

## **Environmental Management System Compliance of Companies Operating within Nigerian Port Authority, Port Harcourt Rivers State, Nigeria**

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**ISO14001-14004, Environmental Management Systems (EMS) Standard has been developed to assist organizations and companies, perform their corporate roles, protect their identity and manage their activities within the area of operations in an environmentally friendly manner world-wide. This study examined the Environmental Management Systems (EMS) compliance of companies operating within Nigerian Ports Authority Rivers Ports, Port Harcourt. A total of one hundred (100) respondents with well-structured questionnaires were interviewed from the sampled companies. Likert scale was weighted in the design of the questionnaires from (1-5) to ascertain EMS compliance in the company's operations. Analysis showed that the management commitment on EMS improvement was 50%; adequate training was 30%, while strong regulation enforcement was 20%. The analysis confirms that without these factors, the implementation of EMS in these companies would be very difficult. Their responses were also sort whether EMS improved their operations. There was a statistically significant difference between EMS awareness levels and the levels of compliance. This shows that though the staff knows about EMS, they do not comply with its standards in the improvements of their operations. The study recommends the adoption of EMS programmes in the companies in Rivers State to achieve organizational goals and to improve company's performances as well as to foster sustainability in the development of the Nigerian environment.**

**Keywords:** Environmental, Management-Systems, Compliance, Nigerian, Ports-Authority.

### **INTRODUCTION**

Environmental issues in Nigeria till date have largely been characterized by ecological problems, unplanned growth and increasing negative effects of domestic and industrial waste disposal and pollution (Onyenekenwa, 2011). Economic developmental activities especially in the oil and gas sector has accelerated the loss of top soil nutrient through oil spillages and other

environmental degradation such as loss of habitat, loss of species, biodiversity, and posing great threat to human being (Bell-Gam, 1992). These environmental problems and challenges emanate from industrial pollution, chemical pollution, crude and refined oil spillages, water pollution, solid and toxic waste disposal problems, air and noise pollution (Bassey, 2013). Environmental

Management System (EMS) is a guide to ensuring sustainable development, and an important tool that helps industries manage or deal with their environmental problems; reduce their waste impact on natural environment. EMS also ensures compliance with environmental regulations and pollution prevention and control. International Standard Organization for Environmental Systems (ISO, 14004-2004) is one of the standards designed for organizational improvements in environmental performance, excellence in operations, and harmonious relationship with host communities, waste management initiatives and reduction in environmental incidents (SPDC-EMS Guideline, 2011). The entire Niger Delta Region of Nigeria has had poor environmental planning, and management practices typified by policy gaps, lack of political will and poor commitment to enforcing of existing environment policy, regulations and weak environmental justice (Elenwo and Akankali, 2014). As a result of the foregoing, this study aims to examine the Environmental Management System (EMS) compliance of companies operating within Nigerian Port Authority, Rivers Port Complex Port Harcourt Rivers State. Arising from the foregoing are the following research questions;

- (a) How many companies are operating within the Nigeria Ports Authority Port Harcourt?
- (b) How do the companies understand EMS operation in their activities?
- (c) What are the focuses of EMS in the operations of these companies?
- (d) What are the levels of compliance of these Companies EMS operations?
- (e) Did the companies EMS operation conform with international standard?
- (f) What are the major impediments of EMS operations in these Companies?

### Aim and Objectives of the Study

The aim of this study was to examine the Environmental Management System Compliance of companies operating within Nigerian Port Authority, Port Harcourt, and Rivers State, Nigeria.

#### Specific objectives were to;

- i. Identify the companies operating within the NPA in Port Harcourt
- ii. Examine the EMS operations and

compliance of these companies.

iii. Ascertain if the companies EMS compliance conforms to international standard.

iv. Identify the improvements EMS operations/compliance has had on the company's environmental performance.

v. Ascertain the factors that hinder effective implementation of EMS in these companies.

### Hypothesis Statement

the loss of top  $H_1$  there is no statistically significant difference between EMS awareness and compliance by the companies in NPA.

### METHOD OF STUDY

The study adopted the cross-sectional survey research. This will include identification of target population (i.e. population of companies in NPA Port Harcourt) for questionnaire administration, selection of the sample size and data analysis. The [Figure 1a](#) Shows the Study Area (Port Harcourt Ports Authority)

**Sample Population:** The sample population includes;

- i. HSE managers of all companies operating within NPA, Port Harcourt.
- ii. The staff of HSE Department of NPA, African circle, and operational companies in NPA, Port Harcourt.
- iii. Selected contractors and Businesses operating within NPA.

