance of its items to the main study dimensions.

The reviewer was asked to evaluate:

- Clarity of the items,
- Consistency with their respective dimensions,
- Linguistic accuracy and clarity of expression.

Based on the review, several modifications were suggested, including improving wording clarity and revising or removing certain items where necessary.

An acceptance rate of **at least 80%** was adopted as the criterion for retaining items in the final scale. After incorporating the reviewer's feedback, the final instrument consisted of **15 items** distributed across three main variables:

- Innovative leadership (independent variable),
- Students' sustainable behavior (dependent variable),
- Training programs and awareness activities (mediating variable).

These steps ensured the validity and readiness of the instrument for field application.

#### Instrument Reliability

Reliability refers to the ability of the instrument to produce approximately consistent results when applied more than once under similar conditions. To ensure reliability, the researcher used **Cronbach's Alpha**, a widely recognized method for measuring internal consistency.

Reliability coefficients were calculated separately for each section of the questionnaire to confirm the consistency of items related to each variable.

**Table (1): Reliability Coefficients Using Cronbach's Alpha**

Study Variables	Number of Items	Cronbach's Alpha
Innovative Leadership Style	5	0.878
Students' Sustainable Behavior	5	0.857
Training Programs & Awareness Activities	5	0.853
Overall Instrument	15	0.915

Table (1) shows that Cronbach's Alpha values for the sub-dimensions ranged between **0.853** and **0.878**, while the overall reliability coefficient reached **0.915**, indicating a high level of internal consistency.

### 3.8 Statistical Methods Used

Descriptive statistical methods were used to answer the study questions using the **Statistical Package for Social Sciences (SPSS), Version 25**, as follows:

- Calculating frequencies and percentages to describe study sample characteristics.
- Using Cronbach's Alpha to verify instrument reliability.
- Computing means and standard deviations to obtain descriptive statistics reflecting participants' response levels.
- Applying **Simple Regression Analysis** to test the first hypothesis.
- Using **Path Analysis** to test the second study hypothesis.

### Description of Sample Characteristics

#### General Description of Study Sample According to Demographic Variables

Table (2) presents the distribution of study participants according to demographic variables: gender, academic level, and specialization.

**Table (2): Distribution of Study Sample by Demographic Variables**

Demographic Variable	Category	Frequency	Percentage
<b>Gender</b>	Male	47	27.8%
	Female	122	72.2%
	<b>Total</b>	<b>169</b>	<b>100%</b>
<b>Academic Level</b>	Bachelor's	97	57.4%

	Master's	60	35.5%
	PhD	12	7.1%
	<b>Total</b>	<b>169</b>	<b>100%</b>
<b>Specialization</b>	Business & Economics	42	24.9%
	Engineering	28	16.6%
	Education	13	7.7%
	Arts & Sciences	19	11.2%
	Law	26	15.4%
	Sharia & Islamic Studies	13	7.7%
	Health Sciences	18	10.7%
	Other	10	5.9%
	<b>Total</b>	<b>169</b>	<b>100%</b>

**Source:** Prepared by the researcher based on SPSS output results.

### 3.9.2 Analysis of the Demographic Distribution of the Study Sample

- Table (4.1) shows that **27.8%** of the study participants were male, while **72.2%** were female. The results indicate that the majority of participants were female, reflecting the actual situation in which the proportion of females exceeds that of males.
- The findings also show that the majority of the study sample (students) belonged to the **Bachelor's level**, representing **57.4%** of the total distribution. Meanwhile, **35.5%** of participants were enrolled in Master's programs, and **7.1%** were PhD students.
- Regarding students' specializations at Qatar University, participants were distributed as follows: **24.9%** from Business and Economics, **16.6%** from Engineering, **7.7%** from Education, **11.2%** from Arts and Sciences, **15.4%** from Law, **7.7%** from Sharia and Islamic Studies, **10.7%** from Health Sciences, and **5.9%** from other specializations.
- The researcher illustrated the demographic distribution of the study sample using graphical representations as follows:

### Data Analysis and Discussion of Results

In this section, data were analyzed using **SPSS (Version 25)** to test the research hypotheses related to identifying the nature of the relationship between innovative leadership style and

sustainable behavior among Qatar University students. The mediating role of training programs and awareness activities was also examined to determine their influence on this relationship.

This chapter presents a detailed analysis of the results according to the order of the study hypotheses, along with scientific interpretations aimed at achieving a deeper understanding of the impact of innovative leadership on promoting sustainable practices within the university environment.

