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The Role of Organizational Culture in Shaping Employee Green Behavior: A Case Study at Google

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Abstract

The escalating global environmental crisis has compelled organizations to integrate sustainability as a core strategic imperative rather than a peripheral corporate responsibility. This study examines how organizational culture shapes Employee Green Behavior (EGB) within knowledge-based industries, using Google (Alphabet Inc.) as a case study. Employing a qualitative literature review method, the research analyzes secondary data from environmental reports, academic journals, and prior studies to explore the interaction between green organizational culture, infrastructure, and employee behavior. The findings reveal that Google's sustainability performance is not solely driven by technological efficiency such as achieving a Power Usage Effectiveness (PUE) of 1.10 and significant carbon-free energy adoption but is deeply rooted in its organizational culture. Through Schein's three-layer cultural framework, the study demonstrates how tangible artifacts (biophilic office design and renewable energy infrastructure), espoused values ("moonshot" innovation), and underlying assumptions (technology as a solution for planetary sustainability) collectively foster voluntary, innovative, and consistent EGB. Employee initiatives such as the Green Googlers community, extensive carbon literacy training, and carbon-aware computing practices illustrate how sustainability becomes embedded in professional identity rather than enforced through rigid policies. The study concludes that the synergy between green infrastructure and cultural internalization enables resilience amid technological challenges, including rising AI-related emissions, and positions organizational culture as a critical driver of sustainable transformation in the digital economy.

Introduction

The world is facing an unprecedented environmental crisis in the past ten years. Climate change, global warming, and ecosystem degradation have become real threats to economic and social stability worldwide (Samiullah & Khanum, 2024; Nguyen et al., 2023; Warner et al., 2010). The Sustainable Development Goals (SDGs) set by the United Nations now require businesses to go beyond simply pursuing profitability and actively take responsibility for reducing their negative impact on the environment. According to Tencati & Pogutz (2015) Corporations are now seen as an integral part of society, with the resources and capabilities to generate sustainable solutions.

According to Schaltegger & Burritt (2018), the business paradigm has shifted as a result of these pressures. Sustainability is no longer considered an optional activity or merely a superficial, voluntary corporate social responsibility. Instead, it has become a core business strategy for survival in the international market. Companies that neglect environmental aspects

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face reputational risks, rejection by ESG (Environmental, Social, and Governance) investors, and non-compliance with increasingly stringent carbon regulations. In such a situation, the key factor that differentiates thriving organizations from stagnant ones is their ability to incorporate green principles into their daily operations (Vickers & Lyon, 2014; Haner et al., 2025; Setyadi et al., 2025).

While investment in low-carbon technologies and green infrastructure continues to increase, organizational sustainable transformation cannot be achieved simply by updating technical systems (Tan & Solangi, 2024; Mahmood et al., 2024). Many organizations believe that sustainability is a matter of engineering, but in reality, the strategy depends heavily on the people who implement it. This is where Green Worker Behavior (EGB) becomes a key factor. EGB encompasses all employee actions in the workplace that support environmental sustainability, from simple things like reducing waste and energy to more complex things like creating more environmentally friendly products and processes (Udodiugwu et al., 2025; Rajendran et al., 2025; Dipta et al., 2025).

The gap between actual practices at the grassroots level and green policies at the management level is a major problem often faced by large companies (Mcgranahan et al., 1998; Esposito et al., 2025; Forliano et al., 2025). Sustainability policies will remain merely rigid administrative documents without the active participation and awareness of employees. Therefore, the biggest challenge for modern organizations today is how to consistently and sustainably be environmentally conscious in their daily work.

Glisson (2015) said that, organizational culture is the most effective tool for overcoming the gap between behavior and policy. Organizational culture serves as a social "glue" that regulates how employees act without the need for consistent formal supervision. When a company can build a green organizational culture, employees will instill environmental sustainability principles within themselves. This creates a social norm in the office where environmentally friendly behavior becomes a habit and identity, rather than a directive from superiors (Camacho et al., 2025; Mendes et al., 2025; Darmawan & Aprilia, 2026). al action taken (Aggarwal & Agarwala, 2025; Rafiq & Xiuqing, 2025; Zaman et al., 2025). Organizational culture can encourage employees to voluntarily adopt green behavior through symbols, stories, and leadership examples (Hooi et al., 2022; Ahmad et al., 2023; Harris & Crane, 2002). Employees who work in an environment with a strong green culture feel more motivated to develop new, more cost-effective and environmentally friendly concepts. Therefore, organizational culture is not just an operational backdrop; it is the primary driver that ensures that employees' green habits become an integral part of the organization (Sarwar et al., 2025; Kant et al., 2025; Gao et al., 2026).

