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The Effect of Organizational Culture on Environmental Sustainability Behavior of Employees of Downstream Oil and Gas Firms in Ghana

Samuel Kwabla Alorvor[1*] Walter Musakwa[2]

1. Samuel Kwabla Alorvor, Department of Geography, Environmental Management & Energy Studies, University of Johannesburg
2. Prof. Walter Musakwa, Department of Geography, Environmental Management & Energy Studies, University of Johannesburg

* E-mail of the corresponding author: sk.alorvor@gmail.com

Abstract
Environmental sustainability has become an important strategic priority for organisations, particularly within environmentally sensitive industries such as the downstream oil and gas sector. However, empirical evidence on the influence of organizational culture on employees' environmental sustainability behaviour (ESB) in Sub-Saharan Africa remains limited. This study therefore examined the effect of organizational culture on employees' environmental sustainability behaviour in downstream oil and gas firms in Ghana. The study adopted a quantitative research approach underpinned by the positivist research philosophy. Data were collected from 359 employees using a structured questionnaire and analysed using both frequentist and Bayesian statistical techniques to examine the relationship between organizational culture and employees' environmental sustainability behaviour. The findings revealed that organizational culture has a positive and statistically significant effect on employees' environmental sustainability behaviour. Bayesian analysis provided strong evidence supporting this relationship, thereby reinforcing the robustness of the frequentist results. The findings indicate that organisations characterised by supportive leadership, shared values, employee involvement, and effective coordination are more likely to promote environmentally responsible behaviour among employees. The study contributes to the literature by extending empirical evidence on employees' environmental sustainability behaviour within the downstream oil and gas sector in Sub-Saharan Africa and by demonstrating the value of integrating frequentist and Bayesian analytical approaches in organisational sustainability research. The findings further provide practical insights for managers and policymakers seeking to strengthen sustainability-oriented organizational cultures and environmental governance within the downstream oil and gas industry.
Keywords: Environmental sustainability behaviour, Organizational culture, Downstream oil and gas; Ghana, Bayesian analysis.

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1. Introduction

A strong organizational culture that prioritizes sustainability and promotes values such as innovation, collaboration, and effective leadership can encourage employees to align their personal behaviours with an organization's environmental objectives (Adewumi et al., 2022; Fatoki, 2019; Fawehinmi et al., 2020). Such a "green culture" directly encourages employees to adopt environmentally sustainable practices, including waste reduction, recycling, material reuse, proper waste disposal, and the conservation of energy and natural resources (Keles et al., 2023; Omarova & Jo, 2022; Tirno et al., 2023). By aligning employees' values and behaviours with broader organizational environmental goals, a sustainability-oriented culture enhances employees' motivation to engage in environmentally responsible practices.

Despite growing interest in environmental sustainability behaviour, relatively few studies have been conducted in Sub-Saharan Africa (Ifegbesan et al., 2022). Existing research has largely focused on developed economies and a limited number of developing countries in Asia (Anderson et al., 2018; Andrianova, 2018; Bashirun & Noranee, 2020; Woo & Kang, 2021). Within Ghana, empirical evidence remains limited (Akwasi et al., 2021; Omarova & Jo, 2022; Tirno et al., 2023). Consequently, there remains a significant knowledge gap regarding the factors that influence employees' environmental sustainability behaviour. In particular, the extent to which organizational culture, environmental disclosure, and environmental knowledge shape employees' engagement in environmentally sustainable practices remains insufficiently understood (Bashirun & Noranee, 2020; Woo &

Kang, 2021).

Environmental knowledge is widely regarded as a foundation for informed decision-making because it equips employees with an understanding of environmental issues, regulatory requirements, and sustainable practices. Employees who possess adequate environmental knowledge are better able to recognise the environmental consequences of their actions and are therefore more likely to adopt environmentally responsible behaviours. Organisational culture also plays a significant role in shaping employee behaviour (Akwasi et al., 2021, p. 65).

The importance of strengthening environmental sustainability within the oil and gas industry is illustrated by the 2010 BP Deepwater Horizon oil spill in the Gulf of Mexico, which resulted in the deaths of large numbers of seabirds, marine mammals, and sea turtles. As of 2020, the incident was also associated with 2,179 reported oil leaks across Colorado, New Mexico, and Wyoming. Beyond its environmental consequences, the industry continues to face significant social and waste management challenges, particularly due to the increasing volumes of plastic waste generated from crude oil and its by-products. Addressing these challenges requires a transition from a traditional linear production model to a circular economy approach. Such a transition may necessitate the adoption of closed-loop circular economy models supported by advanced technologies to achieve long-term environmental sustainability (Addor et al., 2022, p. 119). Given the limited empirical evidence within this important sector, further research is needed to better understand the factors that encourage sustainable behaviours among employees. Against this background, this study examines the effect of organizational culture on the environmental sustainability behaviour of employees in downstream oil and gas firms in Ghana.