### Study Variables Analysis

Means and standard deviations were calculated to identify participants' responses regarding the impact of innovative leadership style on promoting sustainable behavior among Qatar University students. The study variables include:

- Innovative leadership style (independent variable)
- Training programs and awareness activities (mediating variable)
- Sustainable behavior (dependent variable)

### Independent Variable: Innovative Leadership Style at Qatar University

To determine the level of innovative leadership style at Qatar University, means and standard deviations were calculated for each item and for the overall score.

**Table (3): Means and Standard Deviations of Responses Regarding Innovative Leadership Style at Qatar University (Descending Order)**

No.	Innovative Leadership Items	Mean	Std. Dev.	Rank	Level
1	My instructors encourage me to think creatively and outside the box.	4.39	0.66	1	High
2	The leadership style at my university encourages adopting new and innovative ideas.	4.27	0.66	2	High
3	Leaders at my university provide innovative solutions to challenges faced by students.	4.25	0.79	3	High
5	My university provides a learning environment that encourages creative thinking.	4.25	0.84	3	High
4	My instructors guide us toward using new tools in teaching and learning.	4.18	0.80	5	High
<b>Overall</b>		<b>4.27</b>	<b>0.62</b>		<b>High</b>

**Source:** Prepared by the researcher based on SPSS outputs.

Participants' responses indicated that mean scores ranged between **4.18 and 4.39**, with an overall mean of **4.27**, representing a **high level** of innovative leadership.

The highest-ranked item was Item (1), indicating that instructors encourage creative and out-of-the-box thinking. The lowest-ranked item, although still at a high level, was Item (4), concerning guidance toward using new educational tools.

Standard deviation values were below **1.00**, indicating strong agreement among participants (agree/strongly agree).

**Result Summary:** Innovative leadership style at Qatar University is perceived as **high** by the study sample.

### **Mediating Variable: Training Programs and Awareness Activities at Qatar University**

Means and standard deviations were calculated to determine the level of training programs and awareness activities.

**Table (4): Means and Standard Deviations of Responses Regarding Training Programs and Awareness Activities (Descending Order)**

No.	Training & Awareness Items	Mean	Std. Dev.	Rank	Level
1	I have participated in training courses or workshops aimed at promoting sustainable behavior.	4.32	0.77	1	High
5	Awareness activities help me adopt sustainable environmental behaviors in daily life.	4.30	0.78	2	High
3	University awareness activities help me understand the importance of sustainable behavior.	4.27	0.70	3	High
2	My university provides training opportunities related to environmental and sustainability issues.	4.26	0.67	4	High
4	Sustainability-related training courses are very useful in my personal life.	4.20	0.71	5	High
<b>Overall</b>		<b>4.27</b>	<b>0.58</b>		<b>High</b>

**Source:** Prepared by the researcher based on SPSS outputs.

Mean values ranged between **4.20 and 4.32**, with an overall mean of **4.27**, indicating a **high level** of training programs and awareness activities.

Standard deviations were below **1.00**, reflecting general agreement among respondents.

**Result Summary:** Training programs and awareness activities at Qatar University are perceived at a **high level** by participants.

### **Dependent Variable: Sustainable Behavior at Qatar University**

Means and standard deviations were calculated to measure the level of sustainable behavior among students.

**Table (5): Means and Standard Deviations of Responses Regarding Sustainable Behavior (Descending Order)**

No.	Sustainable Behavior Items	Mean	Std. Dev.	Rank	Level
5	I consider environmental protection a shared individual and collective responsibility.	4.37	0.74	1	High
1	I participate in environmental activities aimed at preserving natural resources.	4.31	0.83	2	High
3	I make sure to recycle waste on campus.	4.27	0.80	3	High
2	I try to reduce plastic use in my daily life.	4.21	0.80	4	High
4	I participate in environmental awareness campaigns organized by the university.	4.12	0.89	5	High
<b>Overall</b>		<b>4.26</b>	<b>0.65</b>		<b>High</b>

**Source:** Prepared by the researcher based on SPSS outputs.

The results indicate that sustainable behavior among Qatar University students is perceived at a high level, with mean scores ranging between 4.12 and 4.37 and an overall mean of 4.26, reflecting strong adoption of environmentally responsible practices among students.

