

Assessment of Leadership Styles and Safety Culture in Selected Oil and Gas Services Companies in Rivers State, Nigeria

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Abstract- *This study examined the relationship between leadership styles and safety culture in selected small and medium-scale oil and gas service companies in Rivers State, Nigeria. The study specifically assessed the predominant leadership styles practiced by leaders, the existing level of safety culture among employees, the relationship between transformational, transactional, and laissez-faire leadership styles and safety culture, and the extent to which these leadership styles predict safety culture. A descriptive research design was adopted, relying on primary data collected from 466 employees across twenty selected companies through a structured questionnaire adapted from the Multifactor Leadership Questionnaire (MLQ-4X) developed by Bass and Avolio and the Safety Climate Scale (SCS) developed by Neal and Griffin. Data were analysed using descriptive statistics, Pearson correlation, and multiple regression analysis in SPSS. The findings revealed that transactional leadership (Mean = 2.86) was the most dominant style, followed by transformational leadership (Mean = 2.50), while laissez-faire leadership (Mean = 1.62) was least practiced. The mean safety culture score (1.99) indicated a moderately developed safety orientation among employees. Correlation analysis showed a significant positive relationship between transformational leadership and safety culture ($r = 0.547$, $p < 0.01$), a positive but weaker relationship for transactional leadership ($r = 0.217$, $p < 0.01$), and a significant negative relationship for laissez-faire leadership ($r = -0.264$, $p < 0.01$). The multiple regression model ($R^2 = 0.323$, $F(3,462) = 73.571$, $p < 0.001$) demonstrated that the three leadership styles jointly predicted 32.3% of the variance in safety culture, with transformational leadership emerging as the strongest positive predictor ($\beta = 0.577$, $p < 0.001$). This study establishes leadership as pivotal to safety culture in Nigerian oil and gas SMEs. Transformational leadership enhances engagement; laissez-faire undermines compliance. Findings advocate leadership development, safety incentives, and active involvement. The research contributes by validating a predictive model in an under-researched, high-risk developing economy context.*

Keyword: *Leadership Style, Safety Culture, Oil And Gas, Servicing Companies, Occupational Safety, Rivers State.*

I. INTRODUCTION

The oil and gas industry is one of the most hazardous industrial sectors due to its reliance on high-pressure systems, flammable materials, confined spaces, and complex operational processes. These conditions expose workers and the environment to risks such as fires, explosions, toxic releases, and environmental pollution (Ajavon et al., 2022). Consequently, effective Health, Safety, and Environment (HSE) management has become essential for sustainable operations. Central to this objective is a strong safety culture, which reflects the shared values, beliefs, and behaviours that prioritize safety throughout an organization (Cox & Cox, 1991; Reason, 1997). Organizations with positive safety cultures are characterized by proactive hazard reporting, continuous learning, and visible leadership commitment, whereas weak safety cultures often result in unsafe behaviours and poor safety performance (Pidgeon, 1991; Hofmann & Stetzer, 1996).

Research has consistently shown that leadership is one of the most influential factors in developing and sustaining a positive safety culture (Zohar, 2010; Neal & Griffin, 2006). Through communication, supervision, and decision-making, leaders shape employees' attitudes and behaviours toward safety. Among the commonly studied leadership styles, transformational leadership encourages employee commitment to safety through inspiration and motivation, transactional leadership promotes compliance through rewards and corrective actions,

while laissez-faire leadership has been associated with poor safety performance due to limited managerial involvement (Bass & Avolio, 1995; Skogstad et al., 2007). Previous studies have reported positive relationships between transformational and transactional leadership styles and improved safety compliance, participation, and reduced workplace incidents (Barling et al., 2002; Kelloway et al., 2005; Neal & Griffin, 2006). In Nigeria, particularly in Rivers State, the oil and gas industry remains a major contributor to economic development and is supported by numerous Small and Medium-scale Enterprises (SMEs) providing services such as equipment maintenance, logistics, pipeline inspection, and HSE consultancy (Nwankwo, 2020). Despite existing regulatory frameworks and oversight by the Nigerian Content Development and Monitoring Board (NCDMB), many SMEs continue to experience workplace accidents, equipment failures, chemical spills, and other safety-related incidents (Oyewole et al., 2021). These incidents are frequently linked to organizational shortcomings, especially inadequate leadership commitment to safety, limited HSE competence among supervisors, and poor employee engagement in safety practices (Adebayo & Oke, 2019).

Although the relationship between leadership and safety culture has been widely investigated in multinational organizations and developed countries, empirical evidence focusing on indigenous oil and gas SMEs in the Niger Delta remains limited. Most existing studies emphasize large organizations, leaving a gap in understanding how leadership practices influence safety culture in locally owned SMEs. Therefore, this study employs the Multifactor Leadership Questionnaire (MLQ-4X) (Bass & Avolio, 1995) and the Safety Climate Scale (SCS) (Neal & Griffin, 2006) to examine the relationship between leadership practices and safety culture among selected small and medium-scale oil and gas companies in Rivers State, Nigeria.

Statement of the Problem

Despite the implementation of Health, Safety, and Environment (HSE) regulations and safety management systems in Nigeria's oil and gas industry, workplace incidents such as equipment

failures, fires, spills, and occupational injuries remain prevalent among small and medium-scale enterprises (SMEs) in Rivers State. Evidence suggests that many of these incidents are attributable not only to technical failures but also to organizational weaknesses, particularly inadequate leadership commitment and poor safety culture. While multinational companies have largely institutionalized safety management practices, many indigenous SMEs continue to experience inconsistent safety enforcement, limited HSE competence, and low leadership involvement in promoting safe work behaviours (Adebayo & Oke, 2019; Oyewole et al., 2021). Although leadership is widely recognized as a key determinant of safety performance, empirical studies examining the relationship between leadership styles and safety culture in indigenous Nigerian oil and gas SMEs remain limited. Existing research has largely focused on multinational organizations, leaving a significant gap in understanding the leadership dynamics of locally owned service companies. This knowledge gap limits the development of evidence-based interventions tailored to SMEs. Therefore, this study investigates the relationship between leadership styles and safety culture in selected oil and gas SMEs in Rivers State, with the aim of providing empirical evidence to support leadership development and improve HSE performance.