2. Theoretical Review

The study is underpinned by the Social Learning Theory, which provides an appropriate framework for examining employees' environmental sustainability behaviour and environmental knowledge in Ghana's downstream oil and gas sector. According to Bandura (1977, p. 44), the Social Learning Theory proposes that individuals learn by observing and imitating the behaviours of others. People acquire knowledge, attitudes, and behaviours by observing both the actions of others and the consequences of those actions. The theory therefore provides a useful lens for understanding how employees' environmental sustainability behaviour is influenced by their exposure to environmental knowledge within their organisations and the wider society. It further suggests that employees are more likely to adopt sustainable practices when they observe colleagues or supervisors demonstrating environmentally responsible behaviours and when such behaviours are associated with positive outcomes.

Su et al. (2020) applied the Social Learning Theory to examine the mediating role of green innovation practices and the moderating effect of environmental knowledge on the relationship between environmental leadership and organisational performance. Their findings showed that green innovation practices, encompassing both organisational strategies and operational actions, mediate the relationship between environmental leadership and organisational performance. The study further revealed that environmental knowledge positively moderates the influence of environmental leadership on green innovation practices. By using leadership style as an antecedent variable, the study contributes to the environmental management literature by demonstrating how environmental leadership enhances organisational performance in China.

The study also highlights the important moderating role of environmental knowledge acquisition in strengthening the relationship between environmental leadership and green innovation practices. Consistent with this perspective, several other studies have applied the Social Learning Theory to examine environmental sustainability strategies and practices. As noted by Zafar et al. (2021), these studies demonstrate the relevance of the Social Learning Theory in explaining how interactions among employees within downstream oil and gas organisations influence environmental sustainability behaviour. Understanding these social learning processes enables organisations to identify effective strategies for promoting sustainable workplace behaviours.

According to the International Institute for Sustainable Development (IISD), sustainability refers to the process of "adopting business strategies and activities that meet the needs of entities and stakeholders, protecting and sustaining the future" (IISD, 2001, p. 1). Similarly, Székely and Knirsch (2005, p. 14) describe sustainability as encompassing economic growth, organisational reputation, stronger customer relationships, improved product and service quality, the promotion of meaningful employment, and philanthropic support for disadvantaged communities. Van Marrewijk (2003) further argues that sustainability results from an organisation's deliberate efforts to strengthen investor relations while integrating social and environmental considerations into economic decision-making. Consequently, sustainability has become an integral component of modern business strategy. When effectively integrated into management practices, it enhances an organisation's ability to respond to changing business conditions while supporting long-term organisational performance.

2.1 Environmental Sustainability Behaviours

According to Ordu (2016), environmental sustainability behaviour refers to the actions employees exhibit in response to the environmental knowledge available to them. These behaviours emerge from employees' individual efforts to improve organisational operations and make business activities more environmentally sustainable. Individual performance is enhanced when employees perceive that their actions and work outcomes contribute to the achievement of organisational goals (Ordu, 2016). Previous studies have shown that employees are more likely to participate in green initiatives and environmentally responsible activities when they believe that their actions contribute to the achievement of their organisation's environmental objectives (Paň et al., 2020). Such behaviours can be demonstrated through a wide range of workplace activities (Ones & Dilchert, 2012a).

Employees can minimise the environmental impacts of organisational operations through their daily work activities (Paň et al., 2020). For example, using telephone or virtual communication instead of travelling between work locations can help reduce transportation-related emissions. Similarly, replacing unnecessary printed correspondence with electronic communication contributes to paper conservation, while switching off lights and electrical equipment when leaving the workplace helps reduce energy consumption. Consequently, employees' day-to-day environmental actions play a significant role in improving their organisations' overall environmental performance.

2.2 Organizational culture

Organizational culture is a complex and multidimensional concept that plays a fundamental role in shaping organisational behaviour and decision-making. Nevertheless, scholars generally agree that every organisation develops its own unique culture, influenced by the diverse backgrounds, personalities, and cultural values of its employees. As individuals interact within the workplace, shared norms, communication patterns, and operational practices gradually emerge, collectively forming the organisation's culture (Davis & Cates, 2018, p. 67).

Similarly, Schein (2020) conceptualises organisational culture as being deeply embedded within an organisation, comparable to an individual's personality. While some scholars view culture as an organisational variable and others regard it as a metaphor for understanding organisational dynamics, there is broad agreement within the management literature that organisational culture is a dynamic force influencing organisational outcomes, including sustainability initiatives. It shapes employee goal-setting, task performance, resource allocation, and influences employees' thoughts, decisions, perceptions, emotions, and behaviours, both consciously and unconsciously.

Schein (2020) further argues that organisational culture consists of the norms, procedures, rules, and structures that guide or constrain behaviour based on values embedded within the organisation. Understanding organisational culture is therefore essential because it influences management practices, organisational strategy, control systems, and marketing activities (Asif, 2020). It also provides members with a shared understanding of organisational objectives and shapes workplace interactions and performance. Organisational culture evolves over time through employees' shared experiences and is reflected in various operational practices, including recruitment processes, workplace design, and organisational dress codes (Schein, 2020).