### **Third Null Hypothesis (H0-3)**

*There is no statistically significant effect at the significance level ( $\alpha \leq 0.05$ ) of training programs and awareness activities on promoting sustainable behavior among Qatar University students.*

To test the third hypothesis, Simple Regression Analysis was used to examine the effect of training programs and awareness activities on promoting sustainable behavior among Qatar University students, as shown in Table (6.4).

**Table (6): Simple Regression Analysis Examining the Effect of Training Programs and Awareness Activities on Sustainable Behavior (n = 169)**

<b>R (Correlation)</b>	<b>Beta</b>	<b>R<sup>2</sup> (Explained Variance)</b>	<b>B (Prediction Coefficient)</b>	<b>DF</b>	<b>F-value</b>	<b>Sig.</b>
0.679	0.679	0.462	0.763	168	143.247	0.000*

*Source: Prepared by the researcher based on SPSS outputs.*

\* Statistically significant at ( $\alpha \leq 0.05$ )

Table (6.4) indicates that the correlation coefficient (R) between training programs and awareness activities and sustainable behavior among Qatar University students was **0.679**, reflecting a strong positive relationship. The Beta value (**0.679**) also confirms a direct positive association between the two variables.

The F-value reached **143.247** with a significance level less than **0.05**, indicating statistical significance. The coefficient of determination (R<sup>2</sup>) shows that training programs and awareness activities explain **46.2%** of the variance in sustainable behavior among students. The prediction coefficient (B) was **0.763**.

Accordingly, the null hypothesis was rejected and the alternative hypothesis accepted, indicating that:

**Training programs and awareness activities have a statistically significant effect on promoting sustainable behavior among Qatar University students.**

#### **Fourth Null Hypothesis (H0-4)**

*There is no statistically significant effect at the significance level ( $\alpha \leq 0.05$ ) of innovative leadership style on promoting sustainable behavior among Qatar University students when training programs and awareness activities act as a mediating variable.*

To test the fourth hypothesis, **Path Analysis** was conducted to examine the effect of innovative leadership style on sustainable behavior in the presence of training programs and awareness activities as a mediating variable, as shown in Table (7.4).

The indirect effect value of the mediating variable was calculated by multiplying: (Effect of the independent variable on the mediator)  $\times$  (Effect of the mediator on the dependent variable).

**Table (7): Path Analysis Examining the Mediating Role of Training Programs and Awareness Activities**

Path	Path Coefficient (Indirect Effect)	Chi-square	DF	Significance
Innovative Leadership → Training & Awareness → Sustainable Behavior	0.118	12.401	168	0.000*

\* Statistically significant at ( $\alpha \leq 0.05$ )

The table shows that the indirect path coefficient of training programs and awareness activities in the relationship between innovative leadership style and sustainable behavior was **0.118**. The Chi-square value reached **12.401**, which is statistically significant at the **0.05** level.

This indicates that training programs and awareness activities play a **partial mediating role** in improving the relationship between innovative leadership style and sustainable behavior among Qatar University students. The partial explained variance reached **11.8%**, meaning that training programs and awareness activities enhance **11.8%** of the relationship between innovative leadership and sustainable behavior.

Therefore, the null hypothesis was rejected and the alternative hypothesis accepted, confirming that: Innovative leadership style has a statistically significant effect on promoting sustainable behavior among Qatar University students when training programs and awareness activities function as a mediating variable.

The analysis further indicates that the mediation effect was **partial and moderate**. According to Preacher & Kelley (2011):

- Mediation effect between **1–10%** → weak partial mediation
- Between **10–25%** → moderate partial mediation
- Above **25%** → strong partial mediation

Since the mediation effect reached 11.8%, it falls within the moderate partial mediation category. This confirms that training programs and awareness activities play an important and vital role in strengthening the relationship between innovative leadership style and sustainable behavior among Qatar University students.

#### 4.4 Discussion of Results

- The results showed that Qatar University students possess clear awareness of the role of innovative leadership in influencing their sustainability-related behaviors within the university.

