



Occupational Health and Safety Management System and Organizational Performance in Selected Industries in Cross River State, Nigeria

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Authors' contributions

This study was carried out in collaboration among all authors. Author UKO designed the study, co-wrote the protocol with author EON, performed the statistical analysis, managed data storage and wrote the first draft of the manuscript. Author EON co-designed the study, managed the data processing, supervised the study, managed the literature searches and reviewed drafts. Author JNU co-designed the study, co-supervised the study and read manuscripts. All authors read and approved the final manuscript.

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ABSTRACT

The study adopted qualitative research design to examine Occupational Health and Safety Management System (OHSMS) implementation and organizational performance of Food/Beverage and Building/Construction industries in Cross River State, Nigeria. Three companies from each category and 25 workers from each company totaling 150 research subjects were selected for the study. Three research questions and three null hypotheses were formulated to guide the study, while the internationally accepted OHSAS 18001 and ISO 45001 checklists, directed the preparation of a validated questionnaire which was used for data collection. Mean, standard deviation and Analysis of Variance were used for data analysis. Results showed significantly high and positive influence of OHSMS implementation on the performance of Food/

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Beverage and Building/Construction industries in Cross River State. This stresses the strategic importance/need of OHSMS as a yard stick for organization and operation of every industry. Comparatively however, a more significant influence of OHSMS implementation was recorded in Food/Beverage, indicating a difference in implementation level. Furthermore, each of all the OHSMS elements significantly influenced study industries, except for auditing, indicating that all the essential elements of OHSMS are important at every point of OHSMS implementation. However, more attention should be paid to auditing, in order to achieve a more reliable and successful implementation. In addition, OHSMS, with a consideration for local environment, was highly recommended for its application in all study industries, to bring about optimal performance in the areas of management influence and employee participation.

Keywords: Food/Beverage Industry; occupational health and safety management system; safety performance; building/construction industry; workplace safety.

1. INTRODUCTION

For any successful venture, standards are set for professional skills and knowledge to be acquired, in order to assign different work-standards to the best qualified personnel accordingly. Without positive contributions from skilled workers, and their employers, the achievement of any set objectives and goals will be a wild goose chase. In other words, it will be difficult for any organization that aims at satisfying its human needs to achieve this goal. As a result, Oztas et al. [1] Podgoski [2] and Mohammadfam et al. [3], in their respective contributions, posited that the performance of a system is dependent on close monitoring of the appropriate system indicators that are put in place. In other words, to assure the safety, security, welfare and health of both the employer and employee, the elements of occupational health and safety (OHS) which mainly include Policy, Leadership and Commitment, Organization and Responsibilities, Planning and Procedures, Programme Implementation, Monitoring and Reporting, Audit and Review should be strictly adhered to. Occupational health and safety could be considered as a check-make to safeguard the safety and health of both the employer and workers in any organization while reducing accidents and injuries [4]. In other words, it is a universal instrument applied to different works of life, with regard to possible hazards, risks and incidents to be encountered by workers and the prevailing work environment in consideration. It is multidisciplinary in nature as it aims at circumventing all possible obstacles to be encountered in an assigned workplace. Simply put, it could be considered as the science of anticipating, recognizing, evaluating and controlling all possible hazards which may emanate from or around the work place to negatively affect the health and safety of

workers, workplace and the local environment. For ILO [5], OHS emphasizes a positive relationship between security and productivity in the work environment.

Although a number of scholars agree to this observation [6], the local environmental differences as well as the organization's demands and other prevailing unique conditions during work implementation may demand the variation of the set standard. As a result, the emergence of the International Standard Organization – ISO 45001 as globally accepted for its consideration and application as a base for the assessment of any organizational Health Safety Management System (OHSMS) performance. On close examination of the implementation of OHSMS, Nordlof et al. [7] reported a difference between and among companies on the level of success achieved on OHSMS implementation in their respective organizational performance.

ILO [5] opines that OHSMS has a group of interacting elements that operate together to institute OHS policy and its attending goals for the latter's achievement. Nielson [8] considers OHSMS as known to be proactive, internally integrated and has the characteristic of incorporating known elements of evaluation. To Armstrong [9], organizational performance identifies different responsibilities in accordance with workers' understanding of their abilities, with regard to targeted achievement by the organization. High performance is usually achieved, considering a good measure of safety and health of workers usually supposed to be at optimal level [9,10,11].