In view of the foregoing, a purposive sampling method was adopted to select the population for the study. At the end of the purposive sampling, the following companies were chosen as follows; BUA, NPA, Zimrich, PTOL and African Circle out of twelve companies listed. Furthermore, a total of one hundred (100) well-structured questionnaires were distributed to the various companies that were sampled and later retrieved and analyzed. In-depth interviews on EMS operations and compliance in these companies were carried out. Also the secondary sources of data was included. Furthermore, a likert scale according to (Meyer, 1997) was weighted in the design of the questionnaires from (1-5) as shown below to ascertain the level of EMS improvement on the companies' operations as follows:

Strongly Agree (SA)-1 point  
 Agree (A) - 2 points  
 Undecided (UD)-3 points  
 Disagree (D) - 4 points  
 Strongly Disagree - 5 point

### Weighted Means

This was gotten by adding all the points and dividing by the number of options. For example;

$$\frac{5+4+3+2+1}{5} = 3.0$$

This implies that item mean lower than 3.0 will be accepted, while those higher than 3.0 will be rejected. The comparison between means were tested at 95% confidence interval ( $p=0.05$ ) using z test. Data Analysis involved the use of descriptive statistics, percentages charts and graphs to explain perceived opinions. The Chi-square ( $X^2$ ) was used to test the stated hypothesis.

Chi-Square ( $X^2$ ); is given thus;

$$X^2 = \sum \frac{[(fo - fe)^2]}{fe}$$

Where;

$F_o$  = observed frequency

$F_e$  = expected frequency.

### RESULTS

The results are shown as follows; the **Figure 1b**, shows the five sampled companies operating in the Port Harcourt Ports Authority. Series 1 was the number of questionnaire (10), while series 2 was the Questionnaire distributed to the companies (20) each.

**Table 1** shows that about (75%) of respondents were staff of the companies operating in Ports Authority, (20%) were the contractor's Staff, while other businesses operating within the area were about (5%) respectively.

**Table 2a** shows that about (60%) of respondents agree that they are aware of EMS implementation in Port Harcourt's Port Authority, while 5% are not aware. Also 25% respondents agree that EMS has improved their environmental performance.

**Table 2b** shows respondents' response on the availability of EMS guidelines of operation in their companies. About 75 persons representing 75% of

the respondents strongly agree that there was EMS guideline in their company while 20% says No, and 5% was not certain. This was buttressed graphically in **Figure 2**.

**Table 3** shows responses to the staff's perception on improvement of EMS operations in the companies. For Item 1, 50(50%) reported strongly agree, 40(40%) shows agree, 5(5%) were undecided and only 5(5%) disagrees from the entire respondents that were asked if EMS was a good policy indeed. In item 2, 60(50%) shows strongly agree and 25(25%) of the total respondent agreed that EMS has enhanced the performance their company operations. For item 3, 50(50%) strongly agreed, 40(40%) agreed and 5(5%) were undecided that it will breed harmonious relationship with host communities, and create enabling environment for their businesses to thrive. Item 4 shows that 55(55%) strongly agreed, 25(25%) agreed, and 20(20%) strongly disagreed on the issue that the EMS system will foster the sustainability of the natural environment. Finally, item 5 shows that 50(50%) strongly agreed, 20(20%) agreed, 5(5%) disagrees and 25(25%) strongly disagree the operations of EMS will reduce environmental incidents. However, the result obtained as shown from the **Table 3**, indicates that all item 1-5 have their respective mean below the criterion mean (3.0) as a result of this each of the item statement validated was accepted by the staff of the companies on their perception of the operations of EMS in their companies. More so, it can be inferred that if the EMS programme was properly implemented, that it will achieve the organizational goals in these organizations and foster sustainability of the environment. Furthermore, **Figure 3**, lends credence to EMS compliance in these companies.

