

Employee's Involvement and Planning for an Injury Free Workplace Across Manufacturing Companies in Niger Delta

Avwata, Marvel Okeroghene; Ugbebor N. John; Chinemerem, Patricks

Center for Occupational Health, Safety and Environment

Faculty of Engineering

University of Port Harcourt, Port Harcourt,

Rivers State, Nigeria

DOI: 10.56201/ijemt.v9.no1.2023.pg1.17

ABSTRACT

This study examined the extent of employee's involvement and planning for an injury free workplace across manufacturing companies in Niger Delta. Descriptive research design was adopted for the study. The population for this study comprised of Nine (9) manufacturing firms—one from each of the Niger Delta's states; Akwa Ibom, Bayelsa, Delta, Edo, Cross River, Imo, Rivers, and Ondo, were selected for the research. The sample of this study was sample size for the study was using the Taro Yamane formula. The instrument for data collection was a structured questionnaires titled Employee's Involvement and Planning for an Injury Free Workplace Across Manufacturing Companies Questionnaire. Mean and standard deviation were used to answer the research questions, while a Pearson Product Moment Correlation coefficient was used to test the hypotheses at 0.05 alpha level of significance. Findings from the study showed that there is a significant association between planning and safety performance was supported [(P =.000) p0.05] amongst others. According to the study's results, Niger Delta industrial enterprises had a high level of worker engagement in planning for an injury-free workplace. Finally, the research made the suggestion that the management of manufacturing organizations should make sure that managers and workers who disregard the organization's safety and health rules and procedures are subjected to disciplinary measures and other consequences.

Keywords: Employee's involvement, planning, injury free workplace, manufacturing companies, Niger Delta

INTRODUCTION

Background to the Study

Empowering the staff, fostering long-term worker commitment, and having strong management employee interactions are all deemed essential since each of these elements has been regularly associated with lower injury rates (Ayers et al., 2013; Shannon et al., 1996). To put it another way, encouraging management to encourage employee involvement in safety-related decision-making and activities would enhance the impression of the business's enforcement of an injury-free workplace, which would indirectly lead to enhanced safety performance (Hong et al., 2018).

A range of strategies may be used by managers and safety experts to effectively include and engage staff in safety initiatives (Raines, 2011). Employee involvement is recognized as a crucial need of a safety management system due to its close connection to safety performance. In reality, in order to get ISO 45001 certification, a company must show that employees participate in certain aspects of the safety management system. While changes have an effect on workers' safety and health, this entails talking with them when designing, revising, and implementing safety policies and goals (Raines, 2011).

According to a report by the Institute of Safety Professionals of Nigeria (ISPON), formerly the Nigerian Institute of Safety Professionals (NISIP), "over 11,000 people die from on-the-job accidents each year and a worker is injured every 18 seconds in chemical industries in Nigeria," the situation in Nigeria is critical. In first-world countries, occupational health and safety for workers has improved and is now mostly good.

In order to optimize economic growth among manufacturing enterprises, this study presents safety as a tool. Its goal is to have an influence on Nigeria's sustainable development. It is crucial for businesses to establish a workplace free from incidents since doing so promotes economic development and is in accordance with Sustainable Development Goal No. 8 of the United Nations (UNDP, n.d). For a company to continue operating, survive, and perform at its best, workplace safety is essential (Hassan & Esmail, 2018). According to Okon and Osesie's (2017) analysis of the manufacturing sector's impact on Nigeria's economic development from 1981 to 2015, there is a strong positive association between manufacturing output and the country's economic growth. High accident rates and other indirect costs of accidents might result from improper safety management system implementation, endangering the economy of a country.

Statement of the Problem

Manufacturing is one of the most hazardous industries for occupational accidents (Gunaseelan & Gerald, 2017; Nenonen, 2011). In 2007, there were 667 fatal accidents in the manufacturing sector and 942,000 incidents that resulted in absences of more than three days at businesses in the EU-15 and Norway (Eurostat, 2009). Machinery, sharp items, crushing, falls, and falling objects were prominent accident causes in Turkey's industrial sector (Altunkaynak, 2018). The three biggest risks in the industrial sector are physical, chemical, and psychological ones (Okon & Osesie, 2017)

Despite the stringent standards of the Nigerian Industries Act, occupational accidents are still a common occurrence in Nigerian industrial enterprises, and there is little to no hope for a cure (Akinkunmi, 2016). According to Bayram (2019), occupational illnesses, injuries, and diseases often have devastating effects on staff workers as well as members of their family and friends; frequently, compensation is inadequate to fix the issue. In a research carried out in Delta state, Joyce et al. (2016) found that hand injuries from industrial accidents came in third place. Numerous initiatives have been launched to address the physical harm and fatalities attributable to workplace dangers by implementing standardized occupational health and safety management systems, which are expected to be implemented by every firm. Workplace dangers may be continuously identified and managed via an efficient safety management system. Organizations often place greater emphasis on the SMS's Leadership component while ignoring the need of employee involvement.

Aim and Objectives of the study

This study aims to examine the extent of employee's involvement and planning for an injury free workplace across manufacturing companies in Niger Delta.

The key objectives of the study are to:

1. Determine the impact of workers participation on safety performance across manufacturing companies in Niger Delta.
2. Assess the methodologies of planning for an injury free workplace.
3. Examine the impact of planning on injury prevention.

