

Safety Compliance and Performance of Nigerian Breweries in South East Nigeria

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Abstract

This study examined the adherence to safety regulations and workplace safety practices at Nigerian Breweries in South East Nigeria. It aimed to determine the relationship between safety training and organizational output, as well as the effect of company safety policies on reducing workplace accidents. Data were collected using structured questionnaires. The study population consisted of 1,799 employees, with 261 completed questionnaires returned. The sample size of 318 was determined using the Freund and Williams formula. Data were analyzed, and hypotheses were tested using the Z-test. The results indicated that safety training had a significant positive relationship with organizational output, $Z = 12.194, p < .05$, and that management's safety policies were significantly associated with a reduction in workplace accidents, $Z = 11.823, p < .05$. The study concluded that safety training and effective safety policies contribute to higher productivity and fewer accidents. It is recommended that Nigerian Breweries in South East Nigeria continuously improve and update their safety training programs to enhance operational performance.

Keywords: Workplace safety, Safety training, Safety compliance, Organizational performance, Accident prevention.

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Introduction

The industrial age saw a growth in large-scale production and brewing, sectors that naturally involve risks due to heavy machinery, chemical handling, and shipping. Worldwide, large brewing businesses have implemented strong safety plans and strategies to improve safety, reduce accidents, and enhance overall performance. These safety measures are now essential for worker health, organizational output, and competitiveness.

Safety compliance includes the rules and actions a business takes to meet required safety standards and ensure the safety of workers, the environment, and surrounding areas. For Nigerian Breweries Plc (NB), especially in southeastern Nigeria, safety compliance has multiple aspects. It encompasses worker health and safety at the brewery, food and product safety, environmental protection, and adherence to Nigerian and international regulations (Ezeoke et al., 2020; Egwim et al., 2024; Otitolaiye et al., 2023; Chinweze et al., 2025).

The brewing industry has become a major manufacturing sector globally. Companies operate large-scale production, packaging, and distribution activities that carry significant safety risks, such as chemical handling, heavy equipment use, and falls. Studies in developed countries indicate that effective safety compliance through training, personal protective equipment, and safety programs—reduces accidents, improves operational efficiency, lowers costs, and increases worker satisfaction. A 2024 safety report from a West African brewery highlighted that achieving zero injuries and fostering a strong safety culture helps a company stand out.

In Nigeria, occupational health and safety standards are receiving increasing attention, particularly in manufacturing. Research shows that in Nigerian factories, a safety-oriented culture, management initiatives, and adherence to safety regulations are linked to better safety outcomes (Otitolaiye et al., 2019). Additionally, compliance with safety rules and safe practices influences overall business performance (Oluwafemi & Okon, 2020). A study of two breweries in Enugu State found that while 97.4% of employees had access to safety tools, only 67.3% used them consistently. This indicates that while tools are available, they are not always utilized effectively (Ezeoke et al., 2020).

In southeastern Nigeria, where NB operates, safety compliance and organizational performance are critically important. Factories in this region face challenges such as inadequate infrastructure, the need for worker training, and supply chain constraints, which can increase safety risks. However, current studies provide limited insight into how safety compliance in NB's southeastern operations affects financial and operational performance. Existing research emphasizes that a strong safety culture and management strategies are key to organizational success in the beverage industry, but regional analyses are scarce.

Nigerian Breweries has shown strong growth and effective management nationally, which offers optimism for its operations in the Southeast. Nevertheless, addressing regional challenges is essential for sustained efficiency, cost management, and effective distribution. This will support profitability and contribute to the local economy (Nairametrics, 2025).

Considering historical manufacturing risks, contemporary global safety practices, and evolving regulations and research in Nigeria, NB's southeastern operations provide an ideal context to study the relationship between safety compliance and business performance. Therefore, this study investigates how NB adheres to safety regulations in its Southeast operations and how this compliance affects organizational outcomes.

