

The Strategic Role of Green Technology in Promoting Pillars of Sustainable Organizational Behavior in Smart Universities An Analytical Study at the University of Babylon

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Abstract: This study investigates the persistent influence of green technology dimensions (climate and environmental) on the facets of sustainable organizational behavior (harmony, discipline, and conscientiousness). The research specifically examines the impact of climate and environmental changes on the target sample of employees at the University of Babylon, Iraq. A total of 238 employees were targeted, with 228 valid responses obtained for analysis. The researchers utilized the Statistical Package for the Social Sciences (SPSS) to analyze the collected data. The study formulated six hypotheses, all of which were empirically supported. Drawing on relevant scholarly sources, the findings underscore the importance of implementing this study's framework to enhance the performance of all employees at the University of Babylon. This should be coupled with providing comprehensive and sustainable improvements to their living conditions. Such an integrated approach is posited to foster a positive work environment, thereby motivating employees to perform at their best. Ultimately, this cultivates lasting cooperation among staff and with the institution itself, effectively channeling employee conscientiousness into a positive and sustained contribution towards achieving established programs and strategic plans.

Introduction: Green technology represents a cornerstone in achieving a strategic transformation toward institutional sustainability, particularly within smart universities that seek to keep pace with contemporary developments while maintaining environmental and social balance. In the pursuit of strengthening the pillars of sustainable organizational behavior, the need emerges to adopt innovative strategies that integrate advanced technological dimensions with human and organizational aspects.

In this context, the researchers relied on multiple sources to clarify the importance of the study, drawing on the work of Chen and Chen (2021), which emphasized the role of green technology in improving the work environment and training and motivating employees to achieve strategic plans, thereby enhancing their competencies and ability to face contemporary challenges.

The study by Bai et al. (2021) was also utilized to highlight how employees can assume administrative responsibilities through the use of modern technologies, enabling them to conduct self-performance evaluations, keep pace with global developments, and compete in a rapidly changing environment. This goes beyond technical aspects to include meeting employees' diverse needs, which is a fundamental requirement for motivation and outstanding performance.

The strategic importance of this study lies in linking the dimensions of green technology—namely the climatic and environmental dimensions—with the dimensions of sustainable organizational behavior, including harmony, extroversion, and conscientiousness, as indicated by Marsol-Vall et al. (2022). This linkage demonstrates the effectiveness of green technology in enhancing job support and creating a balanced work environment that stimulates innovation and collective responsibility. Finally, the study confirms that its findings and recommendations, as noted by Shang et al. (2022), will constitute a qualitative addition that can be relied upon in formulating sustainable institutional policies, strengthening the role of smart universities as beacons of progress and sustainability.

Section One: Research Methodology

1- Research Problem

This study addresses the problems faced by employees in their work environment and how appropriate solutions can be identified in order to provide a fulfilling life across all aspects of their lives (Yikun et al., 2023). This, in turn, helps employees move forward by enhancing job performance and avoiding obstacles that hinder them (Paramati et al., 2021).

Modern green technologies—such as conserving natural resources, reducing or recycling waste, lowering carbon emissions and pollutants, and addressing existing environmental damage—should be applied in daily work practices to guide organizational behavior in the appropriate direction (Li et al., 2021). This study also addresses all negative effects experienced by employees at the University of Babylon (Ikram et al., 2021).

2- Research Objectives

1. To focus on the importance of green technology and its impact on sustainable organizational behavior.
2. To identify the basic requirements needed by employees to enhance their administrative performance.
3. To determine the positives and negatives associated with job performance when organizational behavior pillars are strengthened through green technology, and when such technology is absent.
4. To provide recommendations to address the researched problem based on the adopted hypotheses.