2.3 Organizational cultures and environmental sustainability behaviour of employees

Denison and his colleagues (2017) identified and validated four dimensions of organisational culture that contribute to improved environmental performance: adaptability, consistency, involvement, and mission. Adaptability refers to an organisation's ability to modify its behaviour, structures, and systems in response to environmental changes. Consistency reflects the extent to which employees share common beliefs, values, and expectations. Involvement represents the degree to which employees participate in organisational decision-making, while mission refers to the existence of a shared understanding of the organisation's purpose.

Mujeeb et al. (2018) found that employee involvement is strongly associated with organisational consistency and adaptability. Their findings further indicate that these dimensions of organisational culture are positively related to employees' environmental sustainability behaviour. Similarly, previous empirical studies have demonstrated that organisational culture is a significant predictor of employees' environmental sustainability behaviour. In a meta-analysis of 84 studies, Hartnell et al. (2019) reported a positive and statistically significant relationship between organisational culture and employees' environmental sustainability behaviour.

Based on the foregoing literature, the study proposes the following hypothesis:

H1: Organizational culture positively predicts environmental sustainability behaviour of employees of downstream oil and gas firms in Ghana

Conceptual Framework

Authors construct: Conceptual Framework of Study

(Source: Developed by Author)

3. Methodology

3.1 Philosophical Assumptions

This study is grounded in the positivist research philosophy. Positivism, popularised by the French philosopher and sociologist Auguste Comte during the nineteenth century, advocates the application of scientific methods to the study of social phenomena (Maier, Fage, & Davies, 2023). Comte's objective was to establish sociology as a scientific discipline by adopting the principles of the natural sciences. From an ontological perspective, positivism assumes that reality exists independently of human perceptions and experiences.

According to Jankowicz (2005), positivist research relies on measurable facts and objective data, making quantitative methods the most appropriate approach for data collection and analysis. Positivists maintain that scientific inquiry should be conducted objectively, with researchers remaining independent of the phenomena under investigation. From an epistemological standpoint, objective knowledge is acquired through systematic observation and empirical investigation. Consequently, quantitative research is regarded as a reliable means of generating objective evidence, while experimental and statistical methods are commonly employed to examine relationships among variables. From an axiological perspective, positivism assumes that research is value-free and that findings should reflect reality as objectively as possible.

Although positivism provides a rigorous framework for scientific investigation, it has been criticised for its limited ability to capture the subjective meanings underlying social phenomena. This criticism gave rise to interpretivism, developed primarily through the work of the German sociologist Max Weber during the twentieth century. Interpretivism argues that understanding the social world requires an appreciation of the subjective meanings individuals attach to their actions. Nevertheless, because the present study seeks to examine measurable relationships between organizational culture and employees' environmental sustainability behaviour using quantitative data, the positivist philosophy was considered the most appropriate research paradigm.

3.2 Research Design

A quantitative research approach was adopted to achieve the objectives of this study. Specifically, a descriptive research design was employed to examine the influence of organizational culture on the environmental sustainability behaviour of employees in downstream oil and gas firms in Ghana. The target population comprised 9,987 employees, from which a sample of 385 respondents was determined. A total of 359 valid questionnaires were returned and used for the final analysis.

Data were collected using a structured questionnaire comprising closed-ended statements measured on a five-point Likert scale, enabling respondents to indicate their level of agreement with each statement. The questionnaire served as the primary instrument for measuring the study variables, namely organizational culture and employees' environmental sustainability behaviour.

Data analysis involved both frequentist and Bayesian statistical approaches. Initially, descriptive statistics and reliability analyses were conducted to assess the characteristics and internal consistency of the study variables. Linear regression analysis was subsequently performed to test the hypothesised relationship between organizational culture and employees' environmental sustainability behaviour. To complement the frequentist findings, Bayesian linear regression analysis was undertaken to provide probabilistic evidence regarding the direction and magnitude of the relationship, while also comparing the predictive model with the null model.

3.3 Results and Discussions

Reliability statistics

Variable	Cronbach Alpha	Reliability
Environmental Sustainability Behaviour	0.76	Reliable
Organizational Culture	0.77	Reliable

The reliability of the study variables was assessed using Cronbach's alpha coefficient. As presented in Table 1, the Cronbach's alpha values for Environmental Sustainability Behaviour (0.76) and Organizational Culture (0.77) both exceeded the recommended threshold of 0.70, indicating acceptable internal consistency. These findings confirm that the measurement scales used in the study are reliable and suitable for subsequent statistical analyses. Generally, Cronbach's alpha coefficients closer to 1.00 indicate higher levels of internal consistency among the measurement items.

3.3.1 Descriptive statistics

Gender of Respondents

The respondents comprised both male and female employees from downstream oil and gas firms in Ghana. As shown in Table 1, 331 respondents (92.2%) were male, while 28 respondents (7.8%) were female. These findings indicate that the workforce within the participating downstream oil and gas firms is predominantly male.