Statement of the study

Nigerian Breweries Plc, like other manufacturers, should aim for a workplace where safety rules are consistently followed. This protects workers from occupational hazards, maintains smooth production processes, and supports the company's financial performance. Proper adherence to safety regulations, effective training, the use of safety equipment, and vigilant monitoring can prevent accidents, improve employee productivity, and enhance the company's reputation.

In practice, safety practices at Nigerian Breweries in South East Nigeria are not always consistent or fully implemented. Research indicates that in large beverage factories, some workers may fail to follow safety protocols due to inadequate enforcement, insufficient training, or lack of awareness about workplace hazards. This can result in accidents, equipment damage, reduced output, and potential legal issues.

If these problems are not addressed, they could negatively affect Nigerian Breweries in multiple ways. First, an increase in workplace accidents and injuries may lead to lost work time, higher medical expenses, and compensation claims. Second, production inefficiencies could compromise product quality and disrupt supply, thereby reducing profits. Third, a poor safety record could damage the company's reputation, reducing trust among customers and investors. Finally, failure to comply with national and international safety regulations could result in fines, further impacting operational efficiency and financial performance. Therefore, this study aims to examine the level of safety compliance and its effect on organizational performance at Nigerian Breweries in South East Nigeria.

Objectives of the study

The main objective of the study was to evaluate the Safety Compliance and Performance of Nigerian Breweries in South East Nigeria. The specific objectives were to:

- i. Assess the relationship between safety training programs and Output of Nigerian Breweries in South East Nigeria.
- ii. Determine the Relationship between management safety policies and the reduction of accidents of Nigerian Breweries in South East Nigeria.

Research Questions

The following research questions guided the study

- i. What is the relationship between safety training programs and Output of Nigerian Breweries in South East Nigeria?
- ii. What is the Relationship between management safety policies and the reduction of accidents of Nigerian Breweries in South East Nigeria.

Statement of the Hypotheses

The following Hypotheses guided the study

- i. Safety training programs has significant relationship with Output of Nigerian Breweries in South East Nigeria.
- ii. Management safety policies has significant relationship with the reduction of accidents of Nigerian Breweries in South East Nigeria.

Review of Related Literature

Conceptual Review

Safety Compliance

Safety compliance refers to adherence to legal and regulatory requirements. This includes national laws, regulations, and industry standards regarding workplace safety, environmental protection, and product safety. For example, the Nigerian manufacturing sector is governed by laws that mandate compliance with Occupational Health and Safety (OHS) legislation (Chinweze et al., 2025).

For Nigerian Breweries Plc, safety compliance is crucial for ensuring safe production, employee well-being, environmental protection, and maintaining a strong brand reputation. The company has established policies and systems aligned with both legal and international standards and has publicly committed to operating safely. However, a closer examination of its South-East operations reveals ongoing challenges related to employee behavior, organizational culture, infrastructure, and enforcement of rules.

Enhancing worker behavior, better controlling risks associated with specific hazards, increasing transparency, and strengthening the implementation of corporate systems locally are essential for improving safety compliance in the region. By addressing these areas, Nigerian Breweries can ensure that its South-East plants not only meet minimum legal standards but also serve as models of best practices in safety (Ezeoke et al., 2020; Egwim et al., 2024; Otitolaiye et al., 2023; Chinweze et al., 2025).

Components of Safety Compliance used in the study

Safety Training Programs

Safety training programs in breweries are educational initiatives designed to equip brewery workers with the knowledge, skills, and behaviors needed to identify, handle, and mitigate workplace hazards associated with brewing. These programs typically cover hazard recognition, proper use of personal protective equipment (PPE), chemical and equipment safety, emergency response procedures, standard operating procedures (SOPs), and fostering a safety culture (Mobosi, 2025).

Training must address the specific risks of brewery operations, such as boiling, carbonation, cleaning chemicals, and mechanical equipment. The Brewers Association emphasizes that breweries should implement safety programs targeting industry-specific hazards (Brewers Association Safety Subcommittee, 2022). Hands-on workshops, simulations, and visual learning techniques enhance retention and encourage behavioral change. For example, visual training in Nigerian breweries has been shown to improve safety knowledge and practices (Adepoju, 2019). Effective training should be ongoing, incorporating refresher courses, leadership involvement, employee participation, and assessment of training outcomes (Albert & Routh, 2021). Overall, for a brewery to maintain a safe environment, training programs must be relevant, practical, and embedded within a broader organizational commitment to safety.