Objectives of the Study

The study is aimed at assessing leadership styles (transformational, transactional and laissez-faire) and safety culture in selected oil and gas service companies in Rivers State, Nigeria. Specifically, the study sought to:

- i. Identify the predominant leadership styles (transformational, transactional and laissez-faire) among leaders in selected small and medium-scale oil and gas service companies in Rivers State.
- ii. Evaluate the current level of safety culture among employees in selected small and medium-scale oil and gas service companies in Rivers State.
- iii. Determine the relationship between leadership styles (transformational, transactional and laissez-faire) and safety culture in selected

small and medium-scale oil and gas service companies in Rivers State.

- iv. Assess the extent to which leadership styles (transformational, transactional and laissez-faire) predict safety culture in selected small and medium-scale oil and gas service companies in Rivers State.

Research Questions

The following research questions were used as guide for the study:

- i. What is the predominant leadership styles (transformational, transactional and laissez-faire) among leaders in selected small and medium-scale oil and gas service companies in Rivers State?
- ii. What is the current level of safety culture among employees in selected small and medium-scale companies in Rivers State?
- iii. What is the relationship between leadership styles (transformational, transactional and laissez-faire) and safety culture in selected small and medium-scale companies in Rivers State?
- iv. To what extent does leadership styles (transformational, transactional and laissez-faire) predict safety culture in selected small and medium-scale oil and gas service companies Rivers State?

Significance of the study

It contributes to the understanding of the relationship between leadership styles and safety culture among small and medium-scale oil and gas service companies in Rivers State, Nigeria. By addressing the limited empirical evidence on indigenous SMEs, the findings will enrich the existing literature on safety leadership within emerging economies. Practically, the study will provide evidence-based recommendations for managers, HSE professionals, and organizational leaders to strengthen leadership practices, improve employee safety behaviour, and enhance overall safety performance. The findings will also support regulatory agencies, including the Nigerian Upstream Petroleum Regulatory Commission (NUPRC), the Nigerian Content Development and Monitoring Board (NCDMB), and the National Environmental Standards and

Regulations Enforcement Agency (NESREA), in developing more effective leadership-focused safety policies and capacity-building initiatives. Ultimately, the study is expected to promote safer workplaces, strengthen organizational safety culture, and improve sustainable HSE performance in Nigeria's oil and gas industry.

II. LITERATURE REVIEW

The oil and gas industry is universally recognized as one of the most hazardous industrial sectors, characterized by high-pressure systems, flammable hydrocarbons, toxic substances, and complex operational processes. These conditions create a constant risk of catastrophic events such as fires, explosions, equipment failures, and environmental contamination (Ajavon et al., 2022). In such a volatile operational environment, technical safeguards and engineering controls, while essential, are insufficient on their own to prevent accidents. Human and organizational factors particularly leadership have been empirically established as the most influential determinants of safety outcomes (Zohar, 2010). Leadership, in this context, is not merely an administrative function but a behavioral and relational force that shapes organizational culture, influences employee attitudes, and determines how seriously safety is prioritized in practice.

The Concept of Leadership

Leadership is a multifaceted concept that has been defined and explored from numerous perspectives across various fields. At its core, leadership involves the ability to influence, guide, and inspire individuals or groups toward achieving common goals (Amanchukwu et al., 2015). It is a dynamic process where a leader interacts with followers, creates vision, and sets strategies to reach the desired outcomes. Leadership can be understood as a combination of personal qualities, behaviors, and skills that help shape organizational culture and effectiveness (Adanri, 2016). One of the earliest views on leadership was centered around the characteristics and traits of the leader. Early leadership theories, such as the Great Man theory, suggested that certain individuals are born with

inherent leadership qualities that set them apart from others (Bara et al., 2017).

Leadership Styles: An In-Depth Analysis

Leadership style refers to the approach a leader adopts in influencing, guiding, and motivating their followers to achieve organizational goals. Various leadership styles have been identified and discussed over the years, each reflecting different ways in which leaders interact with their followers, make decisions, and create organizational environments. This discussion will examine two prominent leadership styles: Transformational Leadership and Transactional Leadership, offering detailed explanations of their characteristics, application, and impact on organizational success.

Contextual Realities in Nigerian Oil and Gas SMEs

The relationship between leadership and safety culture cannot be fully understood without considering the unique organizational and socio-economic context of small and medium-scale enterprises in Nigeria. Many of these firms are family-owned or closely held businesses with flat hierarchies, limited financial resources, and minimal investment in training and development. Decision-making authority is often concentrated in a single individual the owner or managing director whose personal leadership style has an out scale influence on organizational culture

Dimensions of Safety Culture in Practice

Safety culture is conceptualized not as a monolithic construct but as a multidimensional phenomenon that manifests in various aspects of organizational life. While its roots lie in shared values and assumptions, its expression is visible in everyday behaviors, communication patterns, and response mechanisms. The present structure identifies several key dimensions that are particularly relevant to the Nigerian SMEs context

Research Design

A descriptive survey design with a cross-sectional correlational approach was adopted for this study, enabling investigation of the relationship between transformational, transactional, and laissez-faire leadership and safety culture in SMEs. Systematic description of leadership behaviours and assessment of their association with employee safety perceptions at a single point in time are facilitated by this design. Multiple respondents across organizational levels contribute to a representative depiction of current leadership-safety dynamics. The cross-sectional design was selected to address practical constraints, including time limitations, access issues, and resource constraints. The study's concentration on twenty indigenous oil and gas service SMEs ensures contextual depth, with these firms exhibiting centralized leadership, limited formal HSE frameworks, and significant supervisory influence. Standardised instruments aligned with established research are employed to strengthen the validity and reliability of the findings.

Study Area

The study was conducted in Obio-Akpor LGA, Rivers State, Nigeria. Rivers State, created in 1967, is in the South-South zone of the Niger Delta. It is bordered by Imo/Abia to the north, the Atlantic to the south, Akwa Ibom to the east, and Bayelsa to the west. It covers 9,669 km² with a population of 6.9 million (2006). The economy is oil-dependent, though agriculture remains important. Obio-Akpor LGA lies at 4°45'–4°56'N and 6°52'–7°6'E. It covers 263.1 km² with 649,600 people. The terrain is low-lying, below 15.24 m elevation. It borders Ikwerre/Etche (north), Port Harcourt (south), Oyiibo (east), and Emohua (west). It forms part of the Port Harcourt metropolitan area, 66 km from the Atlantic. Obio-Akpor was purposively selected for its concentration of indigenous SMEs providing oil and gas services. The area hosts the Port Harcourt Refinery, flow stations, pipelines, and field bases. These firms operate with limited resources and weak oversight, making leadership critical for safety. This setting is ideal for studying leadership-safety dynamics in the Niger Delta.