**Figure 3**, shows that there was regular monitoring of some environmental parameters within the Ports premises. The listed air quality parameters were regularly monitored to ascertain the company's compliance ambient air quality according to EMS international standards. The bar chart shows that cement dust had 40%, this was as a result of one company's operations (BUA, cement plant), smoke 20%, carbon monoxide 10% and other gases not listed 20% respectively. Furthermore, **Figure 4** shows the response on types of waste generated, chemical waste 20%, oil waste 44%, effluent is 16% dust 10%, and others 10%. These wastes were not

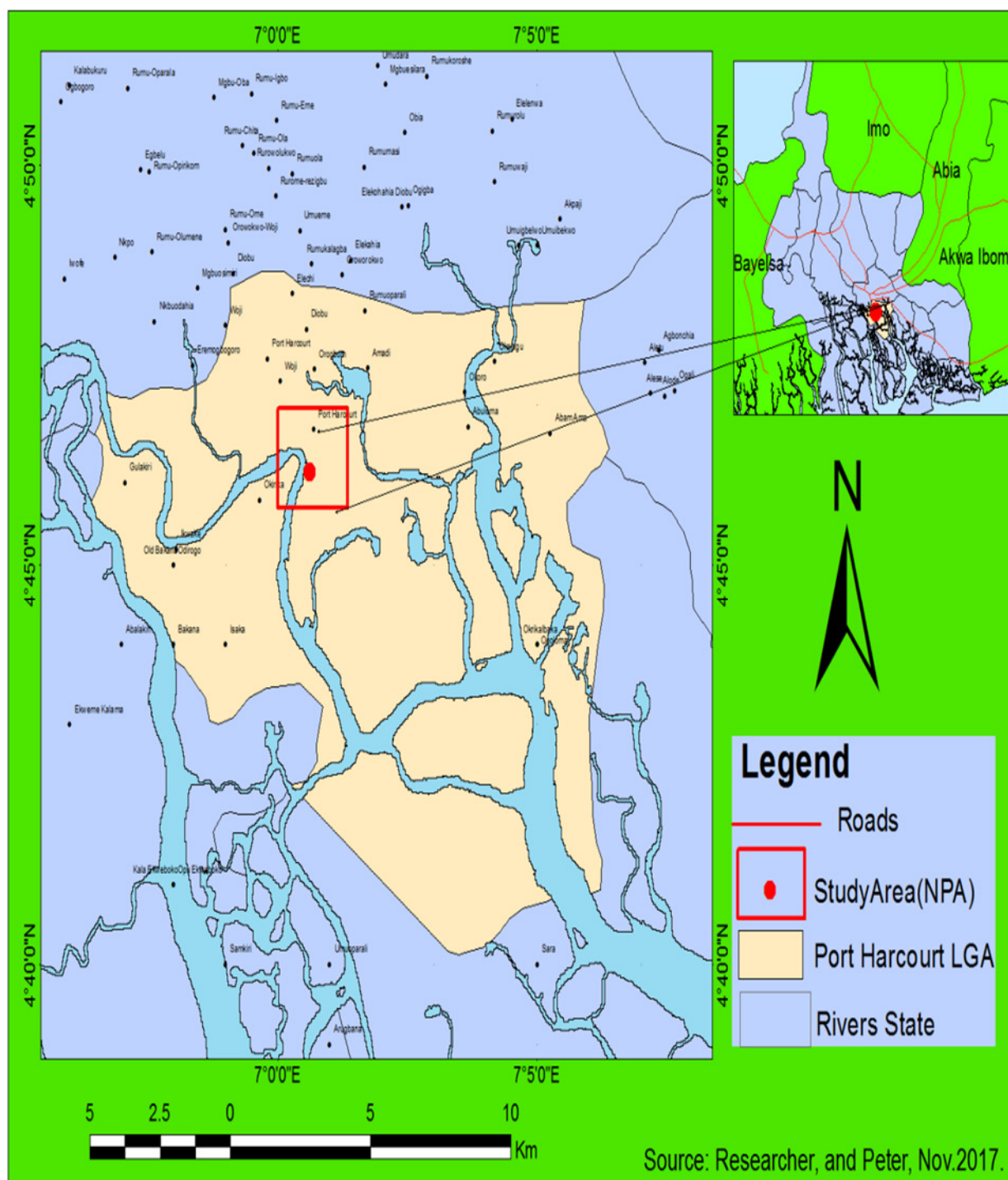


Figure 1a. Showing study Area (Port Harcourt Ports Authority).  
(Insert: Rivers State) Source: GEM Cartography Laboratory, 2018.

properly handled or treated before disposal. This fall short of the guidelines of the EMS standards. Moreover, the ambient air quality measurement exceeded the stipulated EMS

international standard, this also means that the air quality within the Ports complex is polluted. These corroborates with the findings of (Guwfan, 2017) on Environmental Management Systems Compliances