Olsen [12] noted that Weber's bureaucratic management theory which was developed in the 1930s provides a good understanding of how a

system functions. To Weber, responsibilities are well-defined and assigned, in accordance with the individual's specialized skill and ability, with the authority at the apex of the system and everyone is supposed to contribute his best to the optimal functioning of the system to achieve the set goal. By doing so, Omisore and Nweke [13] indicate that earlier institutional traditional, charismatic and bureaucratic or legal powers would be a thing of the past, hence be eliminated, to be replaced with fixed division of labour as well as hierarchy of offices, rational level of authority, selection based on qualification and defined career paths. These arrangements contribute to increased trust on the part of the workers.

Referring to auditing as one of the essential elements of OHSMS, Waring [14] refers considers it as "a deep, critical, systematic and independent examination of everything about an organization that affects safety". It has a number of benefits, one of which is that it provides an opportunity for managers to review the processes of the system for the purpose of achieving purposeful and continuous organizational improvement. Webb [15] notes that medical/health promotion literature argues that people work better when they are physically and emotionally able to work and want to work, thus leading to high productivity. He further observes that improved workplace quality yields high productivity. Similarly, MacLeord [16], while supporting Webb's views adds that high productivity is a result of workplace improvement.

A study of food/beverage industries by Otitolaiye [17] revealed the effect of OHSMS on performance. The study was prompted by high rate of accident/injury in the food/beverage industries and their consequences, hence he upheld the importance of OHSMS for high performance. Yassin and Elsndag [18] assessed Khartoum North's food/beverage industries on existing industrial hygiene and occupational safety. Their aim was to determine the level of observing industrial hygiene. The study found that the presence of noise, lighting and heat stress were quite high, an important reason being that about 72% of the workforce did not bother to observe standard safety. Further findings revealed the presence of chemical hazards due to non-compliance to majority of the industry's safety standards, including lack of safety education, non-premedical checks among the staff, insufficient and sometimes non provision of personnel prevention equipment

(PPE). These failures were also reported by a similar South African study presented by Maseko [19]. In both studies, it was recommended that both the employer and employees be of the rights and obligations for safety and health practices.

Leadership and Commitment comprise another set of the elements of OHSMS in consideration. The former concerns the provision of the right sense of direction in all the affairs of management for the organization's work-related activities to enable goal achievement a reality, while the latter calls for total devotion of all hands to be on deck to ensure successful completion of job-assignment [20]. Flintrop [21] summarized some benefits of Leadership and Commitment to include reduced sickness, enhanced productivity, workers' higher productivity and motivation, less hazard as well as less occupational diseases and work-related problems.

Implementation, Monitoring and Reporting as one of the OHSMS elements is a follow-up of the planned activity. It is not enough to have a plan and policy, but it is important to make them functional, in order to assess the identified areas of weakness and strength. This therefore calls for adequate implementation and close inspection/supervision. The entire activities involved in the attainment of this essential element are judged as the process of adequate plan execution. In achieving this, possible challenges and obstacles must be identified, and arrangements made to eliminate them and organize a close follow-up of activities. Monitoring provides an opportunity to identify and correct anomalies in the workplace and this, in a way, optimizes the use of resources.

Organizational Policy as an element contributes immensely because it provides a sense of direction for all the activities of the organization. At the same time, it specifies the health and safety of every staff. Every organization has its unique policy and seeks compliance and involvement of every staff [5]. In all, the aim is to achieve the organization's objectives. Unfortunately, Oliveira et al. [22] observed that the obedience to rules and regulations differs according to staff and the organization.

Furthermore, the process of Planning and Procedure, as one of the essential elements requires an arrangement of all the important varied ideas related to a set of assigned responsibilities designed to achieve the

organization's goal. In other words, it could be considered as a process of preparing a blue print of all the work to be executed, including action points to take, and other relevant equipment to be provided for successful implementation in a safe and healthy environment. Adequate planning eliminates a lot of law suits/litigations, loss of capital and man-hour. It keeps the management on track of the correct line of actions to take safely and timely.

Organization, Responsibilities and resources as an essential element of OHSMS requires the arrangement of all the plans and policies for optimal allocation of duties to the appropriate staff, without which the application of available equipment, funds and all other essential materials that are meant for deployment at the workplace. Emphasizing the importance of organization's structure, therefore, Daft [23] notes that both the internal and external arrangements should be manned appropriately to achieve objective coordination of activities. It therefore remains to argue that where the chain of coordination is weak, the achievement of the set goal may be far-fetched and the resources are likely wasted or poorly managed. Consequently, an organization chart should be available for every organization to identify at a glance how work is manned and coordinated. Among other things, the chart enables the organization to assign responsibilities to the best fit. This, in a way, eliminates favouritism, among other things from the system.