Management Safety Policies

Management safety policies in breweries are formal rules, procedures, and commitments made by senior management to guide safe operations, risk management, and worker protection within brewery plants. These policies establish a framework to ensure leadership accountability, resource allocation, clear communication of safety expectations, and regular monitoring of safety performance (Ajmal et al., 2022).

In breweries, where operations involve handling ingredients, fermentation, high-temperature processes, pressurized containers, cleaning chemicals, and packaging machinery, management safety policies must explicitly address industry-specific hazards. Such policies typically include the company's safety vision and goals, definitions of roles and responsibilities (especially management commitment), procedures for identifying and controlling hazards, use of PPE, emergency response plans, and mechanisms for continuous review and improvement. Management safety policies also provide a foundation for a safe and healthy organizational culture by setting expectations, providing resources for training and inspections, encouraging employee participation in safety decisions, and holding all personnel accountable. Rahman et al. (2022) note that effective safety management depends on policy design, worker involvement, leadership communication, and consistent enforcement of safety rules.

Performance

Performance refers to the extent to which a company achieves its operational, financial, market, and organizational objectives. It reflects a company's ability to deliver value, remain competitive, and sustain growth. In a brewery, performance includes production efficiency, output quantity, reduction of waste or downtime, equipment utilization, and time to market.

Research indicates that implementing smart manufacturing technologies, such as IoT and digital automation, significantly enhances operational efficiency by reducing bottlenecks, shortening lead times, and improving productivity (Nimbalkar, 2020). Key indicators of financial performance include profitability, return on investment, cost control, and cash flow. A study of Nigerian breweries found strong correlations between cost control/cash management and earnings per share, highlighting the link between management practices and financial outcomes (Chuku, 2022).

Market and strategic performance encompass market share, customer satisfaction, brand strength, product development, and responsiveness to market changes. For example, organizational performance in the Nigerian brewery sector is reflected in increased market share, customer loyalty, and employee satisfaction (Kiarie & Nderui,

2024). Breweries also evaluate performance through operational metrics such as process efficiency, quality management, inventory reliability, and strategic alignment. A study in southwest Nigeria found that effective inventory management had a significant impact on brewery performance (Alo & Lugard, 2024).

Components of Performance used in the study

Output

Output is the total amount of goods produced. For example, it can be the volume of beer or malt beverages produced over a specific period. Output includes the physical units produced and can also be expressed in monetary terms (e.g., sales) when needed for broader analyses.

In a brewery, output depends on factors such as raw material input, production capacity, machine efficiency, worker productivity, and operational conditions. Higher output means the brewery produces more product (e.g., liters of beer ready for sale) within the same timeframe, using the same or fewer resources. Output should be considered alongside input to understand production efficiency.

Monitoring output is crucial in a brewery because it informs key business metrics, drives revenue, affects cost per unit, reflects equipment and process performance, and serves as a basis for measuring productivity (output relative to inputs). In summary, in breweries, “output” refers to the volume or value of products produced and is a critical metric for assessing the health and performance of production operations (Chukwuedo et al., 2024; Olarewaju et al., 2023; Alugbua et al., 2023; Kadiri et al., 2021)

Reduction of accidents

In a brewery, cutting down on accidents means making systematic efforts and achieving positive results, helping lower the number and severity of workplace events like slips, falls, equipment issues, chemical contact, or injuries that harm workers or cause production to stop. Using digital human-modeling and assistive devices greatly lowered the risk of lower-back and muscle injuries (Ji et al., 2023).

Carlsberg Group shows how big brewery operations went over 1,000 days without accidents at multiple plants by starting a “ZERO accidents” culture, with strong leadership commitment, hazard-management systems, and active employee involvement (Carlsberg Group, 2021). Better safety practices in local breweries, such as knowing about dangers, using protective equipment, and having safe work routines, are connected to fewer accidents (Azuonwu & Onyije, 2024).