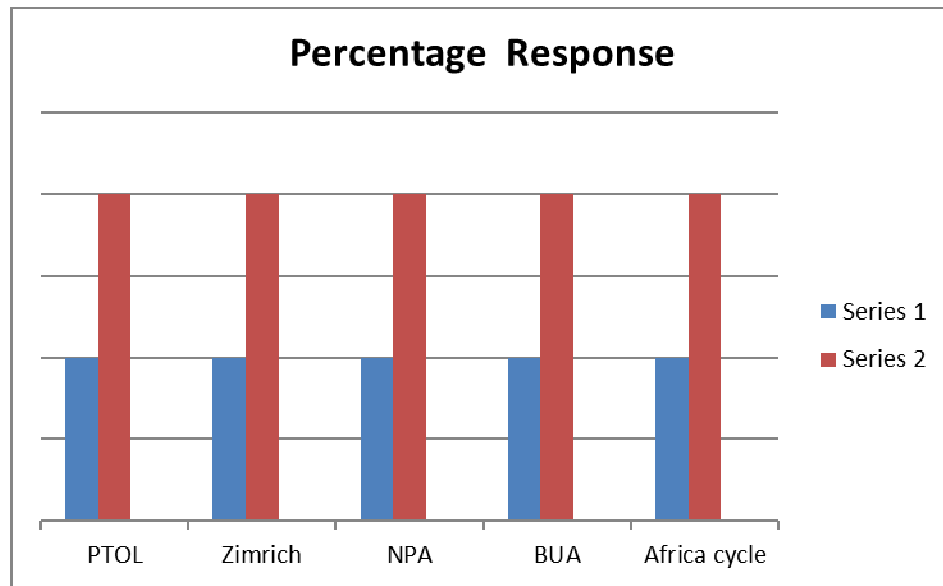


Figure 1b. Number of companies and percentage responses.

**Table 1.** Percentage of Respondents.

Responses	Frequency	%
Staff	75	75
Contractor	20	20
Others	5	5
Total	100	100

**Table 2a.** Perception of Respondents on EMS Operations.

Questionnaire items	Responses Percentage	
	Agree	Disagree
Staff aware of EMS implementation	45 (60%)	10 (40%)
If 'yes' What is the status of EMS operation(improvement in environmental performance)	25(33.3%)	15 (60%)
Staff not aware of EMS operation	5 (6.6%)	0
Total	75	25

of Companies in Trans- Amadi industrial Area Rivers State. **Figure 5** shows responses of participants on whether EMS meets international standard. From the **Figure 5**, about 30% strongly agree that EMS meets international standard while 10% says No, and 60% are not very sure. This was

because they have not been assessed and certified by an international accredited body to ascertain whether they meet international standards. More so, **Figure 6** shows participant's responses on the factor that promotes implementation of EMS in the companies sampled. The analysis showed that

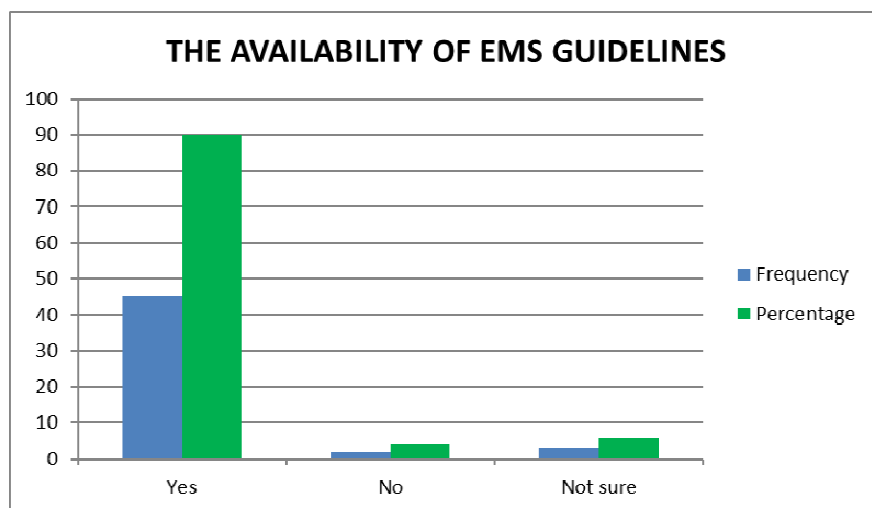


**Table 2b.** Availability of EMS Guidelines of Operations.

Responses	Frequency	Percentage (%)
Yes	75	75
No	20	20
Not Ascertained	5	5
Total	100	100

