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RESOURCES REQUIRED FOR WOOD WASTE MANAGEMENT IN SMALL AND MEDIUM SCALE ENTERPRISES IN NIGER STATE

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Abstract
The study determined the resources for wood waste management for small and medium scale enterprises in Niger State. The study adopted a descriptive survey research design. The population of the study was 37 respondents drawn from 37 SMEs registered with Corporate Affairs Commission (CAC). No sampling was done because the population was manageable. The instrument for data collection was a structured questionnaire. The instrument was validated by three lecturers and the reliability coefficient of the instrument was 0.87 using Cronbach's Alpha. Data collected from the questionnaire were analyzed using Mean and t-test, t-test was used to test the Null Hypotheses at 0.05 level of significance. Decision regarding the null hypotheses was based on comparing the Sig. 2 Tailed value with the stated level of significance. The findings of the study revealed that human resources, material resources and economic resources are the needed resources for wood waste management. The study therefore, concluded that, these resources must be put in place by SMEs and the necessary stakeholders for an effective and sustainable wood waste management. Based on the findings, it was recommended that the resources identified in the study for waste collection, storage, recycling and utilization should be made available in Niger State by the government so as to maximize wood waste utilization and create wealth and jobs in the state and SMEs generating wood waste should explore the business dimension wood waste management, acquire the necessary resources so as to generate more revenue and create jobs.

Keywords: Resources, Wood Waste, Wood Waste Management, Small and Medium Scale Enterprises

Introduction

Waste management is a global issue and a challenge to many nations. Developed nations are constantly working on new, advanced and environmentally friendly approaches of managing waste. Wood waste management seem to be one the most expensive form of waste to be manage because of the cost of recycling and recovery. Wood wastes are residues generated from the activities of wood processing so as to get a desired, finished and usable products. Wood waste are woody residues generated from the process of converting log of wood into usable products, construction and demolition of structures and in the manufacturing of furniture and wood products (Owoyemi, *et al.,* 2016). Wastes generated from the forest consist of branches, leaves, needles, stumps, roots, low grade and decayed wood, slashing and sawdust. Sawmills generate tree barks, sawdust, trimmings, split wood, planer shavings, sander dust and timber with defects.

The wood industry in Niger State Is characterized by small and medium scale enterprises (SMEs). These SMEs generate wood residues in their daily activities which are not properly managed, thereby contributing to human and animal health problems, environmental pollution, degeneration of forest products and economic loses.

Small and medium scale enterprises are the bedrock of economic growth in Nigeria and the African Continent. Small and medium scale enterprises (SMEs) are generally regarded as the engine of economic growth and equitable development in developing economies. They are labour intensive, capital saving and create jobs. They are also perceived as the key to Nigeria's economic growth, poverty alleviation and employment generation (Mba 2014). Small and medium scale enterprises play an important role in terms of growth and development of an economy; and this shows that there is a positive and significant relationship between small and medium scale enterprises and output growth indicating that small and medium scale enterprises in Nigeria make positive contribution towards the development of Nigerian economy (Aminu, *et al*., 2018). Small and medium scale wood enterprises that comprise of sawmills and furniture construction enterprises have contributed so much to foreign exchange and growth of Nigeria's economy. These SMEs in their daily processing and production activities generate much wood waste which are disposed and burnt on the streets and waterways constituting environmental and health hazards.

Wood wastes can be recycled and reused for production of furniture parts and wood products like Medium Density Fibre Boards (MDF), High Density Fibre Board (HDF), Oriented Strand Boards (OSB) and plywood. Much of the waste generated from sawmills and furniture industries are now valuable resources which are used for the production of engineered wood products and furniture parts. Lestari (2015) stated that the recovery of wood waste into composite boards and furniture products has generated income for wood recycling industries and has potential for further development because there are less global environmental impacts of using wood waste for production of wood products and furniture than using virgin wood. Wood waste management that involves the recycling and reuse of wood waste are generally beneficial to the environment, economy and ecosystem; and reduces the pressure on forests as this gives the forest time to regenerate and for the harvested trees to be replaced.

Wood waste management consist of planning, organizing, coordinating and controlling of the collection, recycling and disposal of wood waste. It can also be defined as a conscious effort of collecting, recycling, reusing and disposal of wood waste for economic, environmental and health benefits. Waste management is the application of techniques, technologies and skills that will ensure the proper execution of the functions of collection, transfer, recycling, reduction, treatment and disposal of solid waste (Onu, *et al.,* 2012). The benefit of proper and sustainable wood waste management is immeasurable as it creates wealth by creating jobs in the waste recycling industries, waste collection agencies and research institutes. It is therefore paramount for SMEs to device better strategies and technologies; and acquire resources to manage wood waste since it will be beneficial to them.

A major aspect of the waste management is the integration of diverse stakeholders into waste planning, implementation, maintenance, and evaluation. These stakeholders will suggest and provide the necessary information and resources for sustainable waste management. In Nigeria, waste management seems to fail because the necessary stakeholders do not work collectively to execute their designated task to achieve a functional and sustainable waste management system. Thyberg *et al.* (2015) opined that, national, state, and local governments, technical experts (example: academics, consultants), legal representatives, funding agencies, community groups, media, industry, and the general public play major roles in supporting waste policy actions and their inclusion facilitates effective planning. Identifying stakeholders and their interests is necessary to ensure their

participation and involvement in waste management. For waste management to be effective and sustainable, the necessary resources and stakeholders must be identified and put together by the SMEs and the state government so as to achieve a common goal.

