

Overcoming Barriers to Compliance with Environmental Management System (ISO 14001-EMS) by Manufacturing Companies in Kano, North West, Nigeria.

¹J. O. Agwu, ²K. C. Ogboi, ²A. D. Chinedu and ¹G. C. Okoro

¹Department of Soil Science and Environmental Management Ebonyi State University, Abakaliki, Nigeria.

²Centre for Environmental Management and Control, University of Nigeria, Enugu Campus.

Email: interchemp@gmail.com

Tel:+2347031550006.

ABSTRACT

Manufacturing Companies negatively impact the Environment through air pollutant emissions, toxic waste disposal, and water contamination. Compliance with environmental management system (ISO 14001) can help companies reduce or eliminate environmental degradation. This study looked at overcoming barriers to compliance with environmental management system in manufacturing companies in Kano State from 2016 - 2018. Descriptive research design through questionnaires was used in this study. The study used a combination of participatory, qualitative and quantitative method to collect the necessary data. The data was analysed using excel spread sheets to produce results which were then presented in tables, graphs and charts. The following were the barriers experienced by the companies in complying with EMS standards; top management reluctance (20.5%), lack of knowledge and required skills (11.5%), lack of awareness and education (24.4%), lack of government support (15.4%) and requirement of high investment (28.2%). The companies needed implementation guidelines (11.1%), technical consultancy (17.5%), training and awareness (26.3%), financial support (28.8%) and technology transfer(16.3%) to overcome the above barriers. The topmost barrier to compliance was high cost of investment and financial support is needed most to overcome the huddles of compliance. These financial support could come in inform of tax breaks and or other economic relieves that will enable manufacturing companies in Kano State operate at minimal cost that will make funds available for compliance with ISO 14001 - EMS.

Keywords: Barriers; Compliance; Environmental management system (EMS); Manufacturing Companies; Questionnaire.

INTRODUCTION

Manufacturing Companies negatively impact the Environment through air pollutant emissions, toxic waste disposal, and water contamination. Besides, they are the primary offenders when it comes to greenhouse gas contributions. Manufacturing Companies are responsible for nearly two-thirds of the emissions responsible for global climate change [1]. Manufacturing Companies are to show commitment to managing the impact of their operations on the Environment and society. Most environmental degradations

and emissions are anthropogenic since industrialization has brought factory pollutants and greater land use that have harmed the Natural Environment [2]. Natural resources are indispensable to economic development and not devoid of environmental consequences as traceable to the ecological degradation and atmospheric pollution experienced in Nigeria [3]. Indeed, environmental issues are related to the continuous consumption of materials, energy, and water by industries resulting in the

depletion of these resources. Also, the uncontrolled emission of toxic gases, waste, and effluents in water bodies and air by the manufacturing companies has adverse effects on the Environment. Climate change, global warming, ozone depletion, and nitrifications are some of the consequences of these negative impacts of the activities of manufacturing companies on the Environment.

Also, the manufacturing companies' impacts are dragging the attention of the public, government, business, media, and other stakeholders seeking industrial compliance with the management system. International organizations, also want Manufacturing Companies to comply with healthier environmental management practices, as well as promote research and initiatives on environmental management. Due to pressure from stakeholders and the benefits that accrue from compliance with EMS, manufacturing companies are kin to demonstrate their readiness to maintain a conducive operational environment through compliance with relevant international and local regulations and standards.

Complying with these regulations and standards comes with its own difficulties. These difficulties are referred to as barriers. The objectives of this research are to identify these barriers and propose ways to overcome them, using manufacturing companies in Kano as case study.

Barriers to compliance with Environmental Management System

Barriers are factors that hamper and can even bring to an end the design, implementation, and operation of an environmental management system. Even when driving forces exist, manufacturing companies may face imposing barriers when designing and implementing an EMS. Lack of knowledge and awareness of environmental management also is a significant factor. An environmental management system (EMS) is a suitable

tool for firms to manage their operations' impact on the environment [4], [5], [6].

Many companies complain about the complexity of the ISO 14001 - standard and the high costs of system implementation and third-party certification. Indeed, the complexity of the model and the lack of human and financial resources are the reasons why many companies choose not to comply with environmental management system [7], [8]. According to [9], the following constitutes barriers to compliance with environmental management system:

- Lack of customer requirements or demand to have an environmental management system.
- The misconception that environmental issues are a low organizational priority.
- The belief that an EMS is not essential or relevant to the business or capable of adding to the bottom line.
- Lack of public or non-governmental organization pressure to implement an EMS.
- The belief that an EMS is the current management flavor of the month.
- The belief that an EMS is not widely accepted or used in an industrial sector or geographic area.
- Concern about the cost and time needed to establish an EMS
- Concern about the operational management costs after implementation
- The perception that an EMS is complicated and unattainable.
- Fear of discovering non-compliance with regulations or permits.
- Fear of finding or uncovering internal problems within the organization.