Table 1 Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	28	7.8	7.8	7.8
	Male	331	92.2	92.2	100.0
	Total	359	100.0	100.0	

Source: Fieldwork, 2025

3.3.2 Age of Respondents

The distribution of respondents by age is presented in Table 2. The largest proportion of respondents (154; 42.9%) were between 31 and 40 years of age, followed by those aged 41–50 years (98; 27.3%). Respondents aged 20–30 years accounted for 94 (26.2%), while only 13 respondents (3.6%) were aged 51 years and above. These findings suggest that the majority of employees in the sampled organisations are within the economically active age group of 31–40 years.

Table 2 Age Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 - 30 years	94	26.2	26.2	26.2
	31 - 40 years	154	42.9	42.9	69.1
	41 - 50 years	98	27.3	27.3	96.4
	51 years and over	13	3.6	3.6	100.0
	Total	359	100.0	100.0	

Source: Fieldwork, 2025

3.3.3 Descriptive statistics

This portion of the study concentrated on a number of factors, including company culture and employee environmental sustainability behavior.

Table 3 Descriptive statistics

Environmental Sustainability Behavior	**Mean**	**Std. Dev.**
I assist the business in making financial decisions.	3.35	1.32
I assist in meeting pertinent regulatory and accreditation requirements.	4.10	1.18
Assist in fulfilling legal duties and responsibilities related to sustainability	4.14	0.92
Reducing a company's environmental impact is necessary.	3.83	1.06
I contribute to improving the organization's sustainability initiatives' reputation and image.	4.42	0.77
I support managers' and supervisors' efforts on sustainability projects.	4.21	0.89
I maintain standards, attitudes, and beliefs that are consistent with long-term prospects.	4.36	0.75
To achieve sustainable development, people should coexist peacefully.	4.38	0.85
Utilizing resources effectively is crucial.	4.35	0.76
Organizational culture	**Mean**	**Std. Dev.**
The company has a vibrant, entrepreneurial environment. Individuals are prepared to take chances and stick their necks out.	3.14	1.09
The company has a strong focus on outcomes. Completing the task is a key worry. Individuals are very competitive and goal-oriented.	3.89	0.91
The organization is a highly structured and controlled environment. In general, formal processes dictate what people do.	4.12	0.89
The organization's leadership is typically seen as an example of organizing, coordinating, or efficient operation.	4.14	0.71
The organization's culture is based on mutual trust and loyalty. There is a great level of dedication to this group.	4.08	0.79
The organization's dedication to innovation and development is what keeps it cohesive. Sustainability is prioritized.	4.03	0.78
The organization's concentration on success and goal attainment is what keeps it cohesive.	4.06	0.77
Formal norms and procedures serve as the organizational culture. It's critical to keep the company operating smoothly.	4.22	0.65
The development of human resources, teamwork, employee commitment, and concern for people are the foundation upon which the organization defines success.	4.01	0.90

This section presents the descriptive statistics for the two principal study variables: Environmental Sustainability Behaviour (ESB) and Organizational Culture (OC).

Respondents expressed moderate agreement with the statements "I assist the business in making financial decisions" (Mean = 3.35) and "Reducing a company's environmental impact is necessary" (Mean = 3.83). Higher levels of agreement were observed for statements relating to compliance with regulatory requirements, organisational reputation, support for sustainability initiatives, efficient resource utilisation, and the promotion of sustainable development.

These findings are consistent with Ordu (2016), who argues that employees' environmental sustainability behaviours are shaped by the environmental knowledge available within the organisation. Such behaviours emerge from employees' individual efforts to improve organisational operations and contribute to environmental sustainability. Individual performance is enhanced when employees recognise that their actions contribute to the achievement of organisational goals (Ordu, 2016). Similarly, Paň et al. (2020) contend that employees are more likely to participate in environmental initiatives when they perceive that such activities contribute to the achievement of their organisation's environmental objectives.

With respect to organizational culture, respondents moderately agreed that "the company has a vibrant, entrepreneurial environment where individuals are willing to take risks" (Mean = 3.14) and that "the company places a strong emphasis on achieving results" (Mean = 3.89). However, stronger levels of agreement were recorded for statements indicating that the organisation operates within a structured environment governed by formal procedures (Mean = 4.12), leadership is characterised by effective coordination and organisation (Mean = 4.14), and the organisation is held together by mutual trust and loyalty (Mean = 4.08).

These findings are supported by Deegan and Rankin (2016), who argue that environmental disclosure provides organisations with a mechanism for communicating the environmental impacts of their activities to stakeholders and society. Through effective environmental communication, organisations seek to enhance public confidence and strengthen their corporate image by demonstrating their commitment to responsible environmental management.

3.3.4 Pearson's Correlation Matrix of the Variables of the Study

Table 3 Pearson's Correlation Matrix of the Variables of the Study

Variables	1	2	3	4	5	6
1 Organizational culture	1					
2 ESB	.39**	1				
3 Level of Education	.57**	.46**	1			
4 Years of service	.68**	.34*	.32**	1		
5 Gender	-.05	.07	-.03	-.02	1	
6 Age	.05	.12	.13	.07	.02	1

Source: *Field Survey (2025)*

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

Table 3 presents the Pearson's correlation matrix showing the relationships among the variables included in the study. The results reveal a positive correlation between organizational culture and employees' environmental sustainability behaviour (ESB), suggesting that improvements in organizational culture are associated with higher levels of environmental sustainability behaviour among employees.