- Differences were observed among students in evaluating the relationship between leadership and sustainable behavior, associated with personal and academic characteristics such as specialization, academic level, and participation in training and awareness activities.
- Students evaluated the level of innovative leadership in their university environment as above average, reflecting the presence of leadership efforts supporting initiatives and new ideas.
- The level of sustainable behaviors among students ranged between moderate and good, indicating positive tendencies toward environmentally and socially responsible practices, with room for further improvement.
- The relationship between innovative leadership and sustainable behavior was strong and statistically significant, suggesting that leaders adopting non-traditional approaches can influence students' adoption of sustainable practices.
- Training activities and awareness programs played an effective role in increasing students' awareness of sustainable behavior and directly encouraged its practice.
- The analysis showed that the presence of training programs and awareness activities strengthens the impact of innovative leadership on sustainable behavior, emphasizing the importance of integrating leadership efforts with educational activities to achieve better outcomes.
- Students who participated in sustainability-related training activities demonstrated higher levels of sustainable practice adoption compared to those who did not participate.
- The study findings are consistent with previous studies highlighting the role of innovative leadership and awareness activities in supporting sustainable behavior.
- This study is distinguished by its focus on university students within the Qatari context—a group that has received limited attention in previous research, which mainly focused on employees or academics—thus adding a new dimension to the research field.
- The results highlight the need to strengthen innovative leadership and expand training activities within universities to effectively and sustainably promote a culture of sustainability among students.

## **Results and Recommendations**

### **Research Results**

The study findings revealed a statistically significant effect of innovative leadership style on the level of sustainable behavior among Qatar University students.

Training programs and awareness activities were found to function as mediating factors that strengthen the relationship between innovative leadership and sustainable behavior.

The data showed no statistically significant differences in students' responses toward sustainable behavior when compared according to gender, academic level, or specialization.

The results also indicated that Qatar University students demonstrate a relatively high level of awareness and sustainable behavior, reflecting the positive impact of innovative leadership and training programs in promoting such behaviors.

### **Recommendations**

Based on the study findings, several recommendations can be proposed to enhance innovative leadership and sustainable behavior among Qatar University students, including:

- Developing continuous training programs targeting academic and administrative leaders to enhance leadership skills that support innovation and sustainability.
- Increasing the organization of courses and workshops aimed at raising awareness of sustainable behavior and highlighting leaders' roles in encouraging students to adopt sustainable practices.
- Integrating sustainability and innovative leadership concepts into academic curricula to broaden students' understanding and strengthen their practices.
- Enhancing collaboration and coordination among university colleges and departments to exchange expertise and innovations related to leadership and sustainable behavior.
- Establishing effective communication channels between students and university leadership to enable open dialogue about sustainability initiatives and encourage student participation.
- Supporting student-led sustainability initiatives by providing necessary material and moral resources to encourage the launch of new projects.
- Developing periodic mechanisms to monitor and evaluate the impact of leadership and training programs on student behavior, with continuous review and improvement based on outcomes.
- Increasing students' awareness of the importance of active participation in training activities and programs, as participation significantly contributes to adopting sustainable behavior.
- Utilizing modern technology to enhance knowledge dissemination and organize awareness programs through electronic platforms and educational applications that facilitate access to content.

### **Suggestions for Future Research**

- Investigating how innovative leadership approaches influence the promotion of sustainability practices among university students across diverse educational environments.
- Examining the impact of students' academic and cultural backgrounds on their responses to sustainability-related training and awareness initiatives.
- Evaluating the effectiveness of educational technology and digital tools in improving outcomes of training programs and awareness activities related to sustainable behavior.
- Comparing the impact of innovative leadership styles on sustainable behavior across different educational institutions while considering cultural and organizational differences.
- Analyzing factors that support the continued adoption of sustainable practices by students after completing training programs, with emphasis on institutional support and individual motivation.
- Studying the impact of participation in social and extracurricular activities on increasing awareness of sustainable behaviors and improving the university environment.

### **Summary**

In conclusion, this study demonstrates that innovative leadership represents a key factor in promoting sustainable behaviors among Qatar University students. The findings showed that leadership grounded in innovation and new ideas effectively guides students toward more sustainability-conscious practices. Training programs and awareness activities were also found to play a supportive and influential role in reinforcing these practices within the university environment.

The study revealed that Qatar University students possess a good level of awareness and knowledge regarding the importance of sustainable behavior, reflecting the positive impact of institutional efforts in this field. Furthermore, differences in student responses were not associated with demographic characteristics such as gender, specialization, or academic level, indicating that sustainability values can be widely promoted across diverse student groups.

Overall, the study emphasizes the importance of adopting innovative leadership styles alongside continuous implementation of training programs and awareness activities that promote a culture of sustainability and contribute to preparing an informed university generation capable of supporting sustainable development goals within Qatari society.

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