MATERIALS AND METHODS

Sources of Data

The study used a combination of participatory, qualitative and quantitative

method to collect the necessary data. The sources of data are divided into two categories: the primary data through

interviews, questionnaires and observations and the secondary data which were collected from relevant books, journals, conferences and previous research works.

Sample Collection

Sample collection is necessary so that some elements of the population can be considered and conclusions made about the entire population of the study [10] [11] [12]. In this study, the population is the manufacturing companies in Kano. The sample size is the thirty (30) selected companies.

According to the study area, the data were segmented into categories that identified the targets of the study and results were presented logically based on the research questions obtained from the questionnaires' responses.

Table 1 and figure 1 shows the distribution of questionnaires. Thirty (30) questionnaires were distributed among the thirty (30) selected Companies in

Research Design

Descriptive research design through questionnaires was used in this research. The questionnaire was designed according to consulted literatures during the study. The instrument was pre-tested by interviewing an ISO 14001 consultant who provided a balanced perspective on the issues involved in compliance with EMS.

Data Analysis

The data collected through the use of structured questionnaires was analysed using excel spread sheets to produce results which were then presented in tables, graphs and charts.

RESULTS

Kano State. Twenty four (24) representing 80.0% were returned in 2016. In 2017, twenty-six (26) were returned, representing 86.7%, and in 2018, twenty-six (26) were returned, but one (1) was invalid. The actual number of questionnaires returned for that year was twenty-five (25), which is 83.3%. Average returned questionnaires were twenty-five (25), representing 83.3%.

Table 1: Distribution of Questionnaire

Distributed Questionnaire	Returned	% Returned	Not returned	% Not Returned
30	25	83.3	5	16.7

Source: Fieldwork, 2018.

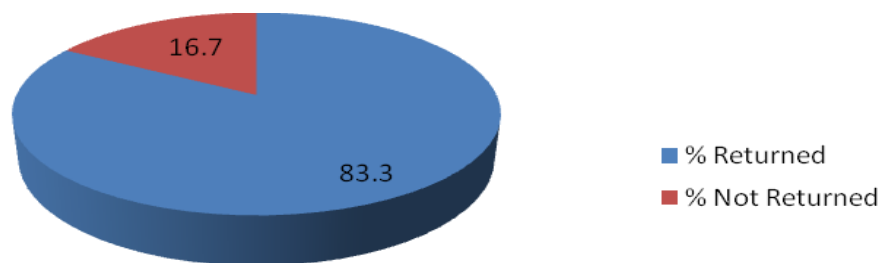


Figure 1 Distribution of Questionnaire (pie-chart)

Source: Adapted from Table 1

Also, table 2 and figure 2 represents company size. Thirty (30) Companies in Kano State were sampled in 2016, 2017, and 2018. Eight (8) of the sampled companies were small scale (<50 employees), sixteen (16) medium-scale (<250 employees), and six (6) large scale (>250 employees). These represents 26.7%, 53.3% and 20% respectively.

Table 2: Company Size

Company size	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Small (<50)	8	26.7	26.7	26.7
Medium (<250)	16	53.3	53.3	80.0
Large (>250)	6	20.0	20.0	100.0
Total	30	100.0	100.0	

Source: Fieldwork, 2018.

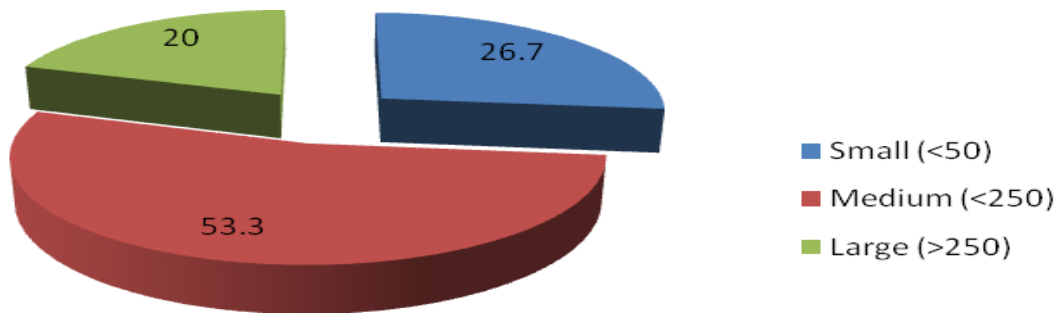


Figure 2: Company Size (pie-chart)

Source: Adapted from Table 2

Table 3 and figure 3 shows positions of respondents. The same number of Companies was sampled within 2016 - 2018. 26.7% were HSE Managers, 30% Lab/Quality control Managers, 6.7% H.R. Managers, 3.3% Station Managers, and 33.3% Factory Managers.