In the past ten years, research on green organizational behavior has increased rapidly. However, most research still focuses on manufacturing and heavy industries, which have a direct impact on physical pollution. Little research has examined how green behavior is shaped in knowledge-based and technology-based industries. The environmental impacts in these sectors are often invisible, such as the carbon footprint of digital infrastructure or the high energy consumption of data centers (Nartey, 2025; Moreau et al., 2025; Monstadt & Saltzman, 2025). Therefore, it is crucial to understand how companies can encourage employees working behind the scenes to develop a high level of environmental awareness. Furthermore, while previous research has focused on formal policy systems, little has specifically examined how a flexible and creative organizational culture can be a key driver of employee green behavior without relying on rigid rules. The primary focus of this research is to fill this gap.

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Google (Alphabet Inc.) was chosen as the case study subject because of its unique position as a leader in the global sustainability agenda and a technology pioneer. Google has set a goal of carbon-free energy for all its data centers and campuses by 2030. However, Google's core strength lies in its renowned organizational culture, which emphasizes freedom, "moonshot" innovation, and solving global problems. At Google, sustainability is integrated into the company culture through various cultural artifacts, from biophilic office design to an internal group called "Green Googlers." Sustainability isn't solely overseen by a dedicated department. Google demonstrates how a technology company can leverage employee engagement to realize abstract values. This research aims to provide a comprehensive overview of how a digital workforce can transform into environmental activists thanks to a strong organizational culture. This is achieved by dissecting Google's cultural mechanisms.

Methods

Research Design

The proposed research has utilized a qualitative literature review design to investigate the influence of organizational culture on the development of Employee Green Behavior in a technology based company setting, where Google or Alphabet Inc. has been used as the focal company. This design was chosen since the research was intended to formulate an explanatory perception of how values of sustainability were inculcated in organizational existence and how they were transformed into the behavior of employees. The study was not based on the direct field observation or statistical measurement of the findings but on the close reading of the pertinent scholarly or institutional sources. By doing so, the literature review did not receive the status of a background supplement to the investigation, but rather, it was the main research tool, used to investigate and define the phenomenon in question.

Research Focus

The key subject of this research was to gain knowledge of how organizational culture serves as a shaping agent in promoting environmental responsible behavior among employees. The study was especially concerned with how sustainability was manifested not only in the form of the formal pledges and organizational rhetoric, but also in the form of infrastructure, values, internal effort, and daily workplace activity. This study aimed to demonstrate that green behavior in digital industries cannot be only explained through the technical efficiency, but also through the cultural environment, through which the perception, motivation and routines of employees are formed.

Data Sources

The research was purely based on the secondary data which was acquired through an array of written sources pertaining to the subject. These sources were corporate environmental reports, sustainability reports, academic journal articles, books, and past research that talked about green organizational culture, green behavior by employees, sustainability at the workplace and environmental transformation within the digital sector. The application of these materials enabled the researcher to observe both conceptual and empirical patterns of the relationship between the organizational culture and the sustainability oriented employee conduct. The secondary data were deemed to be suitable since the object of study demanded a close examination of reported institutional practices and academic explanations as opposed to coming up with new field based evidence.

Data Collection Technique

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The data were gathered by use of documentation. Documentation was used in this study as the methodical procedure of recognizing, choosing, and examining texts that enclosed information pertaining to the research question. The researcher collected materials that have the potential to shed light on the sustainability promise of Google, corporate values, environmental activities, employee involvement in green activities, and the infrastructural aspects that facilitated sustainable working practices. The choice of sources was based on the relevance, credibility, and thematic proximity to the research objectives. By doing this, the research could compile the evidence of the formal manifestation of sustainability in the company and the academic discourse on green organizational behavior.

Data Analysis Technique

Qualitative content analysis was applied to analyze the data. It was initiated by going through the documents gathered severally and noting the common themes and significant patterns pertaining to the organizational culture and green behavior among the employees. The researcher narrowed down the information after the initial reading by choosing the information that was relevant to the research focus. The chosen materials were then sorted into major thematic topics and one of them was the environmental values, sustainability infrastructure, employee participation, green innovation, and workplace practices. To further elaborate on the interpretation, the results were analyzed using the organizational culture framework of Schein, particularly, the artifacts, espoused values, and underlying assumptions dimensions. This analytical framework helped the researcher to go beyond the surface description and describe how the visible sustainability practices were interrelated with the underlying cultural meanings and institutional beliefs in the organization.