III. METHODOLOGY



Figure 3.2: Map of Rivers State showing Obio/Akpor Local Government (Source: Field work, 2017)

Population and Sample Size

The target population includes employees, supervisors, and managers from twenty purposively selected indigenous SMEs in Obio-Akpor LGA providing oil and gas services. Selection criteria: active in technical, maintenance, or logistical support; 50–90 employees; independent ownership; and consent to participate. Multinationals, government firms, and non-oil and gas companies were excluded to focus on indigenous SMEs facing unique leadership and safety challenges. Combined workforce across the twenty companies totals approximately 1,500. Population includes frontline

workers, supervisors, and managers. Frontline personnel form the largest group, most exposed to hazards and leadership influence. Supervisors and managers, though fewer, are critical for modelling safety and enforcing compliance. This defined population supports a focused study on leadership-safety culture relationships in a representative SME sample. Limiting to 50–90 employees captures organizations where leadership is key to communicating safety values. Findings are expected to provide practical insights for improving leadership and safety in similar Nigerian oil and gas SMEs.

Table 3.1: Population of the Study.

S/NO.	NAMES OF COMPANIES	CATEGORIES OF WORKERS					TOTAL (%)
		Technicians	Riggers	Welders	Supervisors	Managers	
1.	A	27	23	20	10	5	80 (5.3%)
2.	B	27	23	20	10	5	80 (5.3%)
3.	C	27	23	20	10	5	80 (5.3%)
4.	D	27	23	20	10	5	80 (5.3%)
5.	E	20	13	10	9	3	55 (3.7%)
6.	F	27	23	20	10	5	80 (5.3%)
7.	G	27	23	20	10	5	80 (5.3%)

8.	H	20	13	10	9	3	55 (3.7%)
9.	I	27	23	20	10	5	80 (5.3%)
10.	J	20	13	10	9	3	55 (3.7%)
11.	K	27	23	20	10	5	80 (5.3%)
12.	L	27	23	20	10	5	80 (5.3%)
13.	M	27	23	20	10	5	80 (5.3%)
14.	N	27	23	20	10	5	80 (5.3%)
15.	O	27	23	20	10	5	80 (5.3%)
16.	P	20	13	10	9	3	55 (3.7%)
17.	Q	27	23	20	10	5	80 (5.3%)
18.	R	27	23	20	10	5	80 (5.3%)
19.	S	27	23	20	10	5	80 (5.3%)
20.	T	27	23	20	10	5	80 (5.3%)
	TOTAL						1,500 (100%)

Sampling Technique

A multi-stage sampling approach was used to balance relevance and reliability. First, purposive sampling selected 20 indigenous oil and gas SMEs in Obio-Akpor based on specific criteria: company size (50–90 employees), service type (technical, maintenance, logistics), independence from multinationals, and willingness to participate. This method ensured information-rich cases. Second, proportional stratified random sampling was applied within each company to select respondents from three levels (frontline employees, supervisors, and managers), ensuring balanced representation across hierarchies and accounting for role-based differences in perceptions of leadership and safety culture.

To determine the appropriate sample size, Yamane's (1967) formula for finite populations was applied using the estimated total population ($N = 1,500$) and a 5% margin of error at a 95% confidence level: To determine the appropriate sample size, Yamane's formula (1967) was applied:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = required sample size

N = total population (1,500)

e = margin of error (0.05)

Substituting the values:

$$n = \frac{1,500}{1 + 1,500(0.0025)}$$

$$n = \frac{1,500}{1.45} = 316 \text{ respondents}$$

The required minimum sample size was calculated as 316 respondents. To compensate for potential non-response or incomplete data, a 10% contingency was added, bringing the final target to 466 participants. These were distributed proportionally across the 20 companies and their hierarchical levels. The two-tiered design purposive selection of companies followed by stratified random sampling of individuals within them ensures both contextual relevance and internal validity, allowing for a robust analysis of leadership practices and safety culture in this SME setting.

Table 3.2: Sample Size of the Study across the Twenty Companies.

S/NO.	NAMES OF COMPANIES	CATEGORIES OF WORKERS					TOTAL (%)
		Technicians	Riggers	Welders	Supervisors	Managers	
1.	A	7	6	5	4	3	25 (5.3%)
2.	B	7	6	5	4	3	25 (5.3%)
3.	C	7	6	5	4	3	25 (5.3%)
4.	D	7	6	5	4	3	25 (5.3%)
5.	E	5	4	3	3	2	17 (3.7%)
6.	F	7	6	5	4	3	25 (5.3%)
7.	G	7	6	5	4	3	25 (5.3%)
8.	H	5	4	3	3	2	17 (3.7%)
9.	I	7	6	5	4	3	25 (5.3%)
10.	J	5	4	3	2	2	16 (3.4%)
11.	K	7	6	5	4	3	25 (5.3%)
12.	L	7	6	5	4	3	25 (5.3%)
13.	M	7	6	5	4	3	25 (5.3%)
14.	N	7	6	5	4	3	25 (5.3%)
15.	O	7	6	5	4	3	25 (5.3%)
16.	P	5	4	3	2	2	16 (3.4%)
17.	Q	7	6	5	4	3	25 (5.3%)
18.	R	7	6	5	4	3	25 (5.3%)
19.	S	7	6	5	4	3	25 (5.3%)
20.	T	7	6	5	4	3	25 (5.3%)
	TOTAL						466 (100%)

Research Instrument

The validity of the research instrument was ensured through content, construct, and criterion-related approaches. Content validity was established by using established scales (MLQ-5X and Safety Climate Scale) and expert review by two academics and one HSE specialist. Construct validity was supported by theoretical alignment with the Full Range Leadership Model and Safety Climate Theory, and later confirmed through Confirmatory Factor Analysis. Criterion-related validity was strengthened by selecting instruments with proven predictive power in high-risk industries, ensuring their suitability for the Nigerian SME context.