Table 3: Positions of Respondents

Positions of Respondents	Frequency	Percentage (%)	Valid Percentage (%)	Cumulative Percentage (%)
HSE	8	26.7	26.7	26.7
Lab/Quality Mgr	9	30.0	30.0	56.7
H.R. Manager	2	6.7	6.7	63.4
Station Manager	1	3.3	3.3	66.7
Factory Manager	10	33.3	33.3	100
Total	30	100.0	100.0	

Source: Fieldwork, 2018.

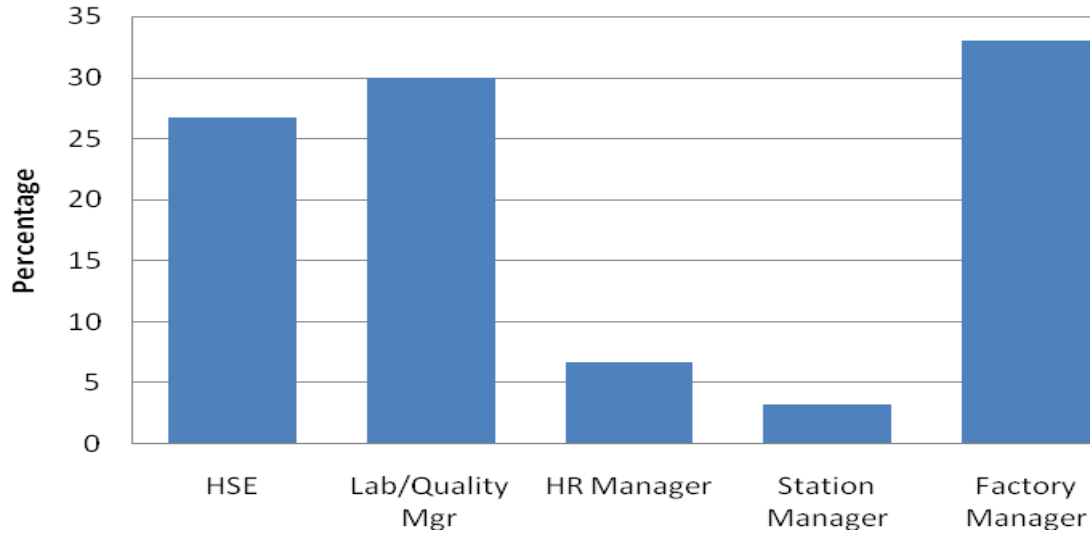


Figure 3: Position of Respondents (Bar-Chart)

Source: Adapted from Table 3.

Table 4 and Figure 4 show barriers experienced by Manufacturing Companies in complying with Environmental Management System - ISO 14001 in Kano State. The requirement of high investment with 28.2% is the highest barrier experienced by the investigated Companies.

Table 4: Barriers Experienced by Manufacturing Companies in Complying with Environmental Management System - ISO 14001 in Kano State.

Barriers Experienced by Manufacturing Companies in Complying with Environmental Management System - ISO 14001 in Kano State.	Frequency	Percentage (%)
Top management reluctances	16	20.5
Lack of knowledge and required skills	9	11.5
Lack of awareness and education	19	24.4
Lack of government support	12	15.4
Requirement of high investment	22	28.2

Source: Fieldwork, 2018.