To sum up, accident reduction isn’t a one-time change but a continuous activity that includes technology, ergonomics, culture, training, and management systems. When well done in breweries, these efforts lead to lower injuries, less downtime, better attitudes, and safer operations.

Theoretical Framework

The study was anchored on Input-Process-Output (IPO) theory by Victor Olabode Otitolaiye and Fadzli Shah Abd Aziz (2025).

The Input-Process-Output (IPO) model provides a useful theoretical framework for analysing how organisational factors (inputs) translate into processes (through safety systems, culture, and behaviours) and finally yield outcomes (safety performance, reduced accidents, improved productivity). For example, in the Nigerian context, the study by Victor Olabode Otitolaiye and Fadzli Shah Abd Aziz (2025) applied this model to Nigerian power and electricity distribution companies: management commitment, safety communication, employee involvement (inputs) → improved working conditions (process) → higher safety performance (output).

Applying the IPO model to Nigerian Breweries in the South East:

- i. Inputs: Management safety policies, regulatory compliance (e.g., with Standards Organisation of Nigeria), resource allocation for safety, safety training programmes, safety culture (management commitment,

incentives, sanctions). Research in Nigeria shows a strong linkage between safety sanctions, incentives, safety climate, and compliance behaviour.

- ii. Processes: These inputs feed into processes such as hazard identification, worker training, supervision and monitoring, safety communications, PPE provision, safety audits, behavioural observation, and worker involvement. For example, in food & beverage manufacturing in Nigeria, organisational safety culture plus a robust safety management system (process) mediated the link to safety performance.
- iii. Outputs: The output here is safety performance: fewer accidents, improved compliance (procedures followed, near misses reported), increased productivity, lower downtime, and better operational performance. For instance, improved working conditions (process) led to better safety performance (output) in Nigerian firms.

Thus, the IPO model suggests that for Nigerian Breweries in the South East to achieve high safety performance, the company must ensure strong safety-related inputs, convert them into effective safety processes, and thereby realise positive outputs.

Why this theory is appropriate

- i. It captures the multi-stage nature of safety compliance: not just “we have a policy” (input), but how it is implemented (process) and what it achieves (output).
- ii. It aligns with empirical findings in Nigeria’s manufacturing/food & beverage sectors, showing that safety culture and management systems mediate performance.
- iii. It is practical for analysing a specific plant (e.g., in the South East) by diagnosing where in the chain problems might lie: weak input (poor policy or management commitment), weak process (poor training or monitoring), or weak output (accidents still happening) — and thus guiding improvement.

Empirical Review

Umoh & Iwezaasi (2019) examined safety practices and employee output in Nigerian manufacturing firms. The article explores how safety practices relate to employee output. They developed three hypotheses and a questionnaire, distributing it to 330 people in ten Port Harcourt manufacturing firms. Data from 292 returned questionnaires were examined. The investigation found a link between providing proper safety gear and employee work output, between legal safety policies and employee production, and between employers following safety rules and employee man-hours. These results back up the claims of Curry et al. (2004), Haddel and Ojikutu (1989), Iwundu (1986), and Eninger (1983), suggesting that workplace safety affects how much effort workers put into production.

Azuonwu & Onyije (2024) did a study on dangers and safety in breweries of Rivers State, Nigeria. The research looked into dangers and safety measures taken by brewery workers in Rivers State. Six objectives were tested at a 0.05 level of confidence. The research used a descriptive survey design with a mixed-method approach. From the brewery business, they took a sample of 671 employees and 8 participants, out of a total employees of 1,600 workers, using Fisher's formula. Data was gathered using a questionnaire and an interview, with reliability measured at 0.84. The results showed that workers had minimal exposure to hazards, and safety measures were generally followed. The correlation coefficient was -0.05, showing almost no association between hazard exposure and safety measures.