**Table 3.** Staff perception on the improvement/compliance of EMS on the companies' operations.

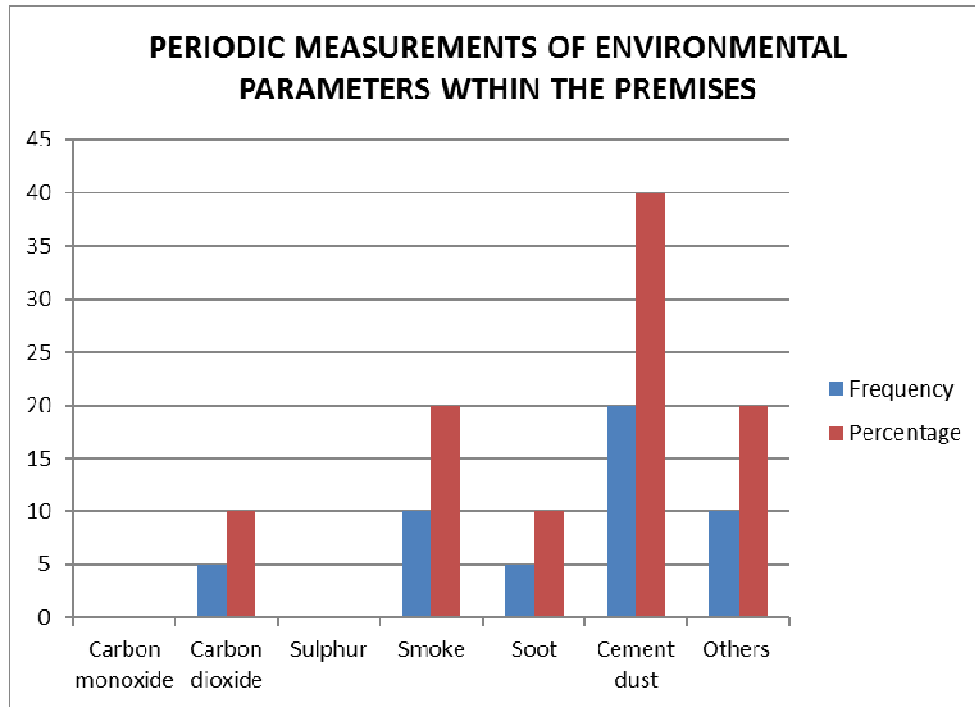
S/N	Items	SA	A	UD	D	SD	X	Remark	
1	it is a good policy	50	40	5	5	-	2.0	Accept	
2	it will enhance performance in the company's operation	60	25	5	5	-	2.0	Accept	
3	it will breed harmonious relationship with host community	50	40	5	-	5	2.2	Accept	
4	it will foster natural environmental sustainability	55	25	-	-	20	1.6	Accept	
5	If operations of EMS will reduce environmental incidents	50	20	-	5	25	2.4	Accept	

**Figure 2.** Availability of EMS Guidelines in the companies.

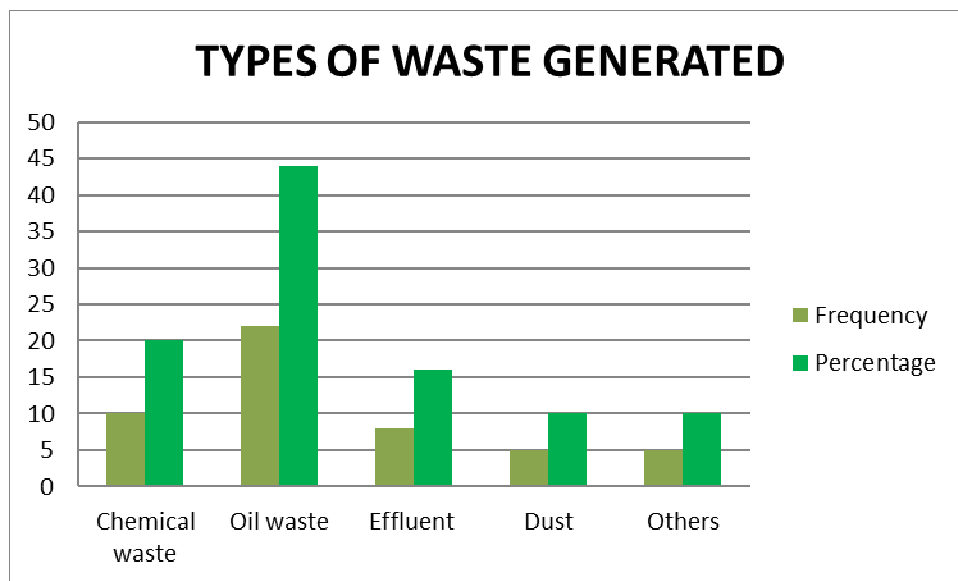
management commitment was 50%; adequate training was 30% while strong regulation enforcement was 20%. The analysis confirms that

without these factors, the implementation of EMS in these companies would be very difficult.