Research Questions

This study will focus on addressing the following questions in order to fulfill the aim and objectives of the research.

1. How does Workers participation impact on Safety Performance across manufacturing companies in Niger Delta?
2. What are the methodologies of planning for an injury free workplace?
3. What is the impact of planning on injury prevention?

Hypotheses

This research postulates the following hypothesis:

Null Hypothesis (H_{01}):

H_{01} = There is no significant relationship between planning and safety performance

Alternate Hypothesis (H_{A1}):

H_{A1} = There is significant relationship between planning and safety performance

Literature Review

Total Quality Management

A continuous improvement technique called total quality management (TQM) uses a methodology similar to safety management systems but places a greater focus on product quality (Ramesh & Ravi, 2013). In Japan throughout the 1940s, TQM was developed in large part by Deming, Juran, and Feigenbaum (Powell, 1995). TQM is a comprehensive management strategy that emphasizes each employee's entire commitment to maintaining and increasing organizational performance, much like SMSCM and Six Sigma (Al-Dhaafri, et al., 2016). TQM was utilized by businesses in a number of ways as a tool for organizational and service management to improve quality (Khanam et al., 2016). Given the widespread implementation of TQM, organizational managers increasingly find it difficult to remain competitive without offering high-quality products and services. TQM is a contemporary management concept, in accordance with Bajaj et al. (2018), that aids organizational managers in addressing technical and competitive concerns in a global setting.

According to Al-Dhaafri et al. (2016), TQM is an approach to quality improvement that successfully contributes to safety management systems. By putting the TQM concept into

practice, as described by Herrero et al. (2002), a company's management might be improved. Particular attention could be placed on the advancement of safety and environmental management. TQM implementation, in accordance with Thai and Jie (2018), aided transportation businesses in achieving greater standards of performance and quality. The continuous improvement of TQM in organizational activities and operations will meet customer expectations for the production and delivery of products and services, according to O'Neill et al. (2016). Implementing TQM raised organizational performance and innovation, which strengthened a company's overall competitive edge (Albliwi et al., 2015; Valmohammadi & Roshanzamir 2015). To acquire a competitive advantage, organizational managers should use TQM methods and processes (Honarpour et al., 2018). TQM adoption and an organization's performance achievement, according to Jaca and Psomas (2015), are unrelated. Additionally, they found that there is no evidence to support the claim that TQM deployment in firms resulted in enhanced performance.

Process Mapping

Process mapping (PM) is a common strategy for management planning and a vital instrument for process improvement (Rybicka et al., 2015). Additionally, PM has been widely used in a range of industrial and scientific contexts. Process mapping may be evaluated from a systems perspective when seen via the SMSCM, which might provide a visual and in-depth description of organizational workflow (Rohani & Zahraee, 2015). Process mapping was identified by White and Cicmil (2016) as the primary tactic for enhancing quality.

Tyagi et al. (2015) assert that the PM component of a safety management system is helpful for launching fresh organizational development efforts. One of the main challenges managers have when establishing a process improvement program is understanding how to begin the process (Tyagi et al., 2015). PM is the facilitation of beginning points. PM may help make complex organizational processes more visible (Tyagi et al., 2015). To develop efficient process maps for their client organizations, organizational managers may profit from outsourcing PM to outside experts (White & Cicmil, 2016). White and Cicmil (2016) assert that if the main goal of PM is to have a complete knowledge of business processes for quality improvement, the efficacy should be the same regardless of whether a firm chooses to outsource or carry out PM operations domestically. Heinrich (1959) stated that SMSCM may aid academics working on PM projects by allowing them to focus on a detailed understanding of organizational processes and by facilitating the collecting of knowledge resources. The necessity of PM, according to White and Cicmil (2016), prevented certain organizational managers from accessing information resources.

Safety Management Systems

Management safety systems deviate when managers in companies with a recurring accident cycle disagree on how to address safety. There are certain organizations where safety initiatives are adversarial, where training is inconsistent, where disciplinary measures are uneven, where training is reactive as opposed to proactive, and where there is little effort put into continual improvement. When incident rates rise, safety attention rises until incident rates fall, at which time it drops and the cycle starts again (Krause, 1994).

Lack of a safety system may boost accident costs, expose an employer to safety code breaches, increase insurance costs, and make humanitarian considerations less important (Hwang &

Kleiner, 2002). A management safety system is an arrangement of components that work together to accomplish a certain objective, in this instance, reducing workplace injuries (Ohio BWC, 2005). The primary goal of workers' compensation is to avoid accidents, so a management safety system must include creating safety standard operating procedures, inspecting facilities for safety issues, establishing a system for reporting safety hazards, holding employees accountable for safe behavior, and providing them with the equipment and training they need to do their jobs more safely.