Onuorah et al. (2020) researched hazard control in Nigerian Breweries, Plc, Enugu. The research studied hazard control and employee service at Nigerian Breweries, finding that health monitoring helps workers plan and arrange their work. In addition, health and safety committees push employees to finish assignments on time. The study adopted descriptive design. Out of 474 workers, a sample of 217 was selected using stratification. Descriptive statistics was used to analyze data. The Pearson correlation was used to find link between hazard control and work done by employee.

Ayodele & Olubayo (2019) assessed worker safety education and training as a way to cut down on accidents in Lagos State industries. The study used a descriptive survey design, selecting 20 managers with an average of 13.5 years of work experience from 10 industries. Data was gathered with a questionnaire and accident data from before and after safety education and training programs. The results showed no link between pre- and post-intervention accident data, meaning that safety education and training did not lead to accident reduction.

Chinda et al. (2024) studied safety planning and employee output in Lagos State manufacturing firms. The research looked at how safety training affected how well employees showed up for work and how personal safety equipment affected job commitment. They distributed questionnaires to 353 people across four firms in Lagos State. The findings showed that safety training improved worker presence on time and personal safety equipment improved employee's dedication.

Akuezue and Ugoani (2016) examined health and safety education at the Nigerian Bottling Company Ltd. The research showed high needs for health and safety education. They distributed surveys to 100 women and 200 men, ages 21 to 60, and examined the data using descriptive and Chi-Square tests.

Popo and Elechi (2023) researched what predicts safety performance of brewery workers in Rivers State, Nigeria. The research adopted descriptive survey design. With a reliability coefficient of 0.98, Data analysis was done with the aid of the statistical product for service solution (SPSS) version 25.0 using percentage, mean and regression analysis at 0.05 alpha level. The results showed a link between safety practices and work experience, training, and job requirements.

Afube (2019) evaluated hazards and safety measures in the food and beverage industry in Nigeria. The study identified major hazards like working at height, high voltage areas, and loud noise, machines, etc. The level of knowing on safety hazards amongst the workers was statistically. The research suggests there is need to assess the risks linked with high-ranking hazards and build a risk control framework based on ISO 31000.

Mgbemena (2022) studied how workplace design affects employee output in Nigerian Breweries Plc, Ama, Enugu State, Nigeria. The research used percentages, correlations, and regression analysis. The results suggest that good workplace design and company welfare programs have a positive effect on how well staff members do their jobs.

Ezeoke et al. (2020) researched if beverage workers in Enugu state Nigeria follow health and safety rules. The research found that safety device was reportedly followed. However, consistent following of safety devices relates to aspects such as age, gender, how long one has worked, etc.

Summary of Literature Review

The reviewed studies were conducted outside the setting of Safety Compliance and Performance of Nigerian Breweries in South East Nigeria, and did not specifically tackle the safety training programs and Output, management safety policies and the accident reduction of Nigerian Breweries in South East Nigeria. Also, previous studies commonly analytical tools while the research distinguishes itself by utilizing the Z-test for hypothesis testing. This research aims to address the gap by specifically analyzing Safety Compliance and Performance of Nigerian Breweries in South East Nigeria.

Methodology

This study focused on four breweries in South East Nigeria with large staffs and long histories. The study determined the sample size to be 318. A survey design was used, with questionnaires and interviews serving as tools for collecting data. Data was analyzed by mean score and Z – test was used to test the hypotheses with aid of Special Package for Statistical Software (SPSS).

Data presentation

The relationship between safety training programs and Output of Nigerian Breweries in South East Nigeria

Table 1: Responses on the relationship between safety training programs and Output of Nigerian Breweries in South East Nigeria