Result and Discussion

Description of Research Object

Alphabet Inc. has transcended the conventional paradigm of corporate social responsibility (CSR) by integrating sustainability as part of its competitive advantage and business innovation. With a global vision to drive progress for all through technology, the Company has set the benchmark for environmental leadership with a more positive paradigm by building a renewed environmental leadership around three strategic pillars: accelerating the transition to clean energy; advancing the circular economy; and developing empowering green technologies. Since achieving carbon neutrality in 2007, Alphabet has steadily evolved from an entity solely offsetting emissions to a driver of systemic decarbonization across its entire value chain. According to Alphabet Inc.'s initial environmental report (2023), the foundation for this decarbonization was built through a long-term commitment to renewable energy that began long before the global ESG trend peaked, with the company focusing on providing transparent data on the environmental impact of its operations.

Alphabet's environmental vision now centers on an ambitious 2030 target of operating entirely on carbon-free energy (CFE) 24/7 across every grid in which it operates. According to the latest environmental reports for 2024 and 2025, this strategy relies on exceptional infrastructure efficiency, with Google data centers achieving a Power Usage Effectiveness (PUE) score of 1.10, making them among the most efficient in the world. Despite facing the challenge of a 48% increase in greenhouse gas emissions from a 2019 baseline due to the massive expansion of artificial intelligence (AI), Google responded by modernizing its infrastructure with specialized processing units such as the TPU v5p, designed for high-level computing energy efficiency.

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The structure of Alphabet's green initiatives is built on a collaborative approach that reduces silos between strategic sustainability teams and operational employees. The central sustainability team does not function as a separate, isolated team, but as a consultative partner for facility engineers and product developers. This collaboration has resulted in several applications, including the use of machine learning algorithms to optimize data center cooling systems, which can reduce energy consumption by 40%. In this collaborative work environment, every employee, or "Googler," has the right to propose contributions to green innovations. Thus, the company's commitment to sustainability is not just a policy, but is internalized in every business activity and technology development owned by the company.

Operational Data and Infrastructure Efficiency

Research data shows that Google's infrastructure has a Power Usage Effectiveness (PUE) of 1.10. This indicates that Google's data centers are 1.8 times more efficient than the industry average, with nearly all energy input used in computing processes with minimal waste in cooling systems. Google also achieves 64%-66% of its hourly Global Carbon-Free (GCF) energy supply, with 10 of its key network regions achieving 90% of its GCF.

Table 1. Operational and infrastructure efficiency

Operational Indicator	Value / Statistic	Description
Power Usage Effectiveness (PUE)	1.10	1.8 times more efficient than the industry average.
Carbon-Free Energy Supply (GCF)	64% – 66%	Global hourly average achievement.
Carbon-Free Energy Target (CFE)	100% by 2030	24/7 operational target across all power grids.
Primary GCF Grid Regions	10 regions	Achieved 90% carbon-free energy levels.
Cooling Energy Reduction	40%	Result of optimization using machine learning algorithms.

Source: Google 2023 Environmental Report (Fiscal Year 2 Data)

In waste management and the circular economy, Alphabet diverted 81% of its operational waste from landfills (Landfills) through recycling and composting, implemented with operational excellence. This systemic step reflects the concrete implementation of the future economic model projected by Bappenas (2021), where the adoption of a circular economy in the electronics and technology sector is expected to significantly reduce hazardous waste while creating added economic value. In manufacturing, approximately 27% of new data center hardware components are now made from recycled materials. Furthermore, Google has committed to eliminating 99% of plastic packaging for consumer products launched by 2023. This transformation strengthens Alphabet's position in supporting Indonesia's transition to a green economy, as emphasized in a Bappenas study (2021) that material efficiency and product lifecycle are key to maintaining the sustainability of national resources amidst rapid digitalization.

Human Resources and Employee Participation

The success of this green initiative is inseparable from the extensive involvement of human resources. By early 2025, Alphabet employed 185,719 full-time employees worldwide. Of that number, more than 10,000 employees had voluntarily joined Green Googlers, a cross-functional employee community that serves as witnesses and catalysts for green culture change

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across offices. Through innovative policies and leadership training programs, all employees are required to complete 120 hours of training annually to ensure that everyone maintains a public mindset aligned with sustainability. The benefits of the sustainable transportation program are also evident in the high level of employee participation. At the Mountain View headquarters, 45% of employees have switched to alternative transportation options, such as bicycles, company electric buses, and public transportation, for their daily commute. These efforts have helped the company reduce its Scope 3 emissions and demonstrated that Alphabet's sustainability strategy has penetrated from top executive levels and become embedded in the daily behavior of thousands of employees.