Many challenges to OHSMS implementation have been identified by Garmica and Barriga [22]. These include inadequate attitude of both the employer and the employees, establishment of rigid rules and regulations, recruitment of unqualified personnel to man important positions, nonchalant attitude of management, poor or inadequate auditing and over-ambition to make profit and negligence of the health and safety of workers. Hasle et al. [24] observed that lack of employees' obedience or adherence to safety rule pose serious challenge to the effectiveness of OHSMS. Similar result was recorded by Idoro [6] in his study of international, national and local construction companies in Nigeria and found the local industries to be least compliant to OHSMS standard of implementation. On the other hand, Games et al. [25] observed that rigorous bureaucratic rules and regulations are accountable for poor organizational performance, despite the existence of OHSMS. Cagno et al. [26] maintained that insufficient or failure to

collect accurate OHS data exposes the organization to difficult or poor management, in spite of existing OHSMS in place. Ahmeida and Nunes [22] referred to this condition as lack of knowledge. Other areas of challenges to OHSMS include budget constraints on the part of management [27,28].

With regard to the building/construction industry, Koehn et al. [29] Idoro [6], Enhassi et al. [30], in their respective but similar studies, expressed similar worries on the high rate of accident in such areas as recorded falls, electrocution, knock-down by objects, including moving trucks. In a study of OHSMS implementation in Douala and Younde in Cameroun, PECB [31] reported high prevalence of poorly constructed buildings, deployment of unqualified workers and use of outdated practices, reason being that the management was bent on maximizing profit, hence there was total neglect on keeping to OHSMS standards [32]. These unfortunate steps by management led to loss of many lives, work-stoppage at different work sites, among other ills.

Nigeria, a developing country, is a signatory towards accepting the global standards for its food/beverage industries as well as building/construction industries. For instance, in Cross River State, the researchers witnessed a number of food/beverage industries such as New Makcco Bakery, Flour Mills industry, chains of restaurants/fast foods and yoghurt industries of different sizes; bridges, roads and complex buildings at different levels of development. Along the line, some building/construction industries have been abandoned, while some collapse due to poor construction. Some food/beverage industries have equally witnessed closure, workers' strike and unnecessary delays in their services. Being certain that each of these categories of industries has standardized OHSMS to be implemented, one wonders the level of its implementation in the performance of these industries. Generally, too, a number of injuries, accidents and other incidents have been recorded by these companies as testified by some workers, thus leading to work absenteeism, sudden withdrawals and sometimes sudden deaths from falls and building collapse. Consequently, focusing on Cross River State, Nigeria, this study examined existing OHSMS in the organizational performance of the selected two categories of industries, namely food/beverage and building/construction industries. Based on this, the following research questions were formulated:

- How does OHSMS implementation influence the performance of food/beverage industries in Cross River State?
- How does OHSMS implementation influence the performance of building/construction industries in Cross River State?
- How do the performances of food/beverage and building/construction industries differ in their OHSMS implementation in Cross River State?

Hypotheses

- The influence of OHSMS implementation in the performance of food/beverage industries in Cross River State does not differ significantly.
- The influence of OHSMS implementation in the performance of building/construction industries in Cross River state does not differ significantly.
- No significant difference exists between the influence of OHSMS implementation in the performances of food/beverage and building/construction industries in Cross River State.

2. RESEARCH METHODOLOGY

The study made use of descriptive research design. The population consisted of all the workers in the two categories of industries namely, food/beverage and building/construction industries in Cross River State, Nigeria. Through random sampling technique, three of each category were selected, totaling six industries; 25 male and female workers from different job categories, with a minimum of three years of work experience were purposively selected from each of the six industries. In other words, the 25 respondents from each industry were considered as true representatives of their industry. Altogether, a total of 150 research subjects (108 males and 42 females) participated. Questionnaires were used for data collection. It was prepared, taking into consideration of the checklist arising from existing International Standard Organization (ISO) 45001 and OHSAS 18001 as well as ascertaining its validity and reliability ($r = 0.83$). The questionnaire contained two sections, namely A and B. Section A sought information on gender, years of job experience, category of industry, present position/rank and highest educational qualification. Section B

