

EQUIPMENT MAINTENANCE ACTIVITIES REQUIRED FOR THE SUSTENANCE AND GROWTH OF WOODWORK INDUSTRIES IN NIGER STATE

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Abstract

This study was designed to investigate those equipment maintenance activities required for the sustenance and growth of woodwork industries in Niger State. Three (3) research questions were formulated to guide this study. Three (3) null hypotheses were also formulated and tested at 0.05 level of significances. A structured questionnaire was validated and used for data collection. Mean and standard deviation were used for data analysis. The population for the study was ninety-four (94) technicians and two hundred (200) craftsmen in the fifty-six (56) registered small and medium scale industries. The area of the study covered the entire Niger State where such industries were found. Recommendations were made based on the finding of the study.

Introduction

One of the maintenance viewpoints of the responsibilities in the management of any physical assets should be maintain to a high level of satisfaction. If this responsibilities is well articulated and carried out, those physical assets would certainly continue to fulfill their intended functions (Lee & George, 1993).

The term equipment has the same general connotation as the term machine expect that it usually includes accessories such as handing devices and special attachment (Obah, 1998). An equipment is defined as an instrument needed for an undertaking of the production of goods and services (Wikipedia Encyclopedia, 2006). The problems in the maintenance of equipment and machines are essentially the same. Equipment is the vital portion of the production and maintenance plan. There are standard equipment-equipment related to the operations and operations sequence needed to manufacture a product and special equipment designed for one particular work piece (Lavler, 1989). Adaptation or reuse of such equipment can be very costly.

Woodwork involves the use of tools, materials and procedure in making goods from wood (Walker, 1976) in woodwork industries, woods are used to make things of beauty, such as jewellery table ware, furniture and work of act wood is used for many different purposes. It can be used to manufacture such items as set and rockets engines, buckets and modern aircrafts where light weight combined with great are required.

An industry could be any grouping of business that share a common method of generating profits. If the activities of woodwork industry are well coordinated much revenues will be derived. Industry the organized action of making goods and services for sale (Lawal, 2000).

Equipment maintenance is essential both to ensure that the equipment failure does not cause a disaster and to ensure the reliability of equipment in a disaster situation (Consortium of Academic libraries) CAL 2006), ensure that equipment stored to deal with a disaster is concluded in maintenance routines. Those responsible should sign to state that the relevant checks and maintenance routines have been carried out. However, as recently pointed out by Lawal and Adeyemo (2002), maintenance is much talked about in Nigeria, there is handily any maintenance culture in the country. To confirm or reject this view, it was considered necessary to look at the maintenance policy/policies of industries in Nigeria. These policies are

all equipment will be used, cared for and maintained in a safe manner, only necessary, properly functioning and safe equipment should be kept in work areas. Broken equipment waiting repair shall be clearly marked with yellow tag. Supervisor ensures employee is aware of and follows the requirements for the use, care and maintenance of equipment (South West Educational Development Laboratory SEDL, 2005). Employees inspect equipment before use, maintain all the equipment they use or for which they are responsible. They provide regular preventive maintenance in order to attain or prolong the service life of equipment and immediately initiate appropriate repair requests on all malfunctioning equipment (JAC Webmaster, 2006).

The woodwork industries in Niger State have machines equipment workshops, tools, building infrastructure and other facilities, which need maintenance. Most woodwork industries employ and train craftsmen through in service training to update their knowledge on the use of modern equipment and machines. Such training requires constant usage of machines and equipment. The machine and workshop tools have to be main trained regularly to ensure that they give the required service.

According to Okemiri (2002) equipment and machines in the woodwork industries in the state have maintenance problems. Some are known to have mechanical faults while others have electrical faults (Lawler, 1989), clearing, lubricating and replacement of worn out parts were usually not considered necessary. Broken down equipment and machines become places where dust settle without prompt attention given to maintenance by then management. Non-availability of spare parts has worsened matters and has prevented many machines and equipment from functioning. The ugly outcome of this is little or no productivity, financial degeneration and in most cases the management of the industry threaten to down size the workforce (Oladeji, 2004 & Olowokere, 2002).