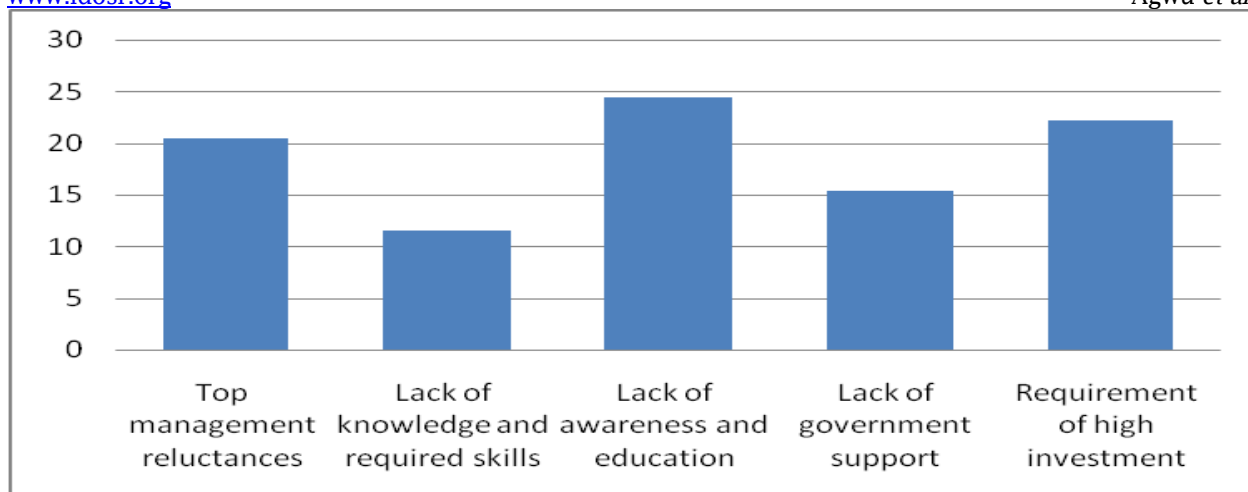


FIGURE 4: Barriers Experienced by Manufacturing Companies in Complying with Environmental Management System - ISO 14001 in Kano State. (Bar-chart Adapted from Table 2)

Table 5 and Figure 5 show support needed to overcome barriers experienced by Manufacturing Companies in complying with Environmental Management System - ISO 14001 in Kano State. Financial support is the topmost need, with 28.8%.

Table 5: Support Needed to Overcome Barriers Experienced by Manufacturing Companies in Complying with Environmental Management System - ISO 14001 in Kano State.

Support Needed to Overcome Barriers Experienced by Manufacturing Companies in Complying with Environmental Management System - ISO 14001 in Kano State.	Frequency	Percentage (%)
Implementation guideline	9	11.1
Technical consultancy	14	17.5
Training and awareness	21	26.3
Financial support	23	28.8
Technology transfer	13	16.3

Source: Fieldwork, 2018.

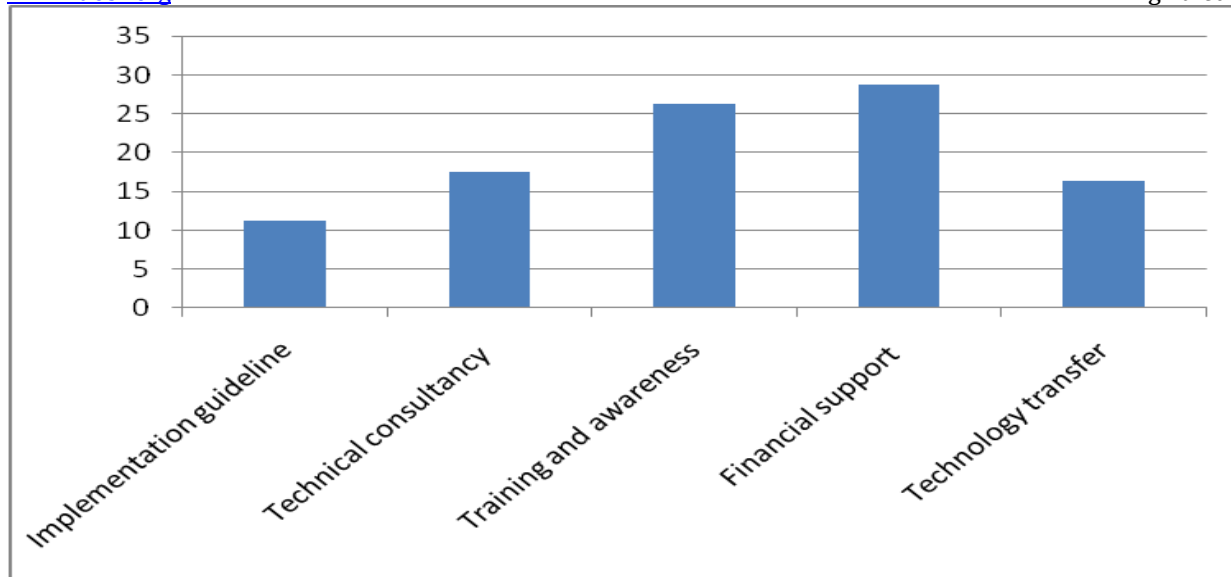


Figure 5: Support Needed to Overcome Barriers Experienced by Manufacturing Companies in Complying with Environmental Management System - ISO 14001 in Kano State. (Bar-chart Adapted from Table 3)

DISCUSSION

The assessment of existing environmental management practices in manufacturing companies in Kano was carried out as a descriptive survey research and the use of questionnaires is considered the most suitable instrument. The document is confidential and gives the respondents the needed cover to express their sincere opinion on the subject matter.