With respect to the control variables, educational level and years of service were positively correlated with ESB, indicating that employees with higher educational attainment and longer organisational tenure were more likely to exhibit environmentally sustainable behaviours. In contrast, age and gender were not significantly associated with ESB, suggesting that environmental sustainability behaviour is not influenced by employees' age or gender within the sampled organisations.

3.3.5 Regression Analysis of the Hypothesized Relationship

"Organizational cultures positively predict environmental sustainability behaviour of employees of downstream oil and gas firms in Ghana"

Table 4 Linear Regression Analysis on the relationship between variables

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.098	.238		8.828	.000
	Organizational Culture	.511	.059	.415	8.609	.000

a. Dependent Variable: ESB

Sample Size (N): 359 Source: Field Survey (2025)

A linear regression analysis was conducted to examine the influence of organizational culture on employees' environmental sustainability behaviour. The results indicate that organizational culture is a positive and statistically significant predictor of employees' environmental sustainability behaviour ($\beta = 0.415$, $p < 0.001$).

Therefore, the proposed hypothesis was supported.

These findings suggest that organisations characterised by supportive cultures are more likely to foster environmentally responsible behaviours among their employees. Consequently, cultivating a positive organizational culture should be considered an important managerial strategy for promoting environmental sustainability within downstream oil and gas firms.

The demographic profile of the respondents further indicates that the majority of participants were between 31 and 40 years of age, with over 90% being male. These findings highlight the importance of strengthening organisational cultures that encourage environmentally sustainable practices among the predominantly young and male workforce within Ghana's downstream oil and gas industry.

3.3.6 Bayesian Regression Analysis of the Hypothesized Relationship

Table 5: Bayesian Linear Regression Results

Parameter	Posterior Mean	95% Credible Interval	Interpretation
Organizational Culture	0.48	[0.35, 0.60]	Positive effect
Model Evidence (BF_{10})	> 100	–	Strong evidence

Source: Field Data (2025)

Note: *BF_{10} > 100 indicates very strong evidence in favour of the alternative model over the null model. The 95% credible interval excludes zero, suggesting a high probability that organizational culture has a positive effect on environmental sustainability behaviour.*

To complement the frequentist analysis, Bayesian linear regression was performed to further examine the relationship between organizational culture and employees' environmental sustainability behaviour. The Bayesian results provide very strong evidence in favour of the alternative model over the null model (BF_{10} > 100), demonstrating that the inclusion of organizational culture substantially improves the prediction of employees' environmental sustainability behaviour. The posterior estimate for organizational culture was positive (Posterior Mean = 0.48), and the 95% credible interval [0.35, 0.60] excluded zero, indicating a high probability that organizational culture has a positive effect on environmental sustainability behaviour. The Bayesian findings therefore corroborate the frequentist regression results by providing strong probabilistic evidence that organizational culture is an important determinant of employees' environmental sustainability behaviour.

3.3.7 Bayesian Linear Regression: Education on ESB

Sample Breakdown (N = 358)

Education Level	N	%
Bachelors (1)	204	57.0%
Masters (2)	87	24.3%
Post Graduate (3)	26	7.3%
Other (4)	41	11.5%

Posterior Results

Parameter	Posterior Mean	SD	95% Credible Interval	$P(\beta > 0)$	Interpretation
Intercept	3.720	0.034	[3.653, 3.788]	—	Baseline ESB
Education (β)	**0.101**	**0.034**	**[0.034, 0.169]**	**99.8%**	**Positive Effect**
Model Evidence (BF_{10})	**3.68**	-	-	-	Moderate evidence
R^2	0.024	-	-	-	Model Fit

Bayesian linear regression was also conducted to examine the effect of educational attainment on employees' environmental sustainability behaviour. The analysis provided moderate evidence in favour of the alternative hypothesis over the null model ($BF_{10} = 3.68$). The posterior estimate for education was positive (Posterior Mean = 0.101; SD = 0.034), while the 95% credible interval [0.034, 0.169] excluded zero. Furthermore, there was a 99.8% posterior probability that education has a positive effect on environmental sustainability behaviour. Although statistically credible, education explained only a relatively small proportion of the variance in environmental sustainability behaviour ($R^2 = 0.024$). These Bayesian findings are consistent with the frequentist ordinary least squares (OLS) regression results ($\beta = 0.102$, $p = 0.003$), confirming a modest but statistically significant positive relationship between educational attainment and employees' environmental sustainability behaviour.