➤ **Safety Knowledge**

Safety knowledge is one factor that influences workplace safety (Webb & Morancie, 2015). It is crucial to address safety knowledge as part of organizational learning if we are to increase workplace safety. According to Cechini et al. (2018), a barrier to an organization's capacity to operate safely and provide safe outputs is a lack of safety expertise. Finding safety knowledge is connected to the environment for safety, behaviors that support safety, and outcomes that influence health and injury risks (Liu et al., 2015). The value of safety information in a company affects employee behavior, per US occupational safety and health requirements (Dragano et al., 2015). Employees with a lack of safety competence were more likely to have workplace accidents as a result of noncompliance with safety rules and regulations (Toppazzini & Wiener, 2017). Following safety training, employees were more mindful of safety information than safety behavior (Feng et al., 2016). In light of new safety information, organizational managers were unmotivated to change safety processes (Feng et al., 2016). Managers must become consistent system thinkers and learners in order to apply organizational learning and improve the efficiency and standard of the organization's system (Hoyme, 2015).

➤ **Safety Training**

Because of Heinrich's (1959) SMSM, organizational managers pushed workplace safety training and increased safety awareness (Hughes et al., 2015). Organizations must invest in safety training if they want to increase employee understanding of and commitment to safety (Liu et al., 2015). Employee safety training is crucial to safeguarding workers' overall safety in the workplace (Jonathan & Mbogo, 2016). Training programs are essential for educating employees on safety issues and fostering a safer and healthier work environment (Jonathan & Mbogo, 2016). The study of the importance of employee safety training goes beyond the borders of the US and provides valuable data on the training of individuals with various cultural backgrounds (Fujimoto & EJ Härtel, 2017).

Heinrich suggested both formal and informal staff training (1959). The results of a study by Kim et al. (2017) shown how government safety training programs reduced the frequency of workplace injuries. Kim et al. (2017) assert that in order to assist reduce workplace accidents, managers must ensure that staff members are informed of the laws and regulations controlling workplace safety. Staff members must also follow the guidelines. Further investigation is required, in the opinion of Huang et al. (2016), to ascertain the effects of safety training results on individuals. Searcy, Dixon, and Neumann (2016) looked at particular safety goals in response to conflicting studies on the overall impact of safety training in the workplace. The need for cultural training to promote safe behaviors among workers was noted by Menger et al. (2016) in light of the fluctuating rates of accidents and illnesses. There are particular ways to tailor health and safety teaching for immigrants, according to Menger et al. (2016). The strategies addressed

issues such as understanding workers, offering training materials and procedures, encouraging participation, and evaluating the results (Menger et al., 2016).

Safety Policy and Objectives

The core of a good SMS is its safety policy and goals, which are documented and state the company's commitment to maintaining acceptable safety as well as the SMS's intentions (Smart, 2017). There are four primary components to this SMS component: The management's dedication, the safety team's coordination of emergency response plans, and the SMS documentation (Jazayeri & Dadi, 2017).

The management's commitment guarantees that the required resources are made available for the implementation of SMS, that staff are informed about behavioral expectations, and that processes for reporting accidents and occurrences are followed (Maurino, 2017). The management commitment must be signed by a responsible executive and then distributed to the whole business. The document's responsible executive or management should also ensure that it is accurate and current (Mendonca & Carney, 2017). Leadership is one of the most important factors in good safety performance. Safety should be recognized and given priority in order to improve workplace safety since management support is a crucial component of implementing safety measures (Hamid et al., 2015). Management commitment to safety may be defined as the degree to which management is seen as placing a high premium on safety and communicating and responding to safety issues in an effective manner.

Safety Promotion

Senior leadership in the business actively promotes a growing, healthy safety culture via safety promotion. An organization must always have a safety culture, which should be supported by effective supporting procedures. To develop a safety culture at all organizational levels, safety promotion encompasses training, education, and communication. The SMS framework's safety promotion actions include (1) delivering SMS training, (2) promoting/strengthening a good safety culture, (3) raising system and safety awareness, (4) aligning competence requirements to system needs, and (5) distributing safety lessons learned. Promoting safety is a collective responsibility.

Success in a company requires more than just a stated SMS policy. By demonstrating the organization's safety policy in their day-to-day work and in their one-on-one leadership techniques, management should communicate, strengthen, and stress it (FAA, 2015). Managers are responsible for ensuring that the safety policy is consistently improved and promoted. To encourage safety awareness, workers must get training and education, and all employees should have access to safety information systems as part of the educational strategy.

Effective dissemination of the SMS rules, current procedures, available tools, and other pertinent information is essential for a positive safety culture. The SMS strives to guarantee that critical information is sent and that all workers within a business have enough SMS knowledge. It is important to provide precise descriptions of necessary activities and safety precautions.

Health and Safety Goals for the Manufacturing Sector

One of the most important considerations before beginning any project in the industrial industry is the health and safety of the personnel. This is because manufacturing is a very risky industry that regularly results in accidents, diseases, and injuries all around the globe (Brace et al., 2009; Haris & McCaffer, 2013; Nadhim et al., 2016). Due to the industry's dangerous nature, the various health and safety difficulties, and the necessity to save worker lives, it has become a worldwide imperative that these issues be regularly addressed through effective preventative methods (WHO, 2019).