Reliability of the Instrument

Reliability refers to the consistency and stability of the measurement tool. To assess internal consistency,

Cronbach's alpha coefficient was computed for each subscale of the MLQ-5X and the Safety Climate Scale using data from the pilot study. Cronbach's alpha values above 0.70 are generally considered acceptable (Field, 2018). The results indicated strong reliability:

- i. Transformational Leadership: $\alpha = 0.89$
- ii. Transactional Leadership: $\alpha = 0.82$
- iii. Laissez-Faire Leadership: $\alpha = 0.78$
- iv. Safety Culture: $\alpha = 0.91$

These coefficients confirm that the items within each construct are highly interrelated and consistently measure the same underlying concept. The high reliability estimates enhance confidence in the accuracy and reproducibility of the findings. Additionally, test-retest reliability was partially ensured by standardizing administration procedures

and training data collectors to minimize variability in delivery.

IV. RESULTS

Demographic Characteristics of Respondents

Table 4.1: Frequency distribution of the Respondent by Gender

	Gender	Frequency	Percent	Valid Percent	Cumulative Percent
	Female	65	13.9	13.9	13.9
	Male	401	86.1	86.1	100.0
	Total	466	100.0	100.0	

Table 4.1 summarizes the gender distribution of survey respondents from small and medium-scale oil and gas companies in Rivers State. Out of 466 respondents, the vast majority (86.1%) were male, while only 13.9% were female. This imbalance

reflects the broader industry trend of male-dominated technical and operational roles. However, the inclusion of female respondents still offers useful perspectives on leadership and safety culture.

Table 4.2: Distribution of Respondents by Educational Qualification

	Educational Qualification	Frequency	Percent	Valid Percent	Cumulative Percent
	HND/BSc	189	40.6	40.6	40.6
	MSc/PGDip	53	11.4	11.4	51.9
	ND/NCE	132	28.3	28.3	80.3
	PhD	9	1.9	1.9	82.2
	Secondary	83	17.8	17.8	100.0
	Total	466	100.0	100.0	

Table 4.2 outlines the educational qualifications of survey respondents. The largest group—189 respondents (40.6%)—held HND/BSc degrees, followed by 132 (28.3%) with ND/NCE, 83 (17.8%) with secondary education, 53 (11.4%) with MSc/PGDip, and only 9 (1.9%) with PhDs. Overall,

the sample was predominantly tertiary-educated, indicating that most respondents were well-equipped to understand and accurately answer the research questions. The inclusion of postgraduate and doctoral degree holders further strengthened the reliability and depth of the data collected.

Table 4.3: Frequency Distribution of Respondents by Age Group

	Age Group (Years)	Frequency	Percent	Valid Percent	Cumulative Percent
	<25	84	18.0	18.0	18.0
	25-34	199	42.7	42.7	60.7
	35-44	125	26.8	26.8	87.6
	45-54	43	9.2	9.2	96.8
	55+	15	3.2	3.2	100.0
	Total	466	100.0	100.0	

Table 4.3 details the age distribution of respondents from oil and gas service firms. The majority—199 respondents (42.7%)—were aged 25–34 years, followed by 125 (26.8%) in the 35–44 age group. Younger respondents under 25 made up 18.0% (84), while older age groups were smaller: 45–54 years

accounted for 9.2% (43), and those 55 and above represented only 3.2% (15). Overall, nearly 70% of participants fell between 25 and 44 years, indicating a relatively young, active, and adaptable workforce well-suited for leadership, safety, and organizational changes. The low representation of employees over 45 likely reflects the physically demanding nature of

the industry, which may limit the presence of senior or long-serving staff.

Analysis of Research Questions and Hypothesis

Research Question One: What is the predominant leadership styles (transformational, transactional and laissez-faire) among leaders in selected small and medium-scale oil and gas service companies in Rivers State?

H01: There is no significance relationship between transformational leadership style and safety culture in selected small and medium-scale oil and gas service companies in Rivers State.

Table 4.4: Descriptive Statistics of Leadership Styles and Safety Culture among Employees in Selected Oil and Gas Service Companies in Rivers State

	N	Mean	Std. Deviation
TF	466	2.4995	.43177
TR	466	2.8605	.36495
LF	466	1.6230	.36613
SC	466	1.9871	.4996

Table 4.4 examined leadership styles transformational, transactional, and laissez-faire and safety culture among 466 employees in small and medium-scale oil and gas service companies in Rivers State. Descriptive statistics revealed that transactional leadership recorded the highest mean score (Mean = 2.86, SD = 0.36), indicating its prevalence in supervisory practices, particularly in performance monitoring and reward-based motivation. Transformational leadership followed with a moderate mean (Mean = 2.50, SD = 0.43), while laissez-faire leadership scored the lowest (Mean = 1.62, SD = 0.37), suggesting limited passive or avoidant leadership behaviours. Safety culture had a relatively low mean score (Mean = 1.99, SD = 0.50) on a 4-point scale, pointing to moderate employee perceptions of safety commitment, possibly reflecting gaps in policy implementation. Overall, the findings indicate that transactional leadership dominates, transformational practices are moderately present, and laissez-faire is minimal, while safety culture requires further strengthening to enhance organizational effectiveness and employee well-being.

Table 4.5: Pearson Correlation between Transformational Leadership and Safety Culture among Employees in Selected Oil and Gas Service Companies in Rivers State

		TF	SC
TF	Pearson Correlation	1	.547**
	Sig. (2-tailed)		.000
	N	466	466
SC	Pearson Correlation	.547**	1
	Sig. (2-tailed)	.000	
	N	466	466

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

Tale 4.5 showed the relationship between transformational leadership and safety culture among employees in selected oil and gas service companies in Rivers State. Pearson correlation analysis revealed a moderate positive and statistically significant relationship between the two variables ($r = 0.547$, $p < 0.01$). This finding indicates that higher levels of transformational leadership behaviours such as articulating an inspiring vision, motivating employees, offering individualized consideration, and stimulating intellectual engagement are associated with stronger safety culture perceptions. Employees under transformational leaders tend to demonstrate greater safety consciousness, commitment, and proactive involvement in maintaining safe work practices. The significance level ($p = 0.000$) confirms that the observed relationship is not attributable to chance. Consequently, the null hypothesis of no significant relationship was rejected, and the alternative hypothesis was accepted, establishing that transformational leadership significantly influences safety culture in the studied organizations. This underscores the importance of fostering transformational leadership qualities to enhance workplace safety outcomes in the oil and gas sector. Research Question Two: What is the current level of safety culture among employees in selected small and medium-scale companies in Rivers State?