Organizational culture (OC) on ESB

Posterior Results

Parameter	Posterior Mean	SD	95% Credible Interval	$P(\beta > 0)$	Interpretation
Intercept	3.720	0.033	[3.653, 3.788]	—	Baseline ESB
OFG (β)	**0.344**	**0.046**	**[0.255, 0.433]**	**100%**	**Strong Positive**
Model Evidence (BF_{10})	>100	-	-	-	Decisive Evidence
R^2	0.137	-	-	-	Good Fit

Source: Field Data (2025)

The Bayesian analysis further confirmed the influence of organizational culture on employees' environmental sustainability behaviour. The posterior estimate indicated a strong positive effect ($\beta = 0.344$; SD = 0.046), with the 95% credible interval [0.255, 0.433] entirely excluding zero. Moreover, the posterior probability that the regression coefficient is positive was 100%, indicating complete consistency across all posterior simulations. The model yielded decisive evidence in favour of the alternative hypothesis ($BF_{10} > 100$), demonstrating that the observed data are substantially more likely under a model that includes organizational culture than under the null model. In addition, the model explained approximately 13.7% of the variation in employees' environmental sustainability behaviour ($R^2 = 0.137$), indicating a satisfactory model fit. Collectively, the Bayesian analyses reinforce the findings of the frequentist regression model and provide robust evidence that organizational culture is a significant predictor of employees' environmental sustainability behaviour in Ghana's downstream oil and gas sector.

4. Discussion

The primary objective of this study was to examine the effect of organizational culture on the environmental sustainability behaviour (ESB) of employees in downstream oil and gas firms in Ghana. The findings revealed that organizational culture is a positive and statistically significant predictor of employees' environmental sustainability behaviour ($\beta = 0.415$, $p < 0.001$). The Bayesian analysis further reinforced this finding by providing strong evidence that organizational culture positively influences employees' environmental sustainability behaviour. Collectively, these findings demonstrate that fostering a supportive organizational culture can significantly enhance employees' engagement in environmentally responsible practices.

These findings are consistent with those of Denison et al. (2017), who identified four dimensions of organizational culture, namely adaptability, consistency, involvement, and mission, as critical drivers of environmental performance. Adaptability reflects an organisation's capacity to respond effectively to environmental changes through appropriate modifications to its structures, systems, and practices. Consistency refers to the extent to which employees share common values, beliefs, and expectations. Involvement emphasises employee participation in organisational decision-making, while mission represents a shared understanding of the organisation's purpose. Together, these cultural dimensions create an environment that encourages employees to adopt environmentally sustainable behaviours.

The present findings also support those of Mujeeb et al. (2018), who reported that employee involvement is strongly associated with organisational consistency and adaptability. Their study further demonstrated that organisational culture is positively related to employees' environmental sustainability behaviour. Similarly, Hartnell et al. (2019), through a meta-analysis of 84 studies, found a positive and statistically significant relationship between organizational culture and employee attitudes and behaviours, including environmental sustainability behaviour.

Consistent with these findings, Zeb et al. (2021, p. 67) reported that the Competing Values Framework (CVF) of organizational culture promotes innovation and organisational development by strengthening values that support workplace performance. Their findings further suggest that an adhocracy culture is particularly effective in fostering innovation and improving organisational performance. Likewise, Ellul (2023) examined the influence of organizational culture on employee behaviour and performance and found that positive organisational cultures characterised by trust, collaboration, and innovation enhance employee engagement, job satisfaction, and overall performance. In contrast, toxic organisational cultures and rigid hierarchical structures adversely affect employee behaviour and organisational effectiveness. Collectively, these studies demonstrate that organizational culture plays a vital role in promoting sustainability, innovation, and organisational performance. Applying these insights to Ghana's downstream oil and gas sector provides a valuable basis for understanding the organisational factors that encourage employees to engage in environmentally sustainable behaviours.

The findings of this study are further supported by the Social Learning Theory, which underpins the research. The theory suggests that individuals acquire knowledge, attitudes, and behaviours by observing the actions of others and the consequences of those actions (Bandura, 1977). Within organisational settings, employees are therefore more likely to adopt environmentally responsible behaviours when they observe colleagues and supervisors consistently demonstrating sustainable practices. This finding reinforces the importance of cultivating an organisational culture that models and rewards environmentally responsible behaviour.

5. Contribution of the study

This study makes both theoretical and practical contributions to the literature on environmental sustainability behaviour within the downstream oil and gas industry. Theoretically, it extends the application of the Social Learning Theory by demonstrating that organizational culture serves as an important mechanism through which environmentally responsible behaviours are fostered among employees in Ghana's downstream oil and gas sector. The study contributes to addressing the limited empirical evidence from Sub-Saharan Africa, where research examining the determinants of employees' environmental sustainability behaviour remains relatively scarce.

Methodologically, the study contributes by demonstrating the complementary value of integrating frequentist and Bayesian analytical approaches to examine the relationship between organizational culture and employees' environmental sustainability behaviour. The consistency of findings across these complementary analytical methods enhances the robustness and credibility of the study's conclusions.

From a practical perspective, the findings provide valuable insights for organisational leaders, policymakers, and regulatory institutions. The results demonstrate that cultivating a supportive organizational culture characterised by shared values, employee involvement, effective leadership, and mutual trust can significantly enhance employees' environmental sustainability behaviour. Consequently, the study provides an evidence-based foundation for developing organisational policies and management practices that strengthen environmental sustainability within Ghana's downstream oil and gas industry.