The essence of distributing questionnaires to different categories of companies is to ensure equity participation in the survey. Eight (8) small scale (<50 employees), sixteen (16) medium-scale (<250 employees), and six (6) large scale (>250 employees) companies took part in the study.

Responsible managers of the surveyed companies responded well to the research questions. 33.3% of the respondents are factory managers and this made gathering of data for the research less cumbersome.

The existing environmental management practices among the sampled manufacturing companies are waste treatment, waste disposal, noise reduction, recycling/reuse, pollution abatement and environmental awareness. Awareness topped the companies' environmental management practices

with 30.9% response. The implication is that all the sampled companies have one form of management practice or the other. For the fact that they are aware means that they have shown some level of commitment to environmental protection, The following were the barriers experienced by the companies in complying with EMS standards; top management reluctance (20.5%), lack of knowledge and required skills (11.5%), lack of awareness and education (24.4%), lack of government support (15.4%) and requirement of high investment (28.2%). The topmost barrier experienced by Manufacturing Companies in complying with Environmental Management System - ISO 14001 in Kano State is requirement of high investment with 28.2%.

The support needed to overcome barriers as experienced by Manufacturing Companies in complying with Environmental Management System - ISO 14001 in Kano State are implementation guidelines (11.1%), technical consultancy (17.5%) , training and awareness (26.3%), financial support (28.8%) and technology transfer(16.3%) to overcome the above barriers.. Financial support is topmost need, with 28.8%.

CONCLUSION

After collection and analysis of data obtained through questionnaires distributed to responsible managers of the selected companies, it was observed that most of the companies are eager to comply with ISO 14001 - EMS essentially as a result of regulatory cum benefits pressure. The topmost experienced barrier to compliance was high cost of

investment. The companies needed financial support to overcome the huddles of compliance. These financial support could come in the inform of tax breaks and or other economic relieves from government, that will enable manufacturing companies comply with ISO 14001 - EMS.

ACKNOWLEDGEMENT

We sincerely acknowledge the senior managers of the selected companies for their co-operation and candid responses to the research questions. We also wish to thank all staff of Soil Science and Environmental Management, Faculty of

Agriculture and Natural Resources Management, Ebonyi State University and those of CEMAC, University of Nigeria, Enugu Campus, for their support and encouragement.

REFERENCES

1. Akinbami, A. O., & Adegbulugbe, J. F. K. (1998). Exploitation of energy resources and environmental degradation in Nigeria. A paper presentation at the Two-Day National Seminar on The Management of Nigerian Resources for National Development under the auspices of NIIA.and Sons Inc., New York
2. Barlett J.E., Kotrlik J.W & Higgins C.C (2001), Organizational research, determining appropriate sample size in survey research, information technology, learning and performance Journal, 19(1).
3. Hillary R. Environmental Management systems and the smaller enterprise. Journal of Cleaner production 2004;12(6):561-569.
4. Macey, W. H., & Schneider, B. (2006). Employee experiences and customer satisfaction: Toward a framework for survey design with a focus on service climate. In A. I. Kraut (Ed.), Getting action from organizational surveys (pp. 53-75). San Francisco: Jossey-Bass.
5. Moodley, B., 2003. *An Analysis of the South African Textile Industry at Macro and Micro Levels*, MBA, University of Natal Pietermaritzburg, 92p.
6. National Bureau of Statistics, (2006), Economic survey.
7. Nigeria population commission, (2006), National census.
8. Palmer J, van deSr vorst R. (2012). 'Are standard' Right for SMEs?, Eco-Management and Auditing 16;(3):91-96.
9. Uwuigbe, O, Uwuigbe, U., Ben,E., 2012.Cash Management and Corporate Profitability: A Study of Selected Listed Manufacturing Firms in Nigeria.. Acta Universitatis Danubius: Oeconomica,
10. Wekks, N and Galbraith (1999), Environmental Management Systems and Environmental Protection: Can ISO 14001 Be useful within the Context of APEC? Journal of Environment and Development 6(3): 292-316.
11. Williams H, Van Hooydonk A, Dingle P, Annandale D. Developing tailored environmental management systems for small business Eco-management and Auditing 2000; 7 3: 106-113.
12. Zeng, S.X., C.M. Tam, V. Z.M. Deng. "Towards Implementation of ISO 14001 Environmental Management System in selected Industries in China." Journal of Cleaner