In light of this, governments all over the globe have rules and regulations in place as previously said, and they work very hard to make sure that enterprises follow by these laws both before and during projects in order to protect the safety of the workforce. New regulations are also being developed specifically for factory safety as the globe advances and manufacturing practices evolve. The Manufacturing and Design Management Regulation (2015) of the Health and Safety Executive is an excellent example since it has a clear objective of making manufacturing facilities a safe place to work. Many industrial organizations throughout the globe are now concentrating on educating workers in health and safety, even while stakeholders have continued to do continuing research on innovative approaches to enhance health and safety within the sector. A Loughborough University report on improving occupational risk management in SME's underlined the need for manufacturing businesses to obtain training on occupational health awareness in order to boost employees' wellbeing in the manufacturing company (Jones et al., 2018). These are all intended to provide workers a safe working environment.

Hazard and Risk Identification and Assessment

ILO (2011) defines a hazard as the fundamental ability or potential of an item to do injury, have bad impacts on someone's health, or cause damage to anything. A hazard is any substance, whether created by nature or by man, that may have an adverse impact on one's health under certain circumstances (Chartres et al., 2019). It might be caused by a chemical, working on a ladder, electricity, a gas cylinder containing pressurized gas, a fire source, or even just a slick floor. Risk is the risk or potential that someone may be hurt, experience negative health consequences as a result of being exposed to a danger, or that something will be broken or lost. Risk and hazard are related by exposure, which may be short-term or long-term.

Every industry and workplace has risks and hazards that might cause accidents or at least increase their likelihood. To minimize such risks and hazards, frequent risk assessment and hazard identification are required. The first step in creating a successful OHS system is identifying, assessing, and monitoring workplace risks (Pretorius, 2013). Identifying and evaluating dangers entails carefully considering what can cause damage to employees and establishing priorities for avoiding or limiting exposure of workers to the hazards (Rout & Sikdar, 2017; OHS Practices: A Guide for Printers, 2012). At the very least, the identification process should focus on risks that may result in mortality, property damage, loss of containment, and environmental impact (Kim et al., 2015). Hazard identification is a crucial activity even if it seldom provides information that is directly applicable to making decisions.

Theoretical Framework

Sociotechnical System Theory

Due to production problems in the long-wall sector, E. L. Trist and his colleagues at the Tavistock Institute of Human Relations in London developed socio-technical theory in the early 1950s (Koontz, 1980). Trist and his colleagues came to the conclusion that just analyzing social issues was inadequate. Instead, they learned that the technical systems, which are "equipment and processes," had a big influence on social systems as they dealt with problems with mining production (Trist & Bamfort, 1951). This implies that the way in which people interact with one another inside a technological system has a significant impact on their individual attitudes and social behavior. This is why socio-technical systems theorists believe that both social and technology systems must be taken into account and that one of a manager's most important responsibilities is to ensure that these two systems work together harmoniously (Koontz, 1980). Both sides must work together in order to achieve greater and optimum results.

This theory is significant because it provides a framework for understanding the many ways that people cooperate, utilize tools and technology, and cooperate to perform tasks effectively. Trist and his crew found that a new shortwall technique was successful in the longwall British coal mines. The approach requires multi-skilled miners to work closely together as teams instead than the more traditional longwall method, when each miner completes one or a limited number of jobs. The implementation of the shortwall technology led to a number of operational changes in the mine. The interdependence of the teams improved worker morale, safety, and output while also resolving many of the psychological problems that the longwall approach had brought on.

Methodology

In this work, a descriptive research approach was used. The research area is Nigeria's Niger Delta. More than 70,000 km² is covered by the Niger Delta region. The study's target audience was primarily the employees of the Niger Delta's chosen industrial enterprises. Nine (9) manufacturing firms—one from each of the Niger Delta's states—Akwa Ibom, Bayelsa, Delta, Edo, Cross River, Imo, Rivers, and Ondo—were selected for the research. The businesses include those in the number of participants in a research is known as the sample size. By using the Taro Yamane formula (Yamane, 1967) to the whole population of industrial employees, the sample size for this research was established. The chemical, metal, food, and beverage, agro processing, and glass manufacturing industries. The supervisors of this research and occupational health and safety specialists tested the content validity of the questionnaire for this study, which serves as the main source of data. Two research tools were used in the study: a questionnaire and a basic checklist for identifying hazards. After the data gathering procedure was complete, the questionnaires were sorted, and the respondents' replies were compared to the questions posed. IBM SPSS (Statistical Package for Social Sciences) Statistics version 25 was used to evaluate quantitative data.

Results and Discussion on Findings

Research Question 1: How does Workers participation impact on Safety Performance across manufacturing companies in Niger Delta?

Table 1: Impact of workers participation impact on Safety Performance

S/N	ITEMS	SD F (%)	D F (%)	A F (%)	SA F (%)	\bar{X}	SD
1	The continuous involvement of workers in safety trainings has increased our total training hours, improved competence and reduced cases of near misses and injuries	0(0.0)	0(0.0)	113(36.1)	200(63.9)	3.64	0.48
2	Our workers are constantly involved in hazard identification and risk assessment which have continually increased the quantity of JSA and RA conducted periodically and in turn prevented fatalities	13(4.2)	49(15.7)	165(52.7)	86(27.5)	3.04	0.77
3	The involvement of employees in Incident Investigation has improved procedures and control measures thereby reducing injury frequency rate	13(4.2)	38(12.1)	123(39.3)	139(44.4)	3.24	0.82
4	The frequency of Site inspections has reduced unsafe acts and conditions	11(3.5)	0(0.0)	162(51.8)	140(44.7)	3.38	0.67
5	My organization conducts safety inductions regularly for workers which has reduced near misses and injuries	0(0.0)	61(19.5)	174(55.6)	78(24.9)	3.05	0.67
6	Our workers are consistently involved in Toolbox meetings which has increased level of awareness and safe work practice	13(4.2)	74(23.6)	226(72.2)	0(0.0)	2.68	0.54
7	Incidents are prevented because my organization involves workers in periodic safety audits	48(15.3)	0(0.0)	126(40.3)	139(44.4)	3.14	1.02
Mean						3.17	0.71