H02: There is no significance relationship between transactional leadership style and safety culture in selected small and medium-scale oil and gas service companies in Rivers State.

Table 4.6: Descriptive Statistics of Safety Culture among Employees in Selected Oil and Gas Service Companies in Rivers State

	N	Minimum	Maximum	Mean	Std. Deviation
SC	466	1.0000	3.6667	1.9871	.4996
Valid N (listwise)	466				

Table 4.6 assessed employees' perceptions of safety culture within small and medium-scale oil and gas service firms in Rivers State, using descriptive statistics derived from a 4-point Likert scale. The overall mean score of 1.99 (SD = 0.50) points to a modest level of perceived safety culture, indicating room for considerable improvement across the organizations surveyed. Perceptions varied widely, as evidenced by scores ranging from a low of 1.00—reflecting notably weak safety orientations—to a high of 3.67, which denotes comparatively robust safety practices in some firms. The standard deviation of 0.50 further highlights the divergence in employee experiences, likely attributable to disparities in management approaches, leadership dedication, and the allocation of resources toward safety initiatives. These findings underscore a critical gap: while formal safety frameworks may be present, their practical execution, internal communication, and capacity to foster employee participation remain inconsistent and suboptimal. Consequently, there is an urgent need for strengthened leadership involvement, stricter adherence to safety protocols, and more inclusive employee engagement strategies to elevate the overall safety culture within these enterprises.

Table 4.7: Pearson Correlation between Transactional Leadership Style and Safety Culture among Employees in Selected Oil and Gas Service Companies in Rivers State

		SC	TR
SC	Pearson Correlation	1	.217**
	Sig. (2-tailed)		.000
	N	466	466
TR	Pearson Correlation	.217**	1

	Sig. (2-tailed)	.000	
N		466	466
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 4.7 examined the relationship between transactional leadership and safety culture among employees in selected oil and gas service companies in Rivers State. Pearson correlation analysis revealed a positive but weak statistically significant relationship ($r = 0.217$, $p < 0.01$). This suggests that transactional behaviours such as setting clear expectations, monitoring performance, and rewarding compliance are associated with modest improvements in safety culture perceptions. Although the effect is weaker than that of transformational leadership, it indicates that transactional practices still contribute to reinforcing safety-related behaviours and adherence to procedures. The significance level ($p = 0.000$) confirms the relationship is not due to chance. Consequently, the null hypothesis of no significant relationship was rejected, affirming that transactional leadership exerts a positive and significant, albeit limited, influence on safety culture within the studied organizations.

Research Question Three: What is the relationship between leadership styles (transformational, transactional and laissez-faire) and safety culture in selected small and medium-scale companies in Rivers State?

H03: There is no significance relationship between laissez-faire leadership style and safety culture in selected small and medium-scale oil and gas service companies in Rivers State.

Table 4.8: Pearson Correlation Matrix Showing the Relationship between Leadership Styles and Safety Culture

		SC	TR	TF	LF
SC	Pearson Correlation	1	.217**	.547**	-.264**
	Sig. (2-tailed)		.000	.000	.000
	N	466	466	466	466
TR	Pearson Correlation	.217**	1	.237**	-.208**
	Sig. (2-tailed)	.000		.000	.000
	N	466	466	466	466
TF	Pearson Correlation	.547**	.237**	1	-.236**
	Sig. (2-tailed)	.000	.000		.000
	N	466	466	466	466
LF	Pearson Correlation	-.264**	-.208**	-.236**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	466	466	466	466
**. Correlation is significant at the 0.01 level (2-tailed).					

Table 4.8 examined the relationships among transformational, transactional, and laissez-faire leadership styles and safety culture in selected oil and gas service companies in Rivers State. Pearson correlation analysis revealed that transformational leadership had a strong positive and significant relationship with safety culture ($r = 0.547$, $p < 0.01$), indicating that inspirational and role-model behaviours foster deeper employee commitment to safety values. Transactional leadership showed a positive but weak significant correlation ($r = 0.217$, $p < 0.01$), suggesting it promotes compliance without strongly engendering internalized safety dedication. Conversely, laissez-faire leadership exhibited a negative and significant correlation ($r = -0.264$, $p < 0.01$), implying that passive, indifferent, or minimally supervisory behaviours weaken safety culture and reduce employee engagement in safety practices. Given the significance levels ($p = 0.000 < 0.01$), the

null hypothesis for laissez-faire leadership was rejected. The findings underscore that effective safety culture development hinges on active leadership engagement particularly transformational and transactional approaches rather than disengaged or avoidant leadership styles

Research Question Four: To what extent does leadership styles (transformational, transactional and laissez-faire) predict safety culture in selected small and medium-scale oil and gas service companies Rivers State?

H04: Leadership styles (transformational, transactional and laissez-faire) does not significantly predict safety culture in selected small and medium-scale oil and gas service companies Rivers State?

Table 4.9: Multiple Regression Analysis Showing the Influence of Leadership Styles on Safety Culture

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.555	.218		2.548	.011
	TF_Mean	.577	.046	.499	12.417	.000
	TR_Mean	.098	.055	.072	1.796	.073
	LF_Mean	-.180	.054	-.132	-3.299	.001
a. Dependent Variable: SC_Mean						

The multiple regression analysis in Table 4.9 examined the combined effects of transformational,

transactional, and laissez-faire leadership styles on safety culture among employees of small and medium-scale oil and gas service companies in Rivers State. The results showed that

transformational leadership had the strongest positive and statistically significant effect on safety culture ($\beta = 0.499$, $p < 0.001$), indicating that leaders who inspire, motivate, and engage their subordinates tend to promote a stronger safety culture within their organizations. Transactional leadership showed a positive but non-significant relationship ($\beta = 0.072$, $p = 0.073$), suggesting that while reward and punishment mechanisms may encourage compliance with safety procedures, they are not sufficient to foster a deeply ingrained safety culture.