Table 2. Human Resources Participation and Behavioral Change

Participation Category	Statistical Data	Organizational Impact
Green Googlers	>10,000 employees	Voluntary community acting as a catalyst for cultural change.
Sustainability Literacy Training	120 hours/year	Fosters a sustainability-oriented mindset among individuals.
Green Transportation	45% of employees	Use of bicycles, electric buses, and public transportation.
Work Productivity	↑ 6%	Positive impact of biophilic office design.

Source: Alphabet Inc., Google 2023 Environmental Report and Browning & Walker (2021).

Analysis of Green Organizational Culture at Google

Organizational culture at Google is not simply an add-on to operations. Rather, it is a driving force to ensure that sustainability values are embedded at every level of employees. Green culture at Google is analyzed through three levels of organizational culture theory: Biophilic Design Artifacts and Physical Infrastructure. The outer layer of Google's organizational culture is a clear manifestation of green culture. One key manifestation is the Bay View campus, which features a "Dragonscale" roof made of 90,000 solar panels. The roof is capable of generating nearly 7 megawatts of clean energy. The use of sustainable wood materials and maximized natural lighting are not only aesthetic but also an effort to strengthen employees' psychological connection to the natural world. Research shows that integrating natural elements into the workspace can lead to up to a 15% increase in employee well-being and a 6% increase in productivity (Charisi et al., 2025; de et al., 2025; Shuaibu & Saleh, 2025).

The facility is also equipped with a functional system located on-site that recycles 100% of non-potable wastewater for use in restrooms and irrigation. The Values Embraced Transform “Moonshot Thinking” into Environmental Action. Google employees who break norms and change behavior to become radically environmentally proactive are not encouraged to make incremental changes, but rather to pursue systemic change. This is reflected in the use of the Time 20 program, where employees are allowed to allocate work hours to innovative projects. As a result, technologies such as the Carbon-Intelligent Computing Platform, which shifts data center workloads to times when renewable energy is most abundant, have been born. This value creates a standard where efficiency is no longer simply a management directive, but rather a competition for creativity between teams. Research shows that a culture of innovation aligned with green values increases employee loyalty and talent retention up to 30 times higher than companies without a clear environmental focus (Jimoh et al., 2025).

Underlying Assumption: Technology as an Existential Solution for the Earth. At its deepest, there is a fundamental assumption collectively held by "Googlers" that technology is an

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existential solution for the Earth. Employees have a fundamental belief that every algorithm they create should contribute to the planet's recovery. This belief is reinforced through ongoing training; internal data shows that Google employees accumulate an average of 120 hours of training per year, including carbon literacy modules. The assumption that "smart technology is green technology" serves as a moral compass, ensuring that sustainability is no longer viewed as a cost burden but as a core part of their professional identity.

Employee Green Behavior (EGB) Analysis

This analysis traces individual behavior as a starting point for the success of Green Employee Behavior (EGB) targets. Alphabet is not merely a supporting activity, but rather a manifestation of "organizational citizenship behavior" or Organizational Citizenship Behavior for the Environment (OCBE). The company achieves sustainability through the following key dimensions:

Voluntary (Proactive) EGB

Voluntary Employee Green Behavior (VGB) is a manifestation of proactive employee actions beyond formal job descriptions. This phenomenon is evidenced by the activities of Google's 'Green Googlers' community, a grassroots initiative with over 10,000 global members who independently conduct waste audits and waste reduction campaigns. This collective contribution has proven effective in supporting the diversion of 81% of operational waste from landfills. This finding aligns with research by Hastuti, & Muafi (2022), which confirms that the implementation of Green Human Resource Management (GHRM) has a positive and significant impact on job satisfaction. This indicates that voluntary involvement in environmental initiatives can construct meaningful work, which simultaneously strengthens employee loyalty and satisfaction with the organization.

Technical EGB (Innovative)

Green Coding and infrastructure optimization represent the technical behavior of engineers in integrating energy efficiency into digital product architecture. The implementation of these practices by Google developers aims to minimize power consumption at the programming code level. Operationally, the use of specific processing units such as the TPU v5p has enabled the training of artificial intelligence (AI) models with energy efficiency that exceeds industry standards. This phenomenon confirms the findings of Nugraha et al. (2025) regarding software-based data center optimization.