Respondent's views were sought on whether



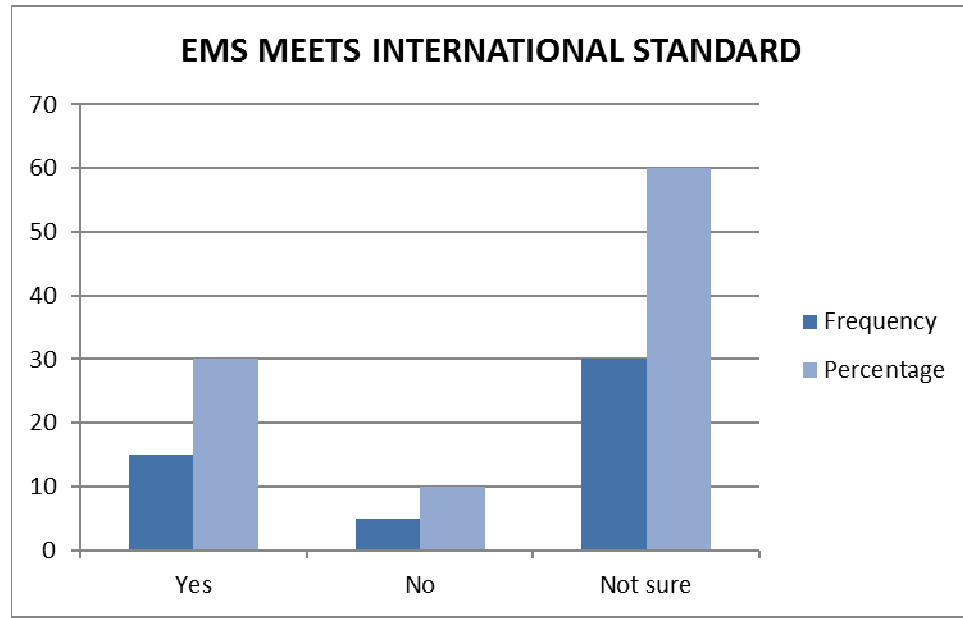
**Figure 3.** Periodic measurements of environmental parameters within the Ports premises.



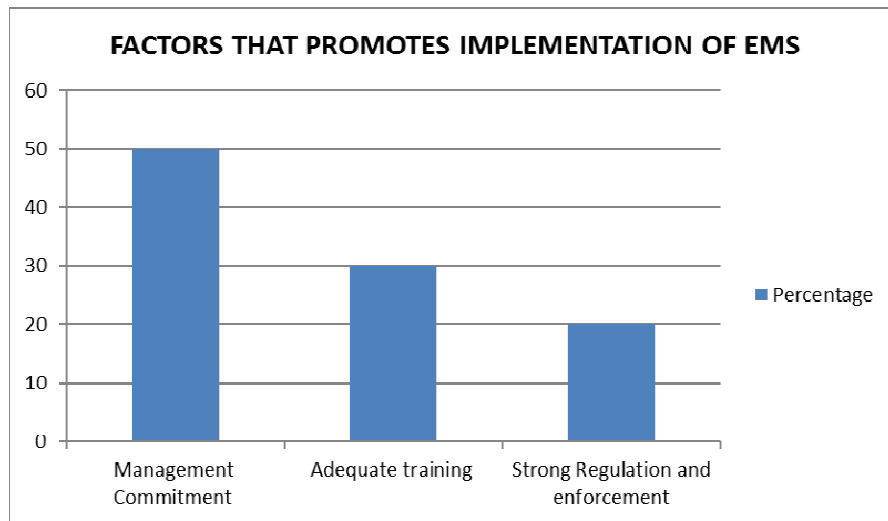
**Figure 4.** Types of waste generated from companies in the Port Complex.

they desired EMS implementation to improve their operation or not. Their responses show that

about respondents 80% strongly agree that they need EMS improvement operations in their