0.132, $p = 0.001$), implying that leaders who are passive, uninvolved, or avoid decision-making weaken employees' safety commitment and awareness. The overall findings suggest that leadership behavior plays a crucial role in shaping safety culture. Organizations that cultivate transformational leadership practices can enhance employees' safety consciousness, teamwork, and adherence to safety standards, while minimizing laissez-faire tendencies that could compromise workplace safety performance.

Conversely, laissez-faire leadership demonstrated a significant negative effect on safety culture ($\beta = -$

Table 4.10: Model Summary Showing the Combined Influence of Leadership Styles on Safety Culture among Employees in Selected Oil and Gas Service Companies in Rivers State

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.569 ^a	.323	.319	.412360885819719
a. Predictors: (Constant), LF_Mean, TR_Mean, TF_Mean				
b. Dependent Variable: SC_Mean				

The regression analysis revealed that the three leadership styles transformational, transactional, and laissez-faire jointly explained 32.3% of the variation in safety culture among employees in selected small and medium-scale oil and gas service companies in Rivers State ($R^2 = 0.323$). The multiple correlation coefficient ($R = 0.569$) indicates a moderate positive relationship between leadership styles and safety culture, while the adjusted R^2 (0.319) confirms the

model's stability after accounting for the number of predictors. The standard error of the estimate (0.412) further suggests that the model predicts safety culture with reasonable accuracy. These findings indicate that leadership practices, particularly transformational leadership, play a significant role in shaping safety culture, although other organizational and contextual factors also contribute to safety outcomes.

Table 4.11: Analysis of Variance (ANOVA) Summary for the Overall Significance of the Regression Model on Safety Culture among Employees in Selected Oil and Gas Service Companies in Rivers State

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	37.530	3	12.510	73.571	.000 ^b
Residual	78.559	462	.170		
Total	116.089	465			

The ANOVA result in Table 4.11 shows that the regression model explaining the relationship between leadership styles (transformational, transactional, and laissez-faire) and safety culture is statistically significant, with $F(3, 462) = 73.571$, $p < 0.001$. This indicates that the combination of the three leadership styles significantly predicts variations in safety culture among employees in the selected oil and gas service companies. The regression sums of squares (37.530) compared to the residual sum of squares

(78.559) demonstrates that a substantial portion of the total variance in safety culture is accounted for by leadership styles. Hence, the null hypothesis stating that "leadership styles do not significantly predict safety culture" is rejected. This finding reinforces the conclusion that leadership behaviours especially transformational leadership are crucial determinants of employees' safety values, attitudes, and practices in small and medium-scale oil and gas service firms in Rivers State.

Table 4.12: Residuals Statistics for the Regression Model Predicting Safety Culture among Employees in Selected Oil and Gas Service Companies in Rivers

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	1.3504	2.8076	1.9871	.2841
Residual	-.9606	1.18047	.0000	.41102
Std. Predicted Value	-2.241	2.888	.000	1.000
Std. Residual	-2.329	2.863	.000	.997

The residual statistics indicate that the regression model adequately predicts safety culture among employees in the selected oil and gas service companies. The predicted values closely correspond to the observed mean of the dependent variable, demonstrating good model fit. Furthermore, the residuals were centered around zero and randomly distributed, suggesting that the assumptions of

linearity and homoscedasticity were reasonably satisfied. The standardized predicted values and standardized residuals also fell within the acceptable range (± 3), indicating the absence of significant outliers. Overall, these diagnostic results confirm that the regression model is statistically robust and appropriate for explaining the relationship between leadership styles and safety culture.

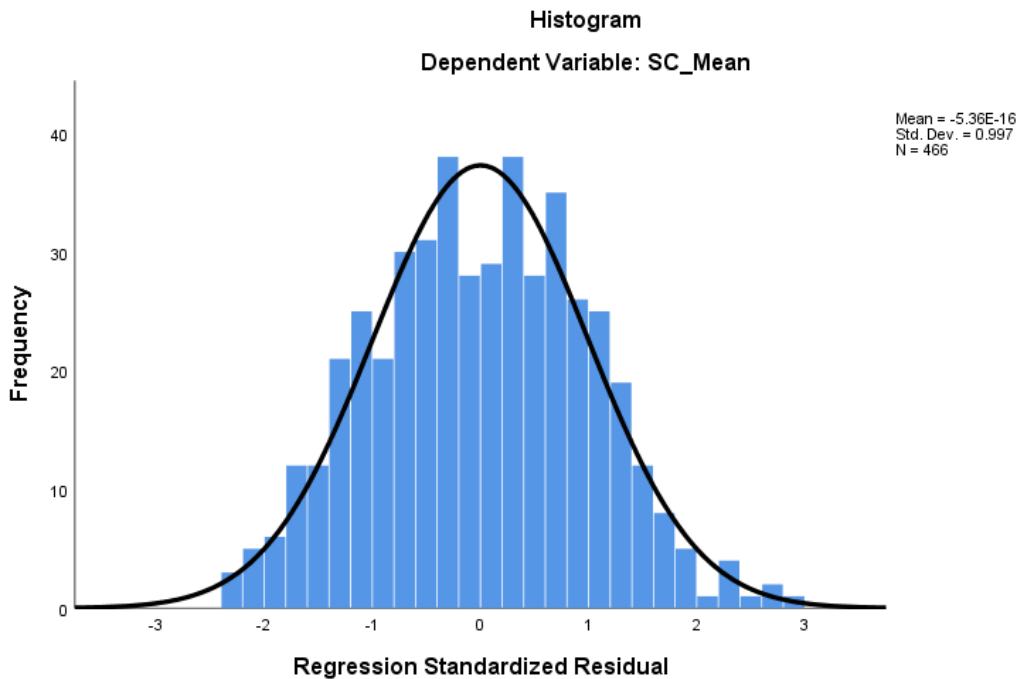


Figure 4.1: Histogram of Regression Standardized Residuals for Safety Culture Model

The histogram in Figure 4.1 displays the distribution of standardized residuals from the regression model predicting safety culture (SC). The residuals are approximately normally distributed, forming a bell-shaped curve centered around zero. The mean of the residuals is virtually zero (Mean = $-.536E-16$) and the standard deviation (SD = 0.997) is close to 1,

indicating that the residuals meet the normality assumption required for multiple regression analysis. This pattern suggests that the model's prediction errors are symmetrically distributed and do not exhibit significant skewness or kurtosis. Therefore, the normality assumption of the residuals is satisfied, implying that the regression estimates are unbiased

and the model is appropriate for interpreting the relationship between leadership styles and safety

culture among employees in the selected oil and gas service companies in Rivers State.