sought information on personal views on industrial performance, based on OHSMS implementation of the key elements, namely policy implementation; leadership and commitment; organization, responsibilities and resources; planning and procedures; implementation, monitoring and reporting; and auditing. Each of the elements contained eight item statements on job performance and the responses were weighed as very high (4), high (3), low (2) and very low (1). With the help of two research assistants, 150 copies of the questionnaire were distributed to the participants and retrieved after three days. Mean and standard deviation were used to answer the research questions, with the criterion mean set at 2.5. Results for the null hypotheses tested were derived through the application of One-Way Analysis of Variance (ANOVA) at 0.05 level of significance.

3. RESULTS

The research questions were answered, using mean, with the criterion mean of 2.50. Thus, the qualitative interpretation of influence is as follows: 4.00-3.00 = Very High; 2.99 – 2.50 = High; 2.49 – 2.00 = Low; 1.99 – 1.00 = Very Low.

Table 1 indicates very high positive influence of OHSMS implementation on the performance of food/beverage industries in Cross Rivers State. All elements of the OHSMS are functional, hence influence the performance of food and beverage industries to enable them perform optimally, based on the mean responses of the respondents.

In Table 2, high positive influence of OHSMS implementation exists on the performance of building/construction industries in Cross Rivers State. Only one of the OHSMS elements, namely Implementation, Monitoring and Reporting, has very high positive influence in improving the performance of the building/construction industries, while other elements recorded high positive influence.

Comparatively in Table 3, the positive influence of OHSMS implementation on the performance of F&BIs is higher than that of building/construction industries in Cross Rivers State (Grand mean difference = 0.30). Each of the elements in food/beverage industries has very high positive influence, while each of the elements in building/construction industries has high positive influence, with the exception of one,

namely Implementation, Monitoring and Reporting, that has very high positive influence.

Hoc further identifies that the significant difference exists between the following on the influence of OHSMS elements:

Referring to Table 4, the Levene Statistic p-value of 0.000 is less than 0.05, indicating no homogeneity in the variances, while ANOVA results of F-calculated (8.171) is greater than F-tabulated (2.26), meaning that H_0 is rejected. Therefore, there is significant influence of OHSMS implementation on the performance of food/beverage industries in Cross Rivers State. With regard to the elements of OHSMS, the Post

- I. policy and organisation, responsibilities and procedures;
- II. policy and auditing;
- III. leadership, commitment and auditing;
- IV. planning, procedures and auditing; and
- V. implementation, monitoring, reporting and auditing

Table 1. Mean rating of the influence of OHSMS implementation on the performance of food/beverage industries in Cross Rivers State

S/No	Element of OHSMS (Item Statement)	\bar{x}	SD	Remarks
1	Policy Implementation	3.38	0.26	VH
2	Leadership and Commitment	3.28	0.28	VH
3	Organization, Responsibilities and Resources	3.20	0.30	VH
4	Planning and Procedures	3.26	0.30	VH
5	Implementation, Monitoring and Reporting	3.24	0.29	VH
6	Auditing	3.06	0.44	VH
	Grand Mean	3.24	0.33	VH
	Criterion Mean: 2.5			

4.00-3.00 = Very High; 2.99 – 2.50 =High; 2.49 – 2.00 = Low; 1.99 – 1.00 = Very Low.

Table 2. Mean rating of the influence of OHSMS implementation on the performance of building/construction industries in Cross Rivers State

S/No	Element of OHSMS (Item Statement)	\bar{x}	SD	Remarks
1	Policy Implementation	2.79	0.28	H
2	Leadership and Commitment	2.95	0.33	H
3	Organization, Responsibilities and Resources	2.93	0.32	H
4	Planning and Procedures	2.98	0.45	H
5	Implementation, Monitoring and Reporting	3.01	0.38	VH
6	Auditing	2.96	0.30	H
	Grand Mean	2.94	0.35	H
	Criterion Mean: 2.5			

4.00-3.00 = Very High; 2.99 – 2.50 =High; 2.49 – 2.00 = Low; 1.99 – 1.00 = Very Low.