		5 SA	4 A	3 N	2 DA	1 SD	ΣFX	- X	SD	Decision
1	Safety training programs in Nigerian Breweries' South East plants help workers understand and follow proper safety procedures, reducing accidents and production downtime.	860 172 65.9	220 55 21.1	69 23 8.8	10 5 1.9	6 6 2.3	1165 261 100%	4.46	.905	Agree
2	Well-trained employees tend to be more confident and efficient in handling equipment, which directly improves overall output and product quality.	865 173 66.3	240 60 23.0	42 14 5.4	6 3 1.1	11 11 4.2	1164 261 100%	4.46	.966	Agree
3	Continuous safety education fosters a culture of responsibility, where employees actively prevent hazards that could disrupt operations.	905 181 69.3	204 51 19.5	18 6 2.3	24 12 4.6	11 11 4.2	1162 261 100%	4.45	1.039	Agree
4	The company's investment in safety programs leads to fewer workplace injuries, minimizing absenteeism and maintaining steady production levels.	985 197 75.5	172 43 16.5	21 7 2.7	10 5 1.9	9 9 3.4	1197 261 100%	4.59	.910	Agree
5	Overall, effective safety training programs have a positive correlation with higher productivity and sustainable output in Nigerian Breweries' South East operations.	980 196 75.1	184 46 17.6	30 10 3.8	6 3 1.1	6 6 2.3	1206 261 100%	4.62	.812	Agree
Total Grand mean and standard deviation							4.516	0.9264		

Source: Field Survey, 2025

Table 1, 227 respondents out of 261 representing 87 percent agreed Safety training programs in Nigerian Breweries' South East plants help workers understand and follow proper safety procedures, reducing accidents and production downtime with mean score 4.46 and standard deviation of .966. Well-trained employees tend to be more confident and efficient in handling equipment, which directly improves overall output and product quality 233 respondents representing 89.3 percent agreed with mean score of 4.46 and standard deviation of .966. Continuous safety education fosters a culture of responsibility, where employees actively prevent hazards that could disrupt operations232 respondents representing 88.8 percent agreed with mean score of 4.45 and standard deviation of 1.039. The company's investment in safety programs leads to fewer workplace injuries, minimizing absenteeism and maintaining steady production levels240 respondents representing 92 percent agreed with mean score of 4.59 and .910. Overall, effective safety training programs have a positive correlation with higher productivity and sustainable output in Nigerian Breweries' South East operations 242 respondents representing 98.1 percent agreed with a mean score of 4.62 and standard deviation .812.

The Relationship between management safety policies and the reduction of accidents of Nigerian Breweries in South East Nigeria

Table 2: Responses on the relationship between management safety policies and the reduction of accidents of Nigerian Breweries in South East Nigeria

		5 SA	4 A	3 N	2 DA	1 SD	ΣFX	- X	SD	Decision
1	Management safety policies in Nigerian Breweries' South East plants play a crucial role in setting clear guidelines that prevent workplace accidents.	955 191 73.2	168 42 16.1	39 13 5.0	14 7 2.7	8 8 3.1	1184 261 100%	4.54	.938	Agree
2	Strong enforcement of these policies ensures that all employees adhere to safety standards, thereby minimizing risky behaviors and unsafe practices.	450 90 34.5	848 212 46.4	96 32 12.3	18 9 3.4	9 9 3.4	1421 261 100%	4.05	.957	Agree
3	Regular monitoring and review of safety policies by management help identify potential hazards early and implement corrective measures promptly.	465 93 35.6	496 124 47.5	93 31 11.9	6 3 1.1	10 10 3.8	1070 261 100%	4.10	.927	Agree
4	When management demonstrates commitment to safety through consistent policy implementation, employees are more likely to prioritize safety in their daily activities.	450 90 34.5	492 123 47.1	96 32 12.3	18 9 3.3	7 7 2.7	1063 261 100%	4.07	.919	Agree
5	Consequently, effective management safety policies contribute significantly to the reduction of workplace accidents and promote a safer, more productive working environment in Nigerian Breweries.	435 87 33.3	464 116 44.4	111 37 14.2	20 10 3.8	11 11 4.2	1041 261 100%	3.99	1.006	Agree
Total Grand mean and standard deviation								4.15	0.9494	