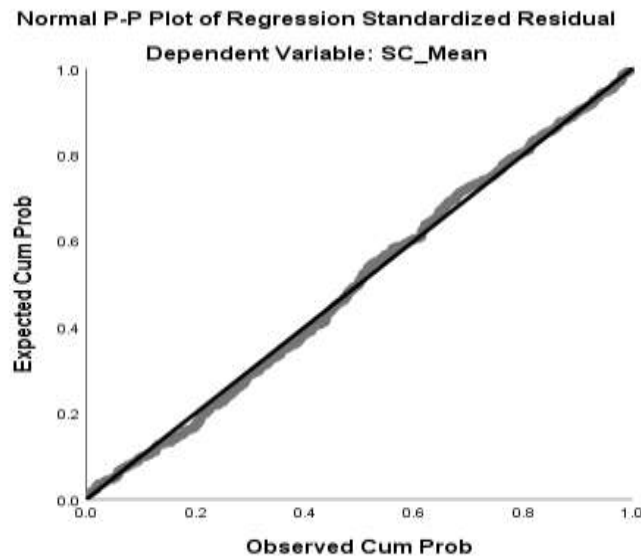


Figure 4.2: Normal P-P Plot of Regression Standardized Residuals for Safety Culture Model

The P-P plot in Figure 4.2 illustrates the relationship between the observed cumulative probabilities and the expected cumulative probabilities of the standardized residuals from the regression model predicting safety culture (SC). The data points align closely with the diagonal reference line, indicating that the residuals follow a normal distribution. This alignment confirms that the normality assumption of the regression model has been met. There are no noticeable deviations or curvature patterns, which suggests that the model is well specified and the residuals are randomly and symmetrically distributed. Therefore, the results validate the appropriateness of the regression analysis and strengthen the reliability of the conclusions regarding the effects of leadership styles on safety culture among employees in the selected oil and gas service companies in Rivers State.

V. DISCUSSION OF FINDINGS

This section presents a detailed discussion of the findings in relation to previous empirical studies on leadership styles and safety culture. The analysis draws on the results summarized in Tables 4.5 to 4.11, which examined the effects of transformational,

transactional, and laissez-faire leadership on safety culture among employees in small and medium-scale enterprises (SMEs) in Rivers State.

The results presented in Table 4.6 and Table 4.4 reveal that transformational leadership (TF) has a statistically significant and positive influence on safety culture (SC) with a standardized beta coefficient ($\beta = 0.499$, $p < 0.001$). The result demonstrates that as transformational leadership behaviours such as inspiring vision, fostering trust, and encouraging employee engagement increase, employees' safety culture perceptions improve correspondingly. This outcome is consistent with Barling et al., (2002) who found that transformational leadership accounted for 34% of the variance in proactive safety behaviours and 22% in compliance across Canadian industries. Similarly, the R^2 value of 0.323 in Table 4.10 indicates that the leadership variables collectively explain about 32.3% of the variance in safety culture, corroborating earlier evidence that leadership style is a strong determinant of employee safety orientation.

In line with Kelloway, Mullen, and Francis (2005), the present study supports the argument that

transformational leadership enhances discretionary safety actions, such as peer intervention and risk communication. The histogram and P-P plots (Figures 4.4 and 4.5) confirm that the model residuals are normally distributed, supporting the robustness of the regression results. As highlighted by Adebayo and Oke (2019), Nigerian organizations that adopted participative and inspirational leadership approaches recorded higher employee engagement and reduced accident frequencies. The current results further affirm that transformational leaders, through motivation and relational engagement, play a crucial role in embedding safety consciousness among subordinates.

The regression analysis in Table 4.11 shows that transactional leadership has a positive but statistically non-significant relationship with safety culture ($\beta = 0.072$, $p = 0.073$). This suggests that while transactional leaders emphasize compliance and performance monitoring, their influence may not be as strong as transformational leaders in shaping proactive safety behaviour. Nonetheless, this modest positive relationship aligns with Kelloway, Mullen, and Francis (2005), who found that contingent reward a core transactional component enhances procedural compliance and reinforces safety adherence. The non-significance observed in this study could indicate that while transactional practices promote rule following, they may not sufficiently inspire discretionary safety actions such as hazard reporting or peer interventions.

The model summary in Table 4.11 ($R^2 = 0.323$) indicates that transactional leadership contributes marginally to the explained variance in safety culture, complementing transformational leadership in maintaining structured safety practices. This result supports Neal and Griffin (2006), who emphasized that transactional leadership plays a reinforcing role in compliance-related behaviours. The ANOVA in Table 4.9 further confirms the model's overall significance ($p < 0.001$), indicating that transactional leadership still holds a supportive function in ensuring operational safety. This suggests that a balanced leadership approach integrating both transformational inspiration and transactional structure may yield the most effective safety

outcomes. Further, the descriptive statistics in Table 4.6 show that the mean safety culture score ($M = 1.99$, $SD = 0.50$) reflects a moderate safety orientation, implying that transactional leaders' focus on control and rewards may not deeply influence employees' internalized safety values. This observation echoes Adebayo and Oke (2019), who noted that Nigerian managers often rely on formal authority and disciplinary measures rather than motivational engagement. Consequently, employees comply superficially rather than developing intrinsic safety awareness. Thus, transactional leadership, while beneficial for procedural adherence, lacks the emotional and relational depth necessary for a sustained safety culture.