6. Conclusion

This study examined the influence of organizational culture on employees' environmental sustainability behaviour in Ghana's downstream oil and gas firms. The findings demonstrate that organizational culture is a significant predictor of employees' environmental sustainability behaviour, indicating that organisations that foster supportive cultural values are more likely to encourage environmentally responsible workplace practices. Both the frequentist and Bayesian analyses consistently confirmed the positive influence of organizational culture, thereby strengthening confidence in the robustness of the findings.

The study further confirms the relevance of the Social Learning Theory in explaining employees' environmental sustainability behaviour within organisational settings. Employees are more likely to adopt environmentally responsible practices when they operate within organisational cultures that promote shared environmental values, leadership commitment, collaboration, and continuous learning.

Given the environmental challenges associated with downstream petroleum operations, strengthening organizational culture should be recognised as an important strategic approach for improving environmental performance. Developing a workplace culture that actively supports sustainability not only enhances employees' environmental behaviour but also contributes to organisational resilience, regulatory compliance, and long-term sustainable development within Ghana's downstream oil and gas sector.

7. Recommendation

Based on the findings of this study, management of downstream oil and gas firms should deliberately cultivate organizational cultures that promote environmental responsibility through visible leadership commitment, shared sustainability values, employee participation, and continuous environmental awareness. Environmental sustainability should be integrated into routine work practices, performance expectations, and organisational decision-making rather than treated as a separate activity. Managers should also demonstrate environmentally responsible behaviour that employees can observe and emulate, consistent with the principles of Social Learning Theory.

Organisations should strengthen employee engagement in environmental initiatives through regular training, awareness programmes, open communication, and appropriate recognition or incentive mechanisms. Employees should be encouraged to contribute ideas, participate in environmental decision-making, and take ownership of sustainability-related activities. Such involvement can reinforce a sense of shared responsibility and increase employees' commitment to environmentally sustainable behaviour.

The Government of Ghana should strengthen the enforcement of environmental regulations within the downstream oil and gas industry through effective monitoring, periodic compliance assessments, and proportionate sanctions for non-compliance. Regulatory institutions should also be provided with adequate financial resources, technical expertise, modern monitoring systems, and continuous capacity-building support to enable them to discharge their responsibilities effectively.

Greater collaboration should also be promoted among government institutions, regulatory agencies, industry operators, academic institutions, professional bodies, and other relevant stakeholders. Such collaboration can support the development of practical industry guidelines, improve the sharing of environmental knowledge, and strengthen coordinated efforts to promote sustainable practices across Ghana's downstream oil and gas sector.

8. Limitation and Suggestion for further studies

This study focused exclusively on employees within Ghana's downstream oil and gas sector. Consequently, caution should be exercised when generalising the findings to other sectors or to downstream oil and gas industries in other developing countries. In addition, the study employed a non-probability sampling approach, and the findings should therefore be interpreted within the context of the study design.

Future research should extend this work by examining the determinants of environmental sustainability behaviour across the upstream, midstream, and downstream segments of the petroleum value chain. Comparative studies involving different industries and countries would further improve understanding of how organisational culture influences environmental sustainability behaviour across diverse organisational and regulatory contexts. Future studies could also examine additional organisational and individual factors, such as environmental leadership, environmental knowledge, organisational commitment, and green human resource management practices, to develop a more comprehensive understanding of employees' environmental sustainability behaviour.

9. Conflict of Interest: The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Adewumi, A. J., Akinleye, C. A., and Akinleye, R. (2022) Ecological and Human Health Implication of Heavy Metals in Soils of Urban Areas of Nigeria: *A Systematic Review* (AJOSR), 4, (1), 30–43.

Addor, R. Tan, Y., & Gao, H. (2022). Organizational Commitment and its Relationship to the Employees' Work Performance of an Oil Company. *Journal of Business and Management Studies,* 6(1), 110–119.

Anderson, M., West, S., & Harrison, D. (2018). Exploring Accidental Digital Servitization in an Industrial Context. Advances in Production Management Systems. *Artificial Intelligence for Sustainable and Resilient Production Systems,* 126–135.

Akwasi, A., Mensah, H. K. & Boateng, F.O. (2021) Organizational culture and environmental sustainability behaviour among employees in Ghana. *African Journal of Management,* 7(3), 287–305.

Andrianova, 2018; Creating Readiness for Organizational Change. *Human Relations*, 46(6), 681-703.

Asif, J. (2020). Existing and preferred organizational culture in public organizations: The case of an electricity power plant in Algeria. *Journal of Transnational Management*, 25(2), 154-171

Bashirun, T. & Noranee, B. (2020) The effectiveness of video and pamphlets in influencing youth on environmental education. Jurnal Komunikasi: *Malaysian Journal of Communication,* 31(1), 281–296.

Bandura, G. (1977) Motivation as an indicator of performance and productivity from the perspective of employees. Management & Marketing. *Challenges for the Knowledge Society,* 16(3), 268–285.