Table 3. Mean rating on the influence of OHSMS implementation on the performance of food/beverage industries (1) and building/construction industries (2) in Cross Rivers State

S/No	Element of OHSMS (Item Statement)	\bar{x}_1	Remarks	\bar{x}_2	Remarks
1	Policy Implementation	3.38	VH	2.79	H
2	Leadership and Commitment	3.28	VH	2.95	H
3	Organization, Responsibilities and Resources	3.20	VH	2.93	H
4	Planning and Procedures	3.26	VH	2.98	H
5	Implementation, Monitoring and Reporting	3.24	VH	3.01	VH
6	Auditing	3.06	VH	2.96	H
	Grand Mean	3.24	VH	2.94	H
	Criterion Mean: 2.5				

4.00-3.00 = Very High; 2.99 – 2.50 =High; 2.49 – 2.00 = Low; 1.99 – 1.00 = Very Low.

Table 4. Analysis of Variance (ANOVA) for the mean responses on the influence of OHSMS implementation on the performance of food/beverage industries in Cross Rivers State.

	Levene Statistic	df1	df2	Sig.	
	9.236	5	444	0.000	
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.160	5	0.832	8.171	0.000
Within Groups	45.211	444	0.102		
Total	49.371	449			
F – Table value: 2.26					
Result: Significant at $p \leq 0.05$ level, therefore REJECT H_{01}					

Table 5. Analysis of Variance (ANOVA) for the mean responses on the influence of OHSMS implementation on the performance of building/construction industries in Cross Rivers State.

	Levene Statistic	df1	df2	Sig.	
	11.927	5	444	0.000	
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.131	5	0.426	3.489	0.004
Within Groups	54.231	444	0.122		
Total	56.362	449			
F – Table value: 2.26					
Result: Significant at $p \leq 0.05$ level, therefore REJECT H_{02}					

Table 6. ANOVA for the mean responses from the influence of OHSMS implementation on the performance of food/beverage industries (1) and building/construction industries (2) in Cross Rivers State, based on the elements.

Element of OHSMS (Item Statement)	Levene Statistic	df1	df2	Sig.	
Policy Implementation	2.097	1	148	0.150	
Leadership and Commitment	4.691	1	148	0.032	
Organization, Responsibilities and Resources	2.766	1	148	0.098	
Planning and Procedures	28.825	1	148	0.000	
Implementation, Monitoring and Reporting	17.010	1	148	0.000	
Auditing	15.128	1	148	0.000	

Table 7. Significant difference exists on the influence of Policy implementation in the performances of food/beverage industries and building/construction industries in Cross Rivers State

Policy	Sum of Squares	df	Mean Square	F	Sig
Between Groups	12.860	1	12.860	179.705	0.000
Within Groups	10.591	148	0.072		
Total	23.451	149			
F- Table value - 3.94					

Result: Significant at $p \leq 0.05$ level, therefore REJECT H_{02}

Table 5 results indicate that according to Levene statistic, p-value (0.000) is less than 0.5, indicating that no homogeneity in the variances. ANOVA shows that F-calculated (3.489) is greater than 2.26, hence H_{02} is rejected. In other words, there is significant difference in the

influence of OHSMS implementation on the performance of building/construction industries in Cross Rivers State. Post Hoc establishes further a significant difference between Policy and Implementation, Monitoring and Reporting.

In Table 6, Levene Statistic results reveal that there is no homogeneity in the variances between Leadership and Commitment, Planning and Procedures, Implementation, Monitoring and Reporting and Auditing as each of the p-values (0.032, 0.000, 0.000 and 0.000) respectively is

less than 0.05, while there is homogeneity in the variances between Policy and Organisation, Responsibilities and Resources as each of the p-values (0.150 and 0.098 respectively) is more than 0.05.

Table 8. There is significant difference between the influence of Leadership and Commitment in the performances of food/beverage and building/construction industries in Cross Rivers State.

Leadership and Commitment	Sum of Squares	df	Mean Square	F	Sig
Between Groups	4.011	1	4.011	42.294	0.000
Within Groups	14.037	148			
Total	18.049	149			

F- Table value - 3.94

Result: Significant at $p \leq 0.05$ level, therefore REJECT H_0

Table 9. There is significant difference between the influence of Organisation, Responsibilities and Resources in the performances of food/beverage and building/construction industries in Cross Rivers State.

Organisation, Resp. and Resources	Sum of Squares	df	Mean Square	F	Sig
Between Groups	2.818	1	2.818	28.823	0.000
Within Groups	14.470	148	0.098		
Total	17.288	149			

F- Table value - 3.94

Result: Significant at $p \leq 0.05$ level, therefore REJECT H_0

Table 10. There is significant difference between the influence of Planning and Procedures in the performances of food/beverage and building/construction industries in Cross Rivers State.