Finally, the financial consequences of neglecting maintenance constitute a major problem, which according to Lawal (2000), is not only seen in terms of reduced assets life and premature replacement but also in increase operating cost and waste of related natural and financial resources. It becomes necessary therefore, it investigate those equipment maintenance activities required for the sustenance and growth of woodwork industries in Niger State.

Research Questions

1. What planning activities are carried out in the woodwork industries to achieve maintenance objectives?
2. What evaluation management strategies are carried out in the woodwork industries to achieve maintenance objectives?
3. What ways can maintenance activities be improved in the woodwork industries in Niger State.

Area of the Study

The study was conducted among woodwork industries in the state where such industries were found. Hence the area of the study was the entire Niger State.

Population for the Study

The population for the study comprised one hundred and twenty-two (122) maintenance technicians and craftsmen in the fifty-six (56) registered small and medium scale woodwork industries in Niger State. In these industries ninety-four (94) were technicians while two hundred (200) were craftsmen. However, since the size of the population is relatively small, the entire population will be studied (source industrial department Ministry of trade and investment, Niger State 2005).

Reliability of the Instrument

The reliability of the instrument was determined by administering it once and analyzing it for its internal consistency. Data collected for the reliability test were analyzed using Cronbach Alpha formula to determine the reliability coefficient and it was found to be 0.85 which is high.

Method of Data Analysis

Mean and standard deviation was used in computing each response.

Research Question 1

What planning activities are carried out in the woodwork industries to achieve maintenance objectives? Data relevant to answer this research question were presented in Table 1 below.

Table 1: Responses of the Respondents on those planning activities in the woodwork industry

S/N	Planning activities	\bar{x}	SD	Remark
1	Equipment are usable soon after they are installed	3.95	0.76	Agree
2	Storage facilities are adequate	4.16	0.68	Agree
3	Storage method is suitable	4.08	0.62	Agree
4	Storage areas have easy access	3.78	0.98	Agree
5	Flammables are stored in approved	4.13	0.68	Agree
6	Cabinets are used for storing tools	4.24	0.68	Agree
7	Equipments are kept in serviceable condition	4.22	0.60	Agree
8	Preventive and corrective maintenance is practiced	4.14	0.65	Agree
9	Skilled personnel are available to handle maintenance services	4.10	0.79	Agree
10	Machines have suitable guards	4.06	0.71	Agree
11	Frequent inspection of facilities is upheld	3.87	0.90	Agree
12	Inspection of facilities is done by expert(s)	4.02	0.88	Agree

N = 294

N = Technicians and craftsmen in the woodwork industries

\bar{x} = Mean of the respondents

SD = Standard deviation of the respondents.

Data in table 1 revealed that all the twelve (12) items studied under planning activities in the woodwork industries have a mean rating above 3.50 which is the cut-off point for agree as stated in the decision rule. They agree upon fall between the mean range of 3.78 to 4.24 and a range of standard deviation of 0.60 to 0.98. This implies that there were high agreement among the technicians and craftsmen on the planning activities in the woodwork industries to achieve maintenance objectives.

Research Question 2

What evaluation management strategies are carried out in the woodwork industries to achieve maintenance objectives?

Data relevant to answer this research question is found in table 2.

Table 2: Responses of technicians and craftsmen on Evaluation management strategies in the woodwork industry

S/N	Evaluation activities	\bar{x}	SD	Remark
1	Equipment are test-runned after installation/repairs	4.35	0.57	Agree
2	Quality control of products is upheld	4.10	0.57	Agree
3	Products meet local and international standard	3.87	0.79	Agree
4	Maintenance devices for cleaning oil/water dust are available	3.97	0.77	Agree

N = 294

N = Technicians and craftsmen in the woodwork industries.

\bar{x} = mean of the respondents.

SD = standard deviation of the respondents.