Finally, Zohar (2010) and Oyewole et al. (2021) both highlight that transactional leadership contributes best when integrated with transformational strategies. The findings from Table 4.10 reinforce this synergy though TR coefficient is smaller, it works complementarily with transformational factors in maintaining accountability. Hence, transactional leadership should not be dismissed but rather restructured to emphasize recognition, consistent feedback, and support of positive safety conduct in SMEs. The regression coefficient for laissez-faire leadership (LF) in Table 4.10 is negative and statistically significant ($\beta = -0.132$, $p = 0.001$), demonstrating that laissez-faire leadership undermines safety culture. This finding aligns with the descriptive data in Table 4.3, which shows that the mean safety culture level ($M = 1.99$) remains below the expected optimum, indicating deficiencies potentially linked to passive leadership. Consistent with Iwaro and Mwansa (2020), who reported a significant negative correlation ($r = -0.52$, $p < 0.01$) between laissez-faire leadership and safety culture, the present result confirms that non-participative leadership behaviours erode accountability and weaken safety systems. Leaders who fail to provide guidance, monitor compliance, or reinforce safety expectations create ambiguity that fosters unsafe practices.

The significant negative coefficient implies that every unit increase in laissez-faire tendencies leads to a corresponding decline in safety culture perception.

This observation parallels Nwankwo (2020), whose qualitative findings from Rivers State SMEs revealed that leadership absenteeism and nonchalance toward safety meetings contributed to diminished employee trust and normalized risk-taking behaviours. The residual statistics in Table 4.8 show that residuals are symmetrically distributed (Mean = 0, SD = 0.411), validating the model's assumptions and confirming the reliability of the statistical inference. This result underscores that passive leadership constitutes a barrier to cultivating a proactive and learning-oriented safety environment.

Moreover, the findings resonate with Adebayo and Oke (2019) and Oyewole et al. (2021), who both emphasized the necessity of active leadership visibility and engagement in Nigerian oil and gas firms. The R^2 value of 0.323 (Table 4.7) reveals that leadership behaviours collectively explain a substantial portion of the variance in safety culture, but laissez-faire practices detract from these gains. This supports Zohar's (2010) assertion that leadership consistency, rather than policy presence, is the linchpin of effective safety climate development. Thus, reducing laissez-faire tendencies is essential for strengthening employee accountability and institutionalizing safety culture within SMEs.

Finally, the histogram and P-P plot (Figures 4.1 and 4.2) indicate that residuals are approximately normal, confirming the robustness of the regression results and minimizing bias in coefficient estimation. Therefore, this study substantiates that laissez-faire leadership poses a detrimental effect on safety performance, reinforcing previous empirical evidence that passive supervision leads to poor compliance, low morale, and weakened safety engagement.

The multiple regression results indicated that leadership styles collectively explained 32.3% of the variance in safety culture ($R^2 = 0.323$, $F(3,462) = 73.571$, $p < 0.001$). Among the predictors, transformational leadership had the strongest positive influence ($\beta = 0.499$, $p < 0.001$), followed by a weak but positive transactional leadership ($\beta = 0.072$, $p = 0.073$), while laissez-faire leadership exerted a significant negative influence ($\beta = -0.132$, $p = 0.001$). These results confirm that leadership style is

a key determinant of safety culture, with transformational leadership emerging as the most critical factor.

This finding resonates closely with Adebayo and Oke (2019), who reported a similar predictive strength ($\beta = 0.58$, $p < 0.001$) for transformational leadership in Nigerian oil and gas firms. The present study's results extend these findings by validating the predictive power of leadership styles within the SME context. Similarly, Oyewole et al. (2021) demonstrated that leadership commitment significantly predicted safety compliance and hazard reporting, accounting for nearly half of the variance in safety culture among Rivers State SMEs.

The negative predictive contribution of laissez-faire leadership parallels findings by Iwaro and Mwansa (2020) and qualitative insights by Nwankwo (2020), both of which emphasize that leadership disengagement erodes trust and accountability, undermining safety management systems. Furthermore, Neal and Griffin (2006) and Zohar (2010) underscored that leadership influence is not only direct but also sustained over time through consistent reinforcement of safety priorities. Thus, leaders who model safe behaviours and reward compliance strengthen both the immediate and long-term aspects of organizational safety culture.

Overall, the predictive analysis underscores that leadership style is not merely a correlational factor but a causal determinant of safety culture quality. By demonstrating statistical and theoretical coherence with global and local findings, this study reinforces the proposition that improving safety culture in Nigerian SMEs requires deliberate investment in leadership development, safety communication, and evidence-based managerial training.

VI. CONCLUSION

This study concludes that leadership behaviour is a critical determinant of safety culture in small and medium-scale oil and gas service companies in Rivers State. Transformational leaders those who inspire, motivate, and engage employees create an environment where safety becomes a shared value

rather than a mere compliance requirement. Transactional leadership contributes positively by reinforcing safe practices through structured monitoring and reward systems, although its impact is limited compared to transformational leadership. Conversely, laissez-faire leadership erodes safety culture by fostering disengagement, ambiguity, and a lack of accountability. The study therefore establishes that the presence of active, visible, and participatory leadership significantly improves employees' attitudes toward safety compliance and proactive behaviour. The findings align with global empirical evidence (Barling et al., 2002; Kelloway et al., 2005; Iwaro & Mwansa, 2020; Adebayo & Oke, 2019) that emphasizes leadership as the foundation of an effective safety management system.

VII. RECOMMENDATIONS

- i. Promote Transformational Leadership Development: Companies should invest in leadership training programs that build transformational competencies such as communication, vision sharing, empathy, and motivational engagement to strengthen safety culture and organizational commitment.
- ii. Institutionalize Structured Reward Systems: Elements of transactional leadership, such as contingent rewards and performance-based recognition, should be systematically incorporated into safety management systems to reinforce compliance and motivate adherence to safety protocols.
- iii. Discourage Laissez-Faire Practices: Management should monitor and address passive leadership behaviours by setting clear accountability standards for supervisors and ensuring continuous oversight of safety activities at all operational levels.
- iv. Enhance Leadership Visibility and Engagement: Leaders and supervisors should regularly participate in safety meetings, conduct site inspections, and provide real-time feedback on safety performance to demonstrate commitment and influence employee behavior.
- v. Integrate Safety Leadership into Organizational Policy: The concept of safety leadership should be formally embedded in the company's policies,

performance appraisal systems, and key performance indicators (KPIs) to ensure sustainability and alignment with corporate goals.

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