Planning and Procedures	Sum of Squares	df	Mean Square	F	Sig
Between Groups	2.818	1	2.818	18.847	0.000
Within Groups	22.130	148	0.150		
Total	24.948	149			

F- Table value - 3.94

Result: Significant at $P \leq 0.05$ level, therefore REJECT H_0

Table 11. There is significant difference between the influence of Implementation, Monitoring & Reporting in the performances of food/beverage and building/construction industries in Cross Rivers State.

Implementation, Mon. and Reporting	Sum of Squares	df	Mean Square	F	Sig
Between Groups	1.933	1	1.933	16.817	0.000
Within Groups	17.015	148	0.115		
Total	18.949	149			

F- Table value - 3.94

Result: Significant at $p \leq 0.05$ level, therefore REJECT H_0

Table 12. No significant difference exists between the influence of Auditing in the performances of food/beverage and building/construction industries in Cross Rivers State.

Auditing	Sum of Squares	df	Mean Square	F	Sig
Between Groups	0.394	1	0.394	2.752	0.099
Within Groups	21.198	148	0.143		
Total	21.592	149			

F- Table value - 3.94

Result: Not Significant at $p \geq 0.05$ level, therefore ACCEPT H_0

4. DISCUSSION

The study showed that OHSMS is an essential instrument for the organization and operation of every industry to direct its affairs for the achievement of the set goal. In addition, in the implementation of OHSMS, all the elements contained in this standard system should be considered, otherwise, the safety and health of both the employer and the employee for a successful venture may not be assured, due to delays and occurrences of unforeseen circumstances arising from the negligence or haphazard consideration of the elements. However, it is important to state, as reported in this study that the level of application of the standard OHSMS to different industries differ, depending on the objectives and the local environmental demands of the industry in consideration.

Oztas et al. [1] believed that the success of every organization is judged by the level of consideration and implementation of OHSMS. In other words, the ideas of these scholars from their study are in tandem with findings of the present study, especially with regard to the claim that every organization/industry requires a standard OHSMS for its successful venture, reason being that it fosters safety and health of both the employer and the employee in an industrial set-up. While in agreement with the foregoing, Idoro [6], in his study of the building and construction industries in Nigeria reaffirms the importance of meeting the prevailing local environmental conditions in the application for successful implementation of OHSMS. The studies of Nordlof et al. [7] equally confirm the foregoing observations. Referring to the elements, Nielson [8] emphasized the importance of the integration of these elements, without which an organization will not succeed in its objectives. The studies of Maseko [19] in South Africa were prompted by inadequate consideration of the OHSMS elements and adverse consequences to safety and health of

workers and their employers. Similar studies include the building/construction industries in Douala and Younde in Cameroun by PECB [31], Enhassi et al. [30] and Idoro [6] respectively in Nigeria, all of which reported high incidents of recorded falls, electrocution, building collapse and work stoppage, among others, as a result of inadequate consideration of the OHSMS in the work place.

5. CONCLUSION

Standard OHSMS implementation in any organizational performance, particularly with regard to food/beverage industries as well as the building/construction industries in Cross River State should be popularized. Equally, particular attention to ensure adequate incorporation of the OHSMS elements for effective result should be the target of every organization. However, the incorporation of the local environmental conditions is also a key to successful implementation of a standard OHSMS. Consequently, all hands should be on deck to the OHSMS' application in developing countries like Nigeria, for effective national development to be a reality.

6. RECOMMENDATIONS

From the results of the present study, the following recommendations are presented:

- (i) Industries are encouraged to equip all staff with the knowledge and application of standard OHSMS in all the sectors of their organization.
- (ii) Industries and stakeholders should maintain regular retraining of staff in OHSMS implementation and review the contents of the OHSMS package to ensure the incorporation of OHSMS elements in their respective operations.
- (iii) Industries should not operate in isolation but should maintain an open system, in

order to provide an opportunity for collaboration and innovation.

- (iv) Staff recruitment should only be based on skill specialization to man related positions.

CONSENT AND ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s). Permission was granted from the Management of the studied industries, to use their facility for research and allow access to workers' opinion and responses with respect to the questionnaire requirements. As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s). Also, to ensure confidentiality of the individual responses, the names of the respondents were not included during the preparation of the instruments. Double handling of the questionnaires was also avoided, by having one point of contact for distribution and collation outside the research population.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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