Data in table 2 above revealed that all the four (4) items obtained a mean rating above 3.50 which is the cut-off point for agree meaning that the four (4) items were accepted as evaluation management strategies needed to obtain maintenance objectives in the woodwork industry. The standard deviations falls between

0.57 to 0.77. This implies that there was unanimous agreement among the respondents, that the four evaluation activities listed in the table above were necessary to arrive at maintenance objectives.

Research Question 3

What ways can maintenance activities be improved in the woodwork industries in Niger State? Data needed for this question were found on table 3.

Table 3: Responses of technicians and craftsmen on ways to improve maintenance objectives in the industry

S/N	Ways to improve maintenance objectives	\bar{x}	SD	Remark
1	Employees are trained and retrained to up-date their knowledge	3.13	1.30	Disagree
2	The management makes monthly allocation for the purchase of maintenance items	4.11	0.60	Agree
3	Files/records for maintenance schedules are available	4.12	0.45	Agree
4	Storage facility for spare parts in available	4.03	0.62	Agree
5	There are manuals for instruction on installing, operating, maintaining, overhauling, starting and stopping	4.09	0.74	Agree
6	Seminars/conferences/workshops are on regular basis organized for employees	2.90	1.34	Disagree
7	The management procure quality and quantity materials	4.12	0.50	Agree

N = 294

N = Technicians and craftsmen in the woodwork industries.

\bar{x} = mean of the respondents.

SD = standard deviation of the respondents.

Table 3 reveals that five (5) out of seven (7) items agreed on ways of improving maintenance objectives. Two (2) items with a mean rating below 3.50 disagreed on way to improve maintenance objectives. The standard deviation ranging from 0.45 to 1.34 showed that two (2) items had a standard deviation above a whole number revealing that there was disagreement in the opinions on ways to improve maintenance objectives. On the other hand, five (5) items whose standard deviation fall below a whole number shows agreement on the ways to improve maintenance objectives in the woodwork industry.

Conclusions

Based on the results of the study, the following conclusions have been drawn by the researcher in the light of our growing economic need for industrialization, skills acquisition are highly needed in the woodwork industries to meet the societal demands for goods and service. To meet this challenge, the woodwork workshops should be well equipped with tools, machines and other necessary facilities.

The management personnel in the woodwork industries need skills to enable them:

1. Plan maintenance activities.
2. Schedule maintenance activities.
3. Workout evaluation management strategies.
4. Identify appropriate supervision role.
5. Ascertain ways to improve maintenance activities.

To up-date the knowledge of employee, training and retraining programmes should be organized for them. Seminars, conferences and workshops should be considered as veritable tools to help works improve on their skills as to face the emergent challenges posed by technological changes.

The management should always source for funds and make such available for the purchase of tools, equipment, machines and spare parts to enhance timely repair and replacement of worn out parts.

In the areas of skills acquisition, discovery was made that in most woodwork industries lack skilled maintenance personnel to handle most breakdown problems. When such breakdown happens, the management goes out to him competent hands with concomitant high cost. It is therefore concluded that emphasis should be on employing proficient persons with adequate incentives, rather than look for cheap labour which in most cases helps to run down the industry.

Recommendations

On the basis of the findings of this study and its implication, the following recommendations have been made:

1. Effort should be made by the management to provide relevant and adequate machines, equipment, tools and other infrastructural facilities in the woodwork industries.
2. The federal ministry of science and Technology should look into the problems of woodwork industries with a view to helping them procure most needed facilities as to help boost the economy.
3. The management should consider training and retraining of personnel as a matter of priority to improve on their skills.
4. The management should use seminars/conferences/workshops as a way of up-dating employees knowledge to face day-today challenges
5. The purchase of quality and quantity spare parts and materials should be considered imperatives by the management.
6. Quality control of products should be the watch word of the management as to meet local and international standard.
7. Maintenance activities should be well planned and implemented by all woodwork industries.
8. Maintenance performance should be used as a basis for reward scheme to motivate maintenance personnel on their jobs.

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