Table 1 shows the mean response on how workers participation impact on Safety Performance across manufacturing companies. The result shows that the respondents agreed that workers participation impacted on Safety Performance across manufacturing companies in Niger Delta as the overall average = $3.17 \pm .71$ was greater than the criterion mean = 2.5. The highest response derived showed that the respondents agreed that, Safety Trainings has improved safety and ensured an injury free environment ($\bar{X} = 3.64 \pm .48$), Site inspections for unsafe acts and conditions is conducted to ensure injury prevention ($\bar{X} = 3.38 \pm .67$), There is involvement of employees in Incident Investigation as required ($\bar{X} = 3.24 \pm .82$), Periodic safety audits are carried out in my organization ($\bar{X} = 3.14 \pm .102$), My organization conducts safety inductions regularly ($\bar{X} = 3.05 \pm 0.67$), Effective and Quality risk assessment is conducted for non-routine and new tasks in my organization ($\bar{X} = 3.04 \pm .77$), and Toolbox meetings are conducted before the commencement of daily tasks ($\bar{X} = 2.68 \pm .54$).

Research Question 2: What are the methodologies of planning for an injury free workplace?

Table 2: Mean response on the methodologies of planning for an injury free workplace

S/N	ITEMS	SD F (%)	D F (%)	A F (%)	SA F (%)	\bar{X}	SD
1	Documents such as injury/illness logs, Safety Data Sheets, medical reports, workplace inspection results, incident investigation reports, and manufacturers' information are reviewed to help identify hazards.	26(8.3)	0(0.0)	200(63.9)	87(27.8)	3.11	0.77
2	The workplace is inspected regularly to identify conditions that pose or could pose a safety or health concern.	13(4.2)	0(0.0)	199(63.6)	101(32.3)	3.24	0.66
3	Trends in injury and illness data, reports of hazards, incidents, etc. are analyzed to identify common hazards	26(8.3)	0(0.0)	222(70.9)	65(20.8)	3.04	0.73
4	Incidents and employee complaints are investigated to identify any hazards previously unrecognized or inadequately controlled.	0(0.0)	26(8.3)	199(63.6)	88(28.1)	3.20	0.57
5	All identified hazards are characterized with respect to the severity of potential outcomes, likelihood of an event or exposure, and number of workers who might be exposed.	39(12.5)	89(28.4)	160(51.1)	25(8.0)	2.55	0.81
6	My organization employs HIRA and HAZID as mechanisms to ensure a safe workplace	26(8.3)	38(12.1)	223(71.2)	26(8.3)	2.80	0.70
7	HAZOP and PHA are some methods my organization use in planning an injury free workplace	13(4.2)	75(24.0)	149(47.6)	76(24.3)	2.92	0.80
8	The causes of previous incidents and emergencies are taken into consideration during hazard identification in my workplace	13(4.2)	13(4.2)	196(62.6)	91(29.1)	3.17	0.69
Mean						3.00	0.72

The mean answer for the planning techniques for an injury-free workplace is shown in Table 2. The outcome demonstrates that the respondents agreed with the listed planning techniques for an injury-free workplace since the overall average, which was more than the criteria mean, was 3.0072. The highest response determined that the respondents agreed that: The workplace is regularly inspected to identify conditions that pose or could pose a safety or health concern ($X = 3.2466$); Incidents and employee complaints are investigated to identify any hazards previously undetected or insufficiently controlled; Documents such as injury/illness logs, Safety Data Sheets, medical reports, workplace inspection results, incident investigation reports;

Research Question 3: What is the impact of planning on injury prevention?

Table 3: Impact of planning on injury prevention

S/N	ITEMS	SD F (%)	D F (%)	A F (%)	SA F (%)	\bar{X}	SD
-----	-------	-------------	------------	------------	-------------	-----------	----

1	Risk assessment of the identified hazards is conducted and the effectiveness of existing controls is considered to ensure an injury free workplace	13(4.2)	13(4.2)	174(55.6)	113(36.1)	3.24	0.72
2	There is a process to assess OHS opportunities to enhance OHS performance in my organization	0(0.0)	13(4.2)	227(72.5)	73(23.3)	3.19	0.49
3	My organization has action plan for emergency preparedness and response	0(0.0)	13(4.2)	238(76.0)	62(19.8)	3.16	0.46
4	OHS objectives are monitored, communicated and updated as appropriate	13(4.2)	0(0.0)	213(68.1)	87(27.8)	3.19	0.64
5	My organization keeps documented information of OHS objectives and plans to achieve them	0(0.0)	26(8.3)	137(43.8)	150(47.9)	3.40	0.64
Mean						3.24	0.59

The average answer on the influence of planning on injury prevention is shown in Table 3. The outcome demonstrates that the respondents believed that the enumeration preparation had an influence on injury prevention since the total average was higher than the criteria mean, which was 2.5, at 3.24.59. The highest response derived indicated that respondents agreed that: My organization maintains documented information of OHS objectives and plans to achieve them ($X = 3.40.64$); Risk assessment of the identified hazards is conducted and the effectiveness of existing controls is considered to ensure an injury-free workplace; ($X = 3.24.72$); There is a process to assess OHS opportunities to enhance OHS performance in my organization; and OHS objectives are standardized;

Hypothesis 1-H₀₁: There is no significant relationship between planning and safety performance.