3- Importance of the Study

This study represents a foundation for achieving benefits required by employees in their workplace. Its importance lies in the following aspects (Sahoo et al., 2023):

1. Emphasizing the impact of green technology dimensions on sustainable organizational behavior by offering modern ideas that serve employees.
2. Providing employees with workplace requirements in line with rapid global technological advancements.
3. Demonstrating the importance of technology and its multiple applications for employees to keep pace with global development.

4- Research Model Development

Governments play a major and effective role in developing organizations through financial and technological support (Lau et al., 2023). They also provide modern equipment that assists governmental institutions in progress and development across all fields. Therefore, the importance of this study within an empirical framework is emphasized (Hussain et al., 2024).

The study also relies on previous research to demonstrate the extent of green technology’s impact on sustainable organizational behavior (Bahrulolum et al., 2021), focusing on the dimensions of both independent and dependent variables to satisfy employees in administrative institutions (Zhang et al., 2022). One requirement of modern administrative technology is continuous training to enhance employees’ loyalty to their institutions (Gupta & Gupta, 2022). Previous studies have confirmed the importance of green technology in organizational performance (Soni et al., 2022).

5- Sub-Hypotheses

1. There is a significant effect of the climatic dimension (CI) on harmony (HA).
2. There is a significant effect of the climatic dimension (CI) on extroversion (EX).
3. There is a significant effect of the climatic dimension (CI) on conscientiousness (CO).
4. There is a significant effect of the environmental dimension (EN) on harmony (HA).
5. There is a significant effect of the environmental dimension (EN) on extroversion (EX).
6. There is a significant effect of the environmental dimension (EN) on conscientiousness (CO).

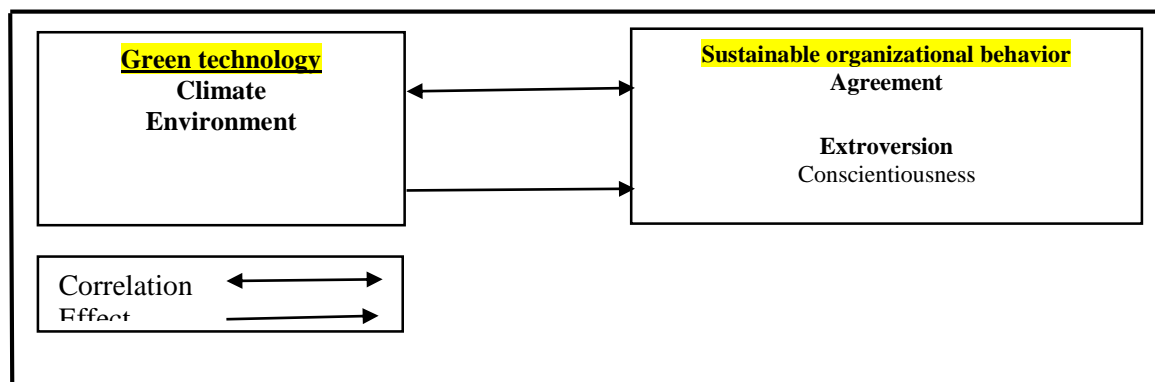


Figure (1) Hypothetical study plan

Researchers emphasize the importance of green technology dimensions in employee performance and in developing administrative organizations. They focus on the significant benefits that green technology dimensions offer to employees. Therefore, it is hoped that employees will have access to the scientific technology they need within their job roles (Kleimann et al., 2023:8). Furthermore, the dimensions of sustainable organizational behavior are crucial in improving employee performance and achieving the best possible results, as researchers anticipate in their studies (Dewi et al., 2022:4).

Section Two: Theoretical Framework

1. Green Technology

1.1 Climatic Dimension

The climatic dimension has evolved as a strategic approach to addressing environmental challenges by relying on green technology applications to mitigate the effects of climate change (Tolliver et al., 2021). Its importance stems from responding to the high economic costs of climate change and protecting productivity from its consequences. As Mikhno et al. (2021) argue, this requires global cooperation to develop effective solutions. Green technology forms the foundation of this approach by stimulating innovation, enabling institutions to address environmental issues more efficiently (Oliveira et al., n.d.).