Source: Field Survey, 2025

Table 2, 233 respondents out of 261 representing 89.3 percent agreed that Management safety policies in Nigerian Breweries' South East plants play a crucial role in setting clear guidelines that prevent workplace accidents with mean score 4.54 and standard deviation of .938. Strong enforcement of these policies ensures that all employees adhere to safety standards, thereby minimizing risky behaviors and unsafe practices 302 respondents representing 80.9 percent agreed with mean score of 4.05 and standard deviation of .957. Regular monitoring and review of safety policies by management help identify potential hazards early and implement corrective measures promptly 217 respondents representing 83.1 percent agreed with mean score of 4.10 and standard deviation of .927. When management demonstrates commitment to safety through consistent policy implementation, employees are more likely to prioritize safety in their daily activities213 respondents representing 81.6 percent agreed with mean score of 4.07 and .919. Consequently, effective management safety policies contribute significantly to the reduction of workplace accidents and promote a safer, more productive working environment in Nigerian Breweries 203 respondents representing 77.7 percent agreed with a mean score of 3.99 and standard deviation 1.006

Test of Hypotheses

Test of Hypotheses One: Safety training programs has significant relationship with Output of Nigerian Breweries in South East Nigeria.

Table 3: One-Sample Kolmogorov-Smirnov Test

	<p>Safety training programs in employees Nigerian Breweries' South East plants help workers understand and follow proper safety procedures, reducing accidents and production downtime.</p> <p>Well-trained employees tend to be more confident and efficient, which directly improves overall output and product quality.</p> <p>Continuous safety education fosters a culture of responsibility, where employees actively prevent hazards that could disrupt operations.</p> <p>The company's investment in safety programs leads to fewer workplace injuries, minimizing absenteeism and maintaining steady production levels.</p> <p>Overall, effective safety training programs have a positive correlation with higher productivity and sustainable output in Nigerian Breweries' South East operations.</p>				
N		261	261	261	261
Uniform Parameters ^{a,b}	Minimum	1	1	1	1
	Maximum	5	5	5	5
Most Extreme Differences	Absolute	.659	.663	.693	.755
	Positive	.023	.042	.042	.034
	Negative	-.659	-.663	-.693	-.755
Kolmogorov-Smirnov Z		10.647	10.708	11.204	12.194
Asymp. Sig. (2-tailed)		.000	.000	.000	.000

a. Test distribution is Uniform.

b. Calculated from data.

Source: Researchers' computation from Field Survey Data, 2025

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnov Z – value ranges from 10.647 < 12.194 and on Asymp. Significance of 0.000, the responses from the respondents as displayed in the table was normally distributed. This affirmed the assertion of most of the respondents that Safety training programs had significant positive relationship with Output of Nigerian Breweries in South East Nigeria

Decision

Furthermore, comparing the calculated Z-value ranges $10.647 < 12.194$ against the critical Z-value of .000(2-tailed test at 95percent level of confidence) the null hypothesis was rejected. Thus, the alternative hypothesis was accepted which states that Safety training programs had significant positive relationship with Output of Nigerian Breweries in South East Nigeria

Test of Hypotheses Two: Management safety policies have significant relationship with the reduction of accidents of Nigerian Breweries in South East Nigeria.

Table 4: One-Sample Kolmogorov-Smirnov Test

	Management safety policies in Nigerian Breweries' South East ensures that plants play a crucial role in setting clear safety guidelines that prevent workplace accidents.	Strong enforcement of these policies ensures that all employees adhere to safety standards, thereby minimizing risky behaviors and unsafe practices.	Regular monitoring and review of safety policies help identify potential hazards early and implement corrective measures promptly.	When management demonstrates commitment to safety through consistent policy implementation, employees are more likely to prioritize safety in their daily activities.	Consequently, effective management safety policies contribute significantly to the reduction of workplace accidents and promote a safer, more productive environment in Nigerian Breweries.
N	261	261	261	261	261
Uniform Parameters ^{a,b}	Minimum	1	1	1	1
	Maximum	5	5	5	5
Most Extreme Differences	Absolute	.732	.558	.581	.566
	Positive	.031	.034	.038	.027
	Negative	-.732	-.558	-.581	-.566
Kolmogorov-Smirnov Z		11.823	9.022	9.393	9.145
Asymp. Sig. (2-tailed)		.000	.000	.000	.000

a. Test distribution is Uniform.

b. Calculated from data.