H_{A1}: There is significant relationship between planning and safety performance

Table 4: Relationship between planning and safety performance

Correlations		Planning	Safety Performance	Decision
Planning	Pearson Correlation	1	.790	Rejected
	Sig. (2-tailed)		.000	
	N	473	473	
Safety Performance	Pearson Correlation	.790	1	
	Sig. (2-tailed)	.000		
	N	473	473	

*S= Significant $p < 0.05$

A substantial positive association between planning and safety performance was found in the statistical testing of hypothesis two, as illustrated in Table 4.4, as shown by the correlation coefficient value of $r = 0.790$ (79%). Additionally, the alternative hypothesis that there is a significant association between planning and safety performance was supported [($P = .000$)

p0.05] while the null hypothesis that there is no significant relationship between planning and safety performance was rejected.

Discussion of Findings

The results of this study demonstrated that poor organizational culture, low employee competency levels, lack of communication, ineffective leadership, and literacy/language barriers were the main obstacles to effective worker participation in SMS implementation across Niger Delta manufacturing companies. This is consistent with the findings of Aksorn and Hadikusumo's (2008) research, which pointed out that a problematic system might result from a lack of resources, bad system design, or subpar system performance. When any of these take place, the outcome would be defective circumstances or actions. Management should determine if a defective state or conduct is to blame for a problem in the system or a policy violation. In the past, safety performance has been assessed through statistical analysis of injury and accident data using metrics including severity, frequency, rates, and costs. Retrospective indicators are the name given to these indicators.

This research demonstrated that worker engagement improved safety performance across Niger Delta industrial enterprises. Additional research revealed a substantial link between worker involvement and safety performance. This result supports the conclusions of Ojokuku and Sajuyigbe (2014), who investigated the impact of employee involvement in decision-making on the performance of a sample of small and medium-sized businesses. Their research showed that employee decision-making has a significant effect on how well SMEs function as an organization. Participants, structure, channels, and quality/effectiveness moderators were identified as the study's four main themes. Simao et al. (2021) reviewed workplace health and safety consultation in Australia to identify principal themes and derive a general consultation framework used by Australian businesses. Both employee involvement and consultation have a considerable influence on predicting safety performance, although employee consultation has a bigger impact than employee participation. According to Gembalska-Kwiecie (2017), in order to create the appropriate safety culture in a modern firm, all workers, at all levels, must be engaged. The study's conclusions demonstrated that planning improved accident avoidance across Niger Delta industrial businesses. Additional research revealed a substantial correlation between planning and safety performance across Niger Delta industrial businesses.

Conclusion

According to the study's results, Niger Delta industrial enterprises had a high level of worker engagement in planning for an injury-free workplace. Additionally, there were few workplace accidents in Niger Delta industrial firms. The study unequivocally established that poor organizational culture, low employee competency levels, lack of communication, ineffective leadership, and literacy/language barriers were the main obstacles to effective worker participation in SMS implementation across Niger Delta manufacturing companies. The research also found that planning had a significant influence on accident prevention in Niger Delta industrial enterprises and that employees engagement had a significant impact on safety performance across those organizations.

Additionally, it was determined that, according to the research, there is a substantial association between planning and safety performance as well as a significant relationship between worker engagement and safety performance.

Recommendations

In light of the aforementioned findings and conclusions, the research called for the following suggestions that can deal with the adoption of active worker engagement and safety planning in manufacturing organizations. Here are a few examples:

1. The management of manufacturing organizations should make sure that managers and workers who disregard the organization's safety and health rules and procedures are subjected to disciplinary measures and other consequences.
2. To reduce the number of workplace injuries in the organization, management of manufacturing enterprises should schedule periodic trainings and workshops on hazard identification and risk assessment.
3. To help workers make safety and health a central part of their operations, businesses should strongly advocate the adoption of their safety culture.