1.2 Environmental Dimension

The environmental dimension refers to adopting modern systems for advanced environmental management through the application of modern technologies to achieve environmentally friendly outcomes at lower cost (Begum et al., 2022). It involves studying environmental variables to reduce financial burdens caused by environmental impacts while continuously monitoring environmental changes. Green technology encourages innovation and helps address ongoing environmental threats (Chen et al., 2022; Tang et al., 2022).

2. Sustainable Organizational Behavior

2.1 Harmony

Harmony reflects behavioral traits such as empathy, intimacy, and cooperation among employees. It is a key component of employee personality and a determinant of individual differences. Sustainability in output is essential for sustainable employee behavior, and the absence of ethical responsibility leads to a lack of harmony (Kadhim & Ahmad, 2019; 2021; 2022).

2.2 Extroversion

Extroversion represents employees' behavioral patterns related to happiness and fulfillment in organizational performance. It is essential for sustainable success and for identifying differences in employee competence. Sustainable institutions must maintain appropriate levels of extroversion to protect sustainable organizational behavior (Kadhim et al., 2024).

2.3 Conscientiousness

Conscientiousness reflects honesty and precision in task performance. It is essential for trust, commitment, and long-term success, while supporting sustainable organizational behavior and institutional development (Kadhim, 2025; Albadry et al., 2020).

Section Three: Results of the Standard Model

The study relied on data collected from a sample of (228) employees at the University of Babylon. By applying statistical analysis using the SPSS program, the analysis process yielded positive results, as the results of the hypothesis testing - which amounted to six hypotheses - showed support and positivity for all of them, thus reinforcing the validity of the theoretical framework and the paths identified in the study.

Table (1) Standard Model Statistics (Standard Relationship) for all variables

variables	Standard feed	n
Climatic Dimension	0.912	228
Environmental Dimension	0.891	228
Harmony	0.905	228
Extroversion	0.951	228
Conscientiousness	0.870	228

Correlation between variables:

Spearman's correlation was calculated to determine the relationship between all dimensions (independent and dependent). The resulting value was 0.05. Table (2) below shows the green technology variables in relation to the sustainable behavioral organization variable.

Table (2) Spearman's correlation of variables

Items		CI	EN	HA	EX	CO
Climatic Dimension	Spearman Correlation	.0011	.830	.012	.201	-.118
	Sig. (2-tailed)		.000	.000	.000	.000
	N	228	228	228	228	228
Environmental Dimension	Spearman Correlation	.835	.222	.011	.0430	-.063
	Sig. (2-tailed)	.000		.000	.000	.000
	N	228	228	228	228	228
Harmony	Spearman Correlation	.038	.071	1	-.082	.033
	Sig. (2-tailed)	.000	.000		.000	.000
	N	228	228	228	228	228
Extroversion	Spearman Correlation	.111	.042	-.321	.022	-.255
	Sig. (2-tailed)	.000	.000	.000		.000
	N	228	228	228	228	228
Conscientiousness	Spearman Correlation	-.162	-.072	.045	-.232	.0222
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	228	228	228	228	228

Descriptive analysis is a fundamental element in determining the data structure for statistical studies, as well as in determining the average value of the statistical results in this research. Standard deviation is used in this study to determine data measurements. Table (3) illustrates the extent of statistical measurement determination.

Table (3) Average level of statistical measurement

Medium range	central slope level
high	5.00-7.00
middle	3.00-4.99
a little	1.00-3.00

Descriptive Analysis:

Table (4) shows us the (6) variables through the results obtained by the researchers in their research study, and the arithmetic mean was 0.581.