**Figure 5.** Whether EMS operations meets international standard.



**Figure 6.** Factors that promotes EMS implementation.

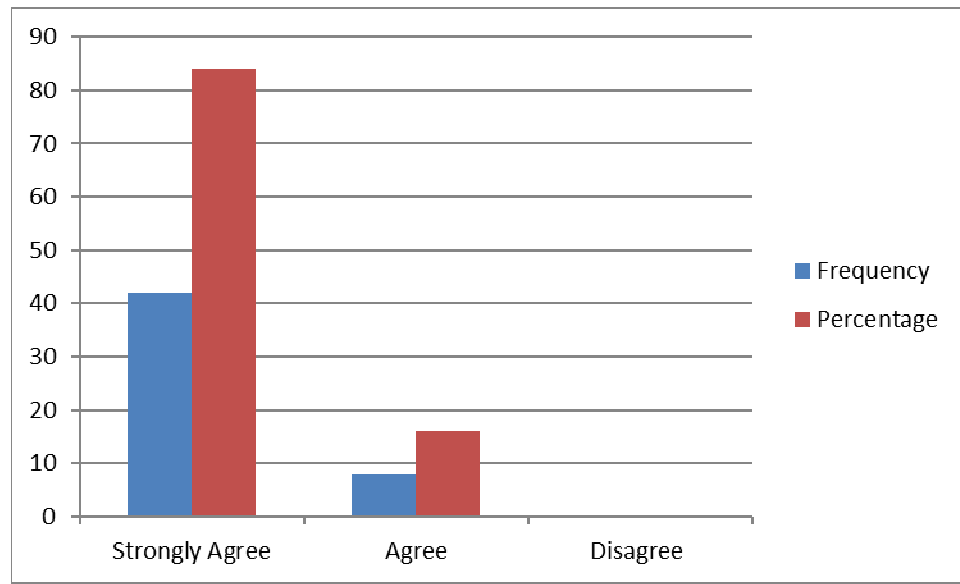
companies, while 20% were not very sure, this was shown in **Figure 7**. Furthermore, the respondents' opinion was equally sort on the factors that could impede the EMS operation in these companies. The analysis in **Figure 8** shows that about 92% agree they desire standard EMS operations, but that it could be impeded by attitudinal behavior of staff to adapt to the new standard of EMS guidelines,

though very minimal about 8%.

### Hypothesis Testing

$H_0$  there is no statistically significant difference between EMS awareness and compliance by the companies in NPA. The chi square ( $\chi^2$ ) result was not significant at  $p > 0.05$ . Therefore, the null





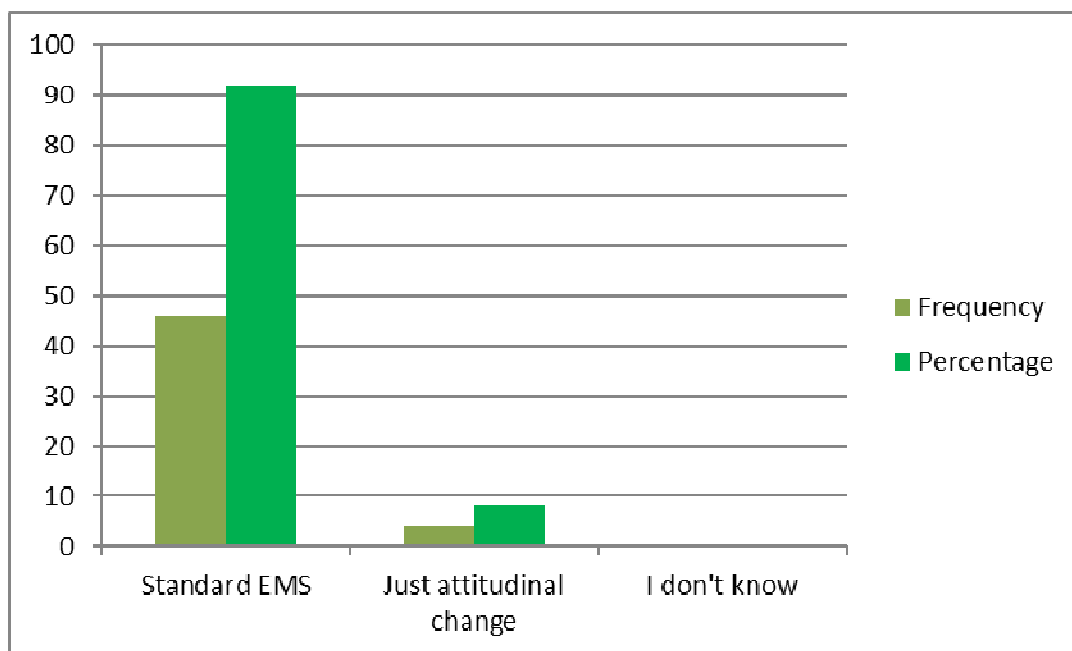
**Figure 7.** Desire for EMS improvement operations in companies.

hypothesis is accepted. This means that there was no statistically significant difference between the chi-square ( $\chi^2$ ) result in Table 4, at significant level  $p < 0.05$ ,  $\chi^2 = 12.5$ . Thus there was a statistically significant difference between EMS awareness levels and the levels of compliance. This illustrates that though the companies know about EMS, they do not comply with its standards in their operations.