References

- Al-Dhaafri, H. S., Al-Swidi, A. K., & Yusoff, R. Z. B. (2016). The mediating role of total quality management between the entrepreneurial orientation and the organizational performance. *The Total Quality Management Journal*, 28(1), 89-111.
- Akinkunmi, D. A. (2016). Occupational accident and protection of temporary workers' rights in Nigerian manufacturing companies: A study of selected manufacturing companies in Lagos State, Nigeria. *E-Journal of International and Comparative Labour Studies*, 2(1), 43-54.
- Albliwi, S. A., Antony, J., & Lim, S. A. H. (2015). A systematic review of lean six sigma for the manufacturing industry. *Business Process Management Journal*, 21(2), 665-691.
- Altunkaynak, B. (2018). A statistical study of occupational accidents in the manufacturing industry in Turkey. *International Journal of Industrial Ergonomics*, 66(2), 101-109.
- Appelbaum, S. H. (1997). Socio-technical systems theory: An intervention strategy for organizational development. *Journal for Organizational Management Decision*, 35(6), 452-463.
- Ayers, G. F., Culvenor, J. F., Sillitoe, J., & Else, D. (2013). Meaningful and effective consultation and the construction industry of Victoria, Australia. *Construction Management and Economics Journal*, 31(6), 542-567.
- Bajaj, S., Garg, R., & Sethi, M. (2018). Total quality management: A critical literature review using Pareto analysis. *International Journal of Productivity and Performance Management*, 67(1), 128-154.
- Bayram, M. (2019). Safety Training and Competence, Employee Participation and Involvement, Employee Satisfaction, and Safety Performance: An Empirical Study On Occupational Health And Safety Management System Implementing Manufacturing Firms.

Alphanumeric Journal, 7(2), 301–318.

- Cechini, A., Elfezazi, S., Chiarini, A., Mokhlis, A., & Benhida, K. (2018). The integration of lean manufacturing, Six Sigma and sustainability: A literature review and future research directions for developing a specific model. *Journal of Cleaner Production*, 139(2), 828-846.
- Cicmil, A. (2016). Motivation to learn: An overview of contemporary theories. *Journal of Medical Education*, 50(8), 997–1014.
- Dragano, N., Lunau, T., Eikemo, T. A., Toch-Marquardt, M., Van-der, S., Wel, K. A., & Bambra, C. (2015). Who knows the risk? A multilevel study of systematic variations in work-related safety knowledge in the European workforce. *Occupational and Environmental Medical Journal*, 72(2), 553-559.
- Earcy, S., Dixon, M., & Neumann (2016). A basic approach in sampling methodology and sample size calculation. *Journal for Medical Life Calculation*, 1(2), 100-116.
- Eurostat, D. (2009). *Theory of accident causes*. https://www iloencyclopaedia.org/part-viii-12633/accident-prevention/item/894-theory-of-accident-causes_
- Federal Aviation Administration. (2015). *Safety management system, what is a safety management system (SMS)?* http://www.faa.gov/about/initiatives/sms_
- Feng, Y., Bruhn, C., & Marx, D. (2016). Evaluation of different food safety education interventions. *British Food Safety Journal*, 118(3), 221-233.
- Fujimoto, Y., & Härtel, C. (2017). Organizational diversity learning framework: Going beyond diversity training programs. *Organizational Personnel Review*, 46(6), 1120-1141.
- Gunaseelan, V., & Gerald, L. A. (2017). Study on safety management system of manufacturing industry. *International Research Journal of Engineering and Technology (IRJET)*, 4(12), 788–790.
- Hamid, H. A., Abdullah, M. N., Asmoni, M., Lokman, M. A. A., & Shaari, N. (2015). An overview of the management commitment to safety elements for mitigating accidents in the construction industry. *Journal of Management Commitment and Safety*, 74(2), 22-42.
- Hassan, A., & Esmail, J. M. (2018). A conceptual framework for upgrading safety performance by influence safety training, management commitment to safety and work environment: Jordanian hospitals. *International Journal of Business and Social Research*, 8(7), 25–35.
- Haynes, J., & Beck, J. (2005). Foodservice safety: Rationale for SARA: Safety analysis risk assessment. *Occupational Health and Safety Magazine Journal*, 3(9), 38-49.

- Herrero, S. G., Saldaña, M. A. M., Campo, M. A. M., & Ritzel, D. O. (2002). From the traditional concept of safety management to safety integrated with quality. *Journal of Safety Research*, 33(9), 1-20.
- Honarpour, A., Jusoh, A., & Nor, K. (2018). Total quality management, knowledge management, and innovation. *Total Quality Management and Business Excellence Journal*, 29(8), 798-816.
- Heinrich, H. W. (1959). *Industrial accident prevention: A scientific approach*. McGraw-Hill Press.
- Hong, C. C., Ramayah, T., & Subramaniam, C. (2018). The relationship between critical success factors, internal control and safety performance in the Malaysian manufacturing sector. *Journal for Safety Science*, 104(2), 179–188.
- Hoyme, K. (2015). Let's ID and nurture systems thinkers. *Biomedical Instrumentation and Technology Journal*, 49(7), 144-155.
- Hughes, B. P., Newstead, S., Anund, A., Shu, C. C., & Falkmer, T. (2015). A review of models relevant to road safety. *Journal of Accident Analysis and Prevention*, 74(2), 250-270.
- Hwang, C., & Kleiner, B. H. (2002). Understanding workers' compensation. *Journal for Management Research and Compensation*, 25(3), 65-72.
- Hylton, J. B., & Trump, K. S. (1997). *Hard lessons in school security*. <http://www.securitymanagement.com/library/000458.html>.
- Huang, Y. H., Lee, J., McFadden, A. C., Murphy, L. A., Robertson, M. M., Cheung, J. H., & Zohar, D. (2016). Beyond safety outcomes: An investigation of the impact of safety climate on job satisfaction, employee engagement and turnover using social exchange theory as the theoretical framework. *Applied Journal for Ergonomics*, 55(3), 248-257.
- Jaca, C., & Psomas, E. (2015). Total quality management practices and performance outcomes in Spanish service companies. *Journal for Total Quality Management and Business Excellence*, 26(10), 958-970.
- Jazayeri, E., & Dadi, G. B. (2017). Construction safety management systems and methods of safety performance measurement: A review. *Journal of Safety Engineering*, 6(3), 15-28.
- Jonathan, G. K., & Mbogo, R. W. (2016). Maintaining health and safety at workplace: Employee and employer's role in ensuring a safe working environment. *Journal of Education and Practice*, 7(29), 1-7.
- Joyce, S., Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2016). Likert scale: Explored and explained. *British Journal of Applied Science and Technology*, 7(4), 39-46.