Table (4) Descriptive Analysis of the Mediator

variables	The mediator	standard deviation	Results
Climatic Dimension	5.29	0.845	high
Environmental Dimension	5.69	1.033	high
Harmony	5.39	0.981	high
Extroversion	5.97	1.049	high
Conscientiousness	5.76	0.087	high

Section Four: Conclusions and Recommendations

First: Conclusions

Based on the analysis of the data collected from the surveyed sample, the following key conclusions can be drawn:

- 1. Supportive Work Environment:** The institutions included in the study provide an organizational climate that supports the adoption and implementation of green technology, which serves as a primary incentive for continuously improving both environmental and institutional performance.
- 2. Organizational Commitment and Expansion Willingness:** Governmental organizations demonstrated a notable interest in the effectiveness of green technology applications in meeting employees' needs and enhancing their job satisfaction. They also exhibited a clear readiness to expand successful implementations of these practices.
- 3. Existence of Modern Development Methodologies:** The study identified several contemporary mechanisms and methodologies that effectively contribute to the development of sustainable organizational behavior, positively reflecting on the quality and performance of outputs.

4. **Preparation of Necessary Infrastructure:** The results revealed the presence of essential organizational enablers (such as technical infrastructure and organizational culture) that facilitate the integration of green technology practices to achieve high-quality performance.

5. **Role of Green Technology in Employee Motivation:** Implementing green technology significantly contributes to meeting employees' expectations and supporting their aspirations by providing a modern work environment equipped with up-to-date information and tools.

6. **Importance of Behavioral Sustainability:** Continuous monitoring and development of sustainable organizational behavior play a critical role in fulfilling employees' requirements and aspirations within the institution.

2. Recommendations

In light of the study's findings, the following recommendations are proposed to enhance the implementation of green technology and achieve organizational sustainability in government organizations:

1. **Utilizing green technology to modernize organizational processes:** Leverage the capabilities of green technology to develop administrative and technical processes, and design customized solutions tailored to the nature of each organization's work, thereby enhancing efficiency and achieving sustainability objectives.

2. **Improving operational efficiency through adopting modern technologies:** Adopt the latest technological tools to enhance operational effectiveness, reduce effort, and meet employees' needs, while transitioning toward advanced work methodologies that ensure optimal performance.

3. **Promoting sustainable organizational behavior through continuous training:** Enhance employees' performance by implementing comprehensive and sustainable training programs that focus on building the necessary capacities to execute green technology projects and ensure their integration with organizational culture.

4. **Ensuring continuous technological development linked to employee satisfaction:** Commit to regularly applying the latest green technology techniques, emphasizing high-quality standards to improve the work environment and increase job satisfaction among employees.

5. **Fostering a culture of sustainability and institutional motivation:** Maintain the role of green technology in achieving employee satisfaction, and encourage them to adopt innovative initiatives that contribute to improving institutional performance while reinforcing their sense of responsibility toward achieving organizational sustainability.

4. Proposed Future Studies

The researchers suggest several future studies that could help bridge current research gaps and provide organizations with practical, actionable evidence to maximize the benefits of green technology and sustainable organizational behavior:

1. Measuring the Return on Investment (ROI) of green technology in government organizations:

- **Objective:** Develop a framework to assess the economic, environmental, and social feasibility of green technology projects, particularly within the public sector.

- **Rationale:** The first recommendation refers to "full benefits," which necessitates studying the costs and effectiveness of these technologies compared to their material and intangible benefits.

2. Exploring barriers to implementing green technology in non-profit or private organizations:

- **Objective:** Identify the challenges (technical, financial, cultural) that hinder the adoption of green technology outside government organizations.

- **Rationale:** Since the study's conclusions focused on government organizations, it is important to examine the potential for generalizing the findings to other sectors.

3. The role of managerial leadership in promoting sustainable organizational behavior through green technology adoption:

- **Objective:** Analyze how leadership styles (e.g., green leadership) can support the transition toward sustainable practices and encourage employees to adopt them.

- **Rationale:** The sixth and third conclusions emphasize the importance of sustainable organizational behavior, and leadership is the primary driver of such behavior.

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