Source: Researchers' computation from Field Survey Data, 2025

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e $Z_{cal} > Z_{critical}$), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnov Z – value ranges from $8.327 < 11.823$ and on Asymp. Significance of 0.000, the responses from the respondents as displayed in the table was normally distributed. This affirmed the assertion of most of the respondents that Management safety policies had significant positive relationship with the reduction of accidents of Nigerian Breweries in South East Nigeria.

Decision

Furthermore, comparing the calculated Z- value ranges $8.327 < 11.823$ against the critical Z- value of .000(2-tailed test at 95percent level of confidence) the null hypothesis was rejected. Thus, the alternative hypothesis was accepted which states that Management safety policies had significant positive relationship with the reduction of accidents of Nigerian Breweries in South East Nigeria.

Discussion of Findings

From the results of hypothesis one, the calculated Z-value ranges from 10.647 to 12.194 against the critical Z-value of 0.000, which implies that safety training programs had a significant positive relationship with the output of Nigerian Breweries in South East Nigeria. In support of this result, Umoh and Lezaasi (2019) conducted a study on safety practices and the productivity of employees in manufacturing firms in Nigeria. The study revealed that there is a positive and significant relationship between the provision of adequate safety equipment and employee work output; a significant relationship exists between legal institutional safety policies and employee production outputs; and a significant relationship was found between employers' compliance with safety rules and the man-hours contributed by employees in the production process.

Azuonwu and Onyije (2024) conducted a study on occupational hazards and safety practices among brewery workers in Rivers State, Nigeria. The results showed that workers' exposure to physical, biological, ergonomic, mechanical, chemical, and psychosocial hazards was low, and the grand mean of 2.65 ± 0.34 indicated a high extent of safety practices among brewery workers. The results illustrated a correlation coefficient of $r = -0.05$, indicating a very low relationship between hazard exposure and safety practices.

Onuorah et al. (2020) conducted a study on the management of work hazards in organizations, focusing on Nigerian Breweries Plc, Enugu. The study found that occupational health surveillance enables employees to plan and undertake work in an organized manner while identifying priorities. Additionally, health and safety committees ensure that employees often put in extra effort to complete assignments on time.

From the results of hypothesis two, the calculated Z-value ranges from 8.327 to 11.823 against the critical Z-value of 0.000, which implies that management safety policies had a significant positive relationship with the reduction of accidents at Nigerian Breweries in South East Nigeria. In support of this result, Akuezue and Ugoani (2016) conducted a study on health and safety education needs in the bottling industry in Nigeria. The results showed a high degree of health and safety education needs in Nigerian Bottling Company Ltd.

Popo and Elechi (2023) conducted a study on predictors of occupational safety practices among brewery industry workers in Rivers State, Nigeria. The study revealed that there was a significant relationship between occupational safety practices and other factors such as years of work experience, training, and job specification.

Conclusion

The study concluded that safety training programs and management safety policies had a significant positive relationship with output and the reduction of accidents at Nigerian Breweries in South East Nigeria. Fostering a robust safety management system is indispensable for Nigerian Breweries in the South East, as it ensures not only regulatory compliance but also sustainable operational performance, improved productivity, and a safer working environment for all employees. Strong management commitment, active worker participation, and continuous monitoring remain the cornerstones for achieving excellence in both safety compliance and overall organizational performance.

Recommendations

Based on the findings, the following recommendations are proffered

- i. To enhance the output of Nigerian Breweries in South-East Nigeria, it is recommended that the company strengthen and regularly update its safety training programs. Well-structured training improves workers' awareness of hazards, promotes correct operational procedures, and reduces accidents and downtime. As a result, production processes become more efficient, leading to higher output while maintaining a safe working environment.
- ii. It is recommended that Nigerian Breweries in South-East Nigeria enforce and regularly review comprehensive management safety policies. Clear, well-communicated policies ensure that employees understand safety expectations, follow standardized procedures, and adopt best practices, which collectively reduce the frequency and severity of workplace accidents.

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