Furthermore, developers in the Google Cloud Region Jakarta have adopted the principle of 'carbon-aware computing,' which synchronizes the scheduling of intensive computing with the availability of renewable energy in the local electricity grid. Strategically, this initiative supports the government's vision as outlined in the Ministry of Environment and Forestry's (KLHK) (2024) report: Indonesia's Net Zero Emission Achievement Report, specifically on the pillars of industrial and energy sector transformation. By aligning data center computing loads with the availability of clean energy in Indonesia, Google employees at the local level plays an active role in accelerating the national decarbonization target through digital operational efficiency.

Furthermore, an analysis of the determinants of Employee Green Behavior (EGB) demonstrates a synergy between external, facility-based motivation and internal, awareness-based motivation. Externally, green infrastructure, such as an electric bus fleet and biophilic office design, acts as an architectural nudge, effectively facilitating 45% of employees' transition to low-carbon mobility. The success of this structural aspect is reinforced by an

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intensive carbon literacy program (averaging 120 hours of training per year per individual) that builds intrinsic competency. This integration of infrastructure accessibility and internalization of values creates an organizational ecosystem where pro-environmental behavior transforms from mere instruction into a consistently internalized professional identity.

The Relationship Between Organizational Culture and EGB

An analysis of Alphabet Inc. confirms that achieving sustainability targets does not solely depend on the availability of financial capital, but rather results from a strategic synergy between physical infrastructure and employee psychological awareness. This phenomenon can be explained through three main dimensions:

Organizational Culture as a Catalyst for Efficiency Innovation

Data shows that despite a 48% increase in emissions due to the expansion of Artificial Intelligence (AI) infrastructure, Google did not implement restrictive policies that could potentially stifle innovation. Instead, its "Moonshot" culture serves as a self-correcting mechanism that encourages engineers to develop technical solutions, such as the development of the TPU v5p, which boasts 2.1 times higher efficiency. In this context, environmental challenges are not viewed as administrative obstacles, but rather as triggers for technical Employee Green Behavior (EGB) based on innovation.

Architecture as a Nudging Instrument

The biophilic design of the Bay View campus and the implementation of the "Dragonscale" photovoltaic roof act as architectural nudging. In addition to its technical contribution of 7 MW of energy production, this infrastructure serves as a cultural artifact that constantly reinforces sustainability values in employee cognition. The empirical impact is evident in the high level of employee participation (45%) in the use of low-carbon transportation, where physical facilities have successfully reduced behavioral barriers to voluntarily adopting green initiatives.

Leadership Transformation and Reconstruction of Professional Norms

Leadership at Google has successfully reconstructed the sustainability paradigm from a "cost" component to a "strategic opportunity." By allocating an average of 120 hours of carbon literacy training per year, the company has established a new social norm where environmental competency is considered equivalent to formal technical expertise. The internalization of this value creates a work ecosystem where environmentally friendly behavior is no longer considered an additional instructional burden, but rather an integral part of professional identity and performance standards.

Conclusion

The recommendations derived from this study can be addressed to multiple stakeholders. For corporate management practitioners, sustainability efforts should move beyond the formulation of formal green policies at the executive level toward the cultivation of internal social norms and voluntary communities such as employee-led green groups to effectively bridge the gap between policy and actual behavior. Companies are also encouraged to invest in intensive and continuous carbon literacy training, comparable to leading benchmarks of approximately 120 hours per year, so that environmental awareness becomes a technical competency equivalent to other professional skills. In addition, the strategic adoption of biophilic design principles and sustainable workplace infrastructure can function as behavioral “nudges,” making environmentally responsible actions easier and more convenient for employees. For

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governments and regulators, the often-invisible environmental footprint of the digital and technology sector, particularly data center emissions, necessitates the development of industry-specific energy efficiency standards for knowledge-based industries, in line with emerging trends in carbon-aware computing. Regulatory support should also promote cross-sector collaboration to accelerate the transition toward a circular economy, especially in the management of electronic hardware waste. Finally, for academics and future researchers, comparative studies are recommended to assess the applicability of organizational culture models, such as Schein's framework, in more rigid industrial contexts like traditional manufacturing, alongside quantitative approaches to precisely measure the relationship between physical workspace design and green employee productivity. Further research is also needed to examine the environmental impact of artificial intelligence, particularly the "efficiency paradox," whereby advanced technologies may inadvertently increase overall energy consumption despite localized efficiency gains.

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