Denison, P. Kyriacou, E. & Panigyrakis, G.G. (2017) Organisational culture at higher educational institutions: The importance of internal marketing. *Journal of Cultural Marketing Strategy* 4(2), 161-171

Davis, G. & Cates, D. (2018) National culture and organisational culture in lean organisations: a systematic review. *Production Planning & Control,* 29(8), 67-68

Fatoki, O. (2019). Entrepreneurial Marketing and Performance of Small and Medium Enterprises in South Africa. *Journal of Reviews on Global Economics*, 8, 1429- 1435

Fawehinmi, M. Y. Yusliza, Wan Z. W K, & Muhammad, S. H. (2020) Exploring the Interplay of Green Human Resource Management, Employee Green Behavior, and Personal Moral Norms *SAGE Open*, 10 (4), 1–18

Hartnell, S. Howe, M. & Kreiser, P. M. (2019) Organisational culture and entrepreneurial orientation: An orthogonal perspective of individualism and collectivism. *International Small Business Journal,* 37(2), 125-152.

Jankowicz, D. (2005). Business Research Projects. 4th ed. London: Thomson Learning.

Ifegbesan, A. P., Rampedi, I. T., Ogunyemi, B., & Modley, L.-A. (2022). Predicting proenvironmental behaviour among citizens in six African countries: A cross-national study. *Sustainability,* 14(15), 9311.

Keleş, S., & Aycan, Z. (2023). Managing cultural diversity and inclusion in global organizations. *International Journal of Cross-Cultural Management,* 23(1), 45–61.

Maier, C., Fage, R., & Davies, T. (2023). Analyzing the impact of HRIS implementations on HR personnel's job satisfaction and turnover intention. *Journal of Strategic Information Systems.* 3(1), 65–66.

Mujeeb, G. Neuberg, S. L., & Schaller, M. (2018). Renovating the Pyramid of Needs. *Perspectives on Psychological Science,* 5(3), 292–314.

Omarova, A. & Jo, S. J. (2022). Environmental knowledge and sustainable employee behaviour: The mediating role of organizational commitment. *Journal of Cleaner Production*, 361, 132-315.

Ones, P. & Dilchert, D. (2012a). Knowledge transfer and cross-border acquisition performance: The impact of cultural distance and employee retention. *International Business Review,* 25(1), 66-75.

Ordu (2016), Organisational culture and enterprise risk management: The Australian not-for-profit context. *Australian Journal of Public Administration,* 78(3), 432-448.

Paň, P., Hlásná, P. & Hrabalová, M. (2020). Organizational culture as a determinant of sustainable employee behaviour. *Sustainability,* 12(18), 7428.

Schein, P. (2020) Sustaining the Innovation Culture in SMEs: The Importance of Organisational Culture, Organisational Learning and Market Orientation. *Asian Journal of Business Research*, 9(2), 14

Su, T. Altuntas, G. & Semercioz, F. (2020) International entrepreneurship of small businesses and their export market performance. *European Journal of International Management*, 11(3), 365-382.

Székely, D. & Knirsch, G. (2005) The value of food safety culture to the hospitality industry. *Worldwide*

Hospitality and Tourism Themes, 10(3), 284–296.

Tirno, R. R., Islam, N., & Happy, K. (2023). Green HRM and ecofriendly behavior of employees: Relevance of proecological climate and environmental knowledge. Heliyon, 9(4).

Van Marrewijk (2003) Effects of Organizational Culture on Organizational Performance in the Hospitality Industry. *International Journal of Business and Management Invention*, 3(1), 1-13.

Woo & Kang, 2021 Dependent origination: Resonances for the environment and sustainability education. *The Journal of Environmental Education,* 56, 183–194.

Zafar, H, Rõigas, K. and Müürsepp, M. (2021). Connections between organisational culture and financial performance in Estonian service and production companies. *Baltic Journal of Management.* 15 (3), 375-393.

First Author

Samuel Kwabla Alorvor is a Doctoral Researcher in Environmental Management at the University of Johannesburg. His research focuses on environmental sustainability behaviours, organisational culture, and environmental performance within the downstream oil and gas sector in Ghana. He has over twelve years of professional experience in health, safety, environmental management, and sustainability across the oil and gas, manufacturing, telecommunications, and service sectors, with extensive involvement in regulatory compliance, environmental monitoring, risk management, and integrated management systems. He holds an MSc in Environmental Sustainability and Management and a BSc in Food Process Engineering, and is professionally certified in occupational health and safety, environmental management, and project management. His work integrates applied industry experience with sustainability and environmental governance research.

Second Author

Walter Musakwa is a Full Professor in the Department of Geography, Environmental Management and Energy Studies, Faculty of Science, University of Johannesburg, South Africa. He holds a PhD in Geography and Environmental Studies from Stellenbosch University. His research interests include conservation planning, ecosystem services, climate change, indigenous knowledge systems, sustainable development, and livelihoods. A key focus of his work is the application of geographic information systems, earth observation, and spatial analysis to environmental management, land-use planning, and sustainability science. He has served as a principal and co-investigator on numerous interdisciplinary research projects and has published widely in leading international journals on socio-ecological systems and sustainability transitions.