## FINDINGS AND DISCUSSION

Results from this study on the Environmental Management Systems Compliance of companies operating within NPA, Rivers Port reveals that about 75% were of staff the companies operating within the Port Harcourt Ports, while 25% were contractor staff. Furthermore, about 60% of the staff was aware of EMS implementation in the company, while 39.9% were not aware. About 90% of the respondents strongly agree that was improvement and compliance on the EMS implementation in these companies, while 10% did not agree. More so, about 70% agrees that the introduction of EMS into the company's operations has brought changes such as fostering of sustainable development, reduction in environmental incidents, created enabling environment for businesses to thrive and improvement in operational performances etc. In

Table 3 the performance /compliances options using the Likert scale as indicated from item 1-5 have their respective mean below the criterion mean (3.0) as a result; the item statements validated was accepted by the staff of the companies on their perception of the operations of EMS in their different companies within the Port Harcourt Ports Authority. From Figure 5 shows that about 30% strongly agree that EMS meets international standard while 10% says No, and 60% are not very sure. This was because they have not been assessed and certified by an international accredited body to ascertain whether they meet international standards. Figure 5 showed the factors that could promote EMS operations in the companies. The analysis showed that management commitment was 50%; adequate training was 30% while strong regulation enforcement was 20%. The analysis confirms that without these factors, the implementation of EMS in these companies would be very difficult. Also their responses were sort whether EMS improved their operation. Figure 7 shows that about respondents 80% strongly agree that they need EMS improvement operations in their companies, while 20% were not very sure. Furthermore, the respondents' opinion was equally sort on the factors that could impede the EMS operation in these companies. The analysis in Figure 8 shows that about 92% agree they desire



**Figure 8.** Factors that Impede EMS operations in the companies.

**Table 4.** Contingency Chi- Square Statistics on EMS Compliance by the companies.

	EMS Compliance
Chi-square	12.47
Degree of freedom	7
Level of significance	0.05

standard EMS operations, but that it could be impeded by attitudinal behavior of staff to adapt to the new standard of EMS guidelines, though very minimal about 8%. The chi square ( $\chi^2$ ) result was not significant at  $p > 0.05$ ,  $\chi^2 = 12.5$ . Therefore, accept the null hypothesis. Thus there was a statistically significant difference between EMS awareness levels and the levels of compliance.

## CONCLUSION

The ISO14001-14004 Environmental Management Systems (EMS) standard has been developed to assist organizations/companies, performance aimed to protect her corporate identity and manage her activities within her area of operations in an

environmentally friendly manner world-wide. This study examined the Environmental Management Systems (EMS) compliance of companies operating within Nigerian Ports Authority Rivers Ports, Port Harcourt. A total of one hundred (100) respondents with well-structured questionnaires were interviewed from the sampled companies. A likert scale was weighted in the design of the questionnaires from (1-5) to ascertain the level of EMS compliance in the company's operations. The analysis showed that the management commitment on EMS improvement was 50%; adequate training was 30%, while strong regulation enforcement was 20%. The analysis confirms that without these factors, the implementation of EMS in these companies would be very difficult. Also their responses were sort whether EMS improved their operations. Figure 7 shows in this study showed that about 80% respondents strongly agree that they need EMS improvement operations in their companies, while 20% were not very sure. Furthermore, the respondents' opinion was equally sort on the factors that could impede the EMS operation in these companies. The analysis in Figure 8 also showed that about 92% agree they desire standard EMS improvement operations, but that it could be impeded by attitudinal behavior of

staff to adapt to the new standard of EMS improvement guidelines, though very minimal about 8%. The chi square ( $\chi^2$ ) result was not significant at  $p > 0.05$ ,  $\chi^2 = 12.5$ . Therefore, we accept the null hypothesis. Thus there was a statistically significant difference between EMS awareness levels and the levels of compliance. This shows that though the companies know about EMS, they do not comply with its standards in the improvements of their operations. The study recommends that if the EMS programme were properly implemented in all the companies in Rivers state, then the organizational goals in these companies would be achieved and fosters sustainability of the environment in Nigeria.

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