- Khanam, S., Siddiqui, J., & Talib, F. (2016). Role of information technology in total quality management: A literature review. *International Journal of Advanced Research in Computer Engineering and Technology*, 2(8), 2433-2445.
- Kim, M. (2016). Social exchange theory. *The International Encyclopedia of Communication Theory and Philosophy*, 11(9), 1-9.
- Kim, W. K., Park, S. J., Lim, H. S., & Cho, H. H. (2017). Safety climate and occupational stress according to occupational accidents experience and employment type in shipbuilding industry of Korea. *Journal for Safety and Health at Work*, 8(4), 290-295.
- Koontz, H. (1980). The management theory jungle revisited. *The Academy of Management Review*, 5(2), 175-188.
- Krause, T. R. (1994). Continuous safety progress focuses on “upstream” factors in analyses. *Journal for Occupational Health and Safety*, 4(10), 81-99.
- Liu, D., Linderman, K., Schroeder, R. G., Zaheer, S., & Choo, A. S. (2015). Reward and punishment mechanism in a vertical safety regulation System: A transferred prisoner’s dilemma. *International Journal for Modern Economy*, 6(8), 552-562.
- Menger, L., Rosecrance, J., Stallones, L., & Roman-Muniz, I. (2016). A guide to the design of occupational safety and health training for immigrant, Latino/a dairy workers. *Journal for Frontiers in Public Health*, 4(9), 1-11.
- Maurino, G. (2017). Quantifying the intangible costs related to non-ergonomic work conditions and work injuries based on the stress level among employees. *Journal for Safety Science*, 82(8), 283-288.
- Mendonca, N., & Carney, O. (2017). *Occupational health and safety issues in the informal manufacturing sector of cape coast metropolis*. University of Cape Coast Publishers.
- Nenonen, S. (2011). Fatal workplace accidents in outsourced operations in the manufacturing industry. *Safety Science Journal*, 49(10), 1394–1403.
- Ohio Bureau of Workers' Compensation. (2005). *Best practices for public schools*. <http://www.ohiobwc.com/downloads/blankpdf/PublicSchools.pdf>.
- Okon, M., & Osesie's, B. (2017). An empirical study of safety performance assessment. *International Journal of Occupational Hygiene*, 6(4), 201–209.
- O'Neill, P., Sohal, A., & Teng, C. W. (2016). Quality management approaches and their impact on firms' financial performance—an Australian study. *International Journal of Production Economics*, 171(9), 381-393.
- Powell, T. C. (1995). Total quality management as competitive advantage: A review and

- empirical study. *Strategic Management Journal*, 16(1), 15-37.
- Raines, M. S. (2011). Engaging employees: Another step in improving safety. *Journal for Professional Safety*, 56(4), 36-55.
- Shannon, H. S., Walters, V., Lewchuk, W., Richardson, J., Moran, L. A., Haines, T., & Verma, D. (1996). Workplace organizational correlates of lost-time accident rates in manufacturing. *American Journal of Industrial Medicine*, 29(3), 258–268.
- Smart, F. (2017). Managing employees with chronic illness. *Journal for Human Resource Management International Digest*, 26(1), 7-20.
- Thai, M., & Jie, A. (2018). *People skills*. Palgrave Publishers.
- Toppazzini, M. A., & Wiener, K. K. (2017). Making workplaces safer: The influence of organisational climate and individual differences on safety behaviour. *Journal for Organisational Climate and Safety*, 3(7), 1-16.
- Trist, E., & Bamfort, K. (1951). *Some social and psychological consequences of the longwall method of coal getting: An examination of the psychological situation and defences of a workgroup in relation to the social structure and technological content of the work system*. <https://www.uv.es/>=
- Tyagi, S., Choudhary, A., Cai, X., & Yang, K. (2015). Value stream mapping to reduce the lead-time of a product development process. *International Journal of Production Economics*, 160(6), 202-212.
- Valmohammadi, C., & Roshanzamir, S. (2015). The guidelines of improvement: Relations among organizational culture, total quality management and performance. *International Journal of Production Economics*, 16(4), 167-178.
- Webb, M., & Morancie, A. (2015). Food safety knowledge of foodservice workers at a university campus by education level, experience, and food safety training. *International Journal for Food Control*, 50(6), 259-264.
- White, G. R., & Cicmil, S. (2016). Knowledge acquisition through process mapping: Factors affecting the performance of work-based activity. *International Journal of Productivity and Performance Management*, 65(7), 302-323.