Statement of the Problem

In Niger State, most of the SMEs that generate wood wastes do not know the economic potentials of wood waste nor have the resources for managing wood waste, rather these wood wastes are used for landfills, poultry beddings, cooking fuel or are disposed improperly, these activities have contributed in many human and animal health problems, environmental pollution and economic losses due. The management of wood waste require the use of human and material resources. Since SMEs are seen as the bedrock of economic development of most nations, therefore, small and medium wood enterprises need to acquire the necessary resources for managing wood waste. This will help to curb wood waste mismanagement, increase income generation, create jobs and improve human, animal and environmental health. Based on the foregoing, the study is designed to determine the resources needed for wood waste management in SMEs in Niger State.

Research Question

What are the resources required for wood waste management in small and medium enterprises in Niger State?

Research Hypothesis

There is no significant difference between the mean responses of small scale enterprises and medium scale enterprises on the resources for wood waste management for small and medium scale enterprises.

Methodology

Descriptive survey research was adopted for the study. The study was conducted in Niger State. The population of the study was 37 respondents drawn from 37 SMEs registered with Corporate Affairs Commission (CAC). No sampling was done because the population was manageable. The instrument for data collection was a structured questionnaire divided in three sections and containing 13 items. The questionnaire items were structured using five-point rating scale with response options of: Strongly Agree (SA= 4), Agree (A=3), Disagree (D=2), Strongly Disagree (SD=1), (No Opinion=0). Data collected from the questionnaire were analyzed using Mean and t-test, t-test was used to test the Null Hypotheses at 0.05 level of significance. Decision regarding the research questions as based on real limit of numbers. Decision regarding the null hypotheses was based on comparing the Sig. 2 Tailed value with the stated level of significance.

Results and Discussion

Research Question One

What are the resources required for wood waste management in small and medium enterprises in Niger State?

Table 1: Mean responses of small and medium scale enterprises on the resources for wood waste management in small and medium scale enterprises in Niger State

S/N	Resources for Wood Waste Management	$\overline{X}_1$	$\overline{X}_2$	$\overline{X}_A$	Remark
	Human Resources				
1	Skilled personnel for wood waste collection and sorting	3.87	3.94	3.90	Agreed
2	Skilled personnel for wood waste treatment	4.13	3.88	4.00	Agreed
3	Skilled person for wood waste recycling	3.93	3.76	3.84	Agreed
4	Skilled personnel for wood waste management researching	3.93	3.94	3.94	Agreed
	Material Resources				
5	Wood waste Collection vehicles	4.13	3.88	4.00	Agreed
6	Wood waste dump sites	3.93	3.94	3.94	Agreed
7	Wood waste storage facilities	4.07	4.06	4.06	Agreed
8	Wood waste recycling plants	4.27	4.00	4.13	Agreed
9	Wood waste incineration facilities	4.07	3.88	3.97	Agreed
	Economic Resources				
10	Finance for waste management facilities	4.00	4.06	4.03	Agreed
11	Finance for waste management workers	3.93	3.88	3.91	Agreed
12	Finance for waste management research	3.87	3.88	3.88	Agreed
13	Finance for waste collection Vehicles	4.07	3.88	3.97	Agreed
	Grand Mean	3.97	3.93	3.95	Agreed

All the 13 items on the resources for wood waste management presented in Table 1 had mean average scores between 3.84 and 4.13. This connoted that, the respondents agreed with all the 13 items to be the resources for wood waste management in small and medium scale enterprises in Niger State.

Table 2: T-test analysis for the test of significant difference between the mean responses of small scale enterprises and medium scale enterprises on the resources for wood waste management for small and medium scale enterprises in Niger State

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Equal variances assumed	.192	.664	.664	30	.512	.09231	.13898	-.19153	.37615
Equal variances not assumed			.677	29.220	.504*	.09231	.13642	-.18662	.37123

Table 2 revealed that, the significant (2-tailed) value of t-test for equality of means with variance not assumed presented on was 0.504 which is larger than the stated level of significance. Since the 2-tailed value is higher than 0.05, it's an indication that the difference between the mean responses of small scale enterprises and medium scale enterprises on

the resources for wood waste management for small and medium scale enterprises was not statistical significant**.** Accordingly, the null hypothesis was maintained.

Discussion

The findings on Table 1 revealed that human, material and economic resources were found to be the resources for wood waste management in small and medium scale enterprises in Niger State. The table also revealed that all respondents agreed on all three items and these includes: Human resources, Material resources and Economic resources as resources needed for wood waste management in small and medium scale enterprises in Niger State. This confirms that wood waste management cannot be carried out effectively and efficiently without human, material and economic resources. The human resources needed for wood waste management includes: skilled personnel for wood waste collection and sorting, skilled personnel for wood waste treatment skilled person for wood waste recycling and killed personnel for wood waste management researching. The material resources needed includes: wood waste collection vehicles, wood waste dump sites, wood waste storage facilities, wood waste recycling plants and wood waste incineration facilities. The economic resources include: financial provision for waste management facilities, personnel, researchers and waste collection vehicles. These resources are interdependent and must function as a collective entity.

The implication of this study is that when these resources are adequately made available as indicated in the developed framework for wood waste management, the SMEs and stakeholders can jointly and efficiently implement the strategies listed for wood waste management framework and this will in turn yield a successful and sustainable wood waste management in Niger State. In favour of this finding, AlHumid *et al.* (2019) reported that to achieve a sustainable solid waste management system, all the key components need to perform efficiently with available technical, human, and financial resources. Therefore, this means that the key resources needed for an efficient and sustainable wood waste management is the availability of human, material and economic resources.

Conclusion

The study determined the resources for wood waste management for small and medium scale enterprises in Niger State. The study revealed that human resources, material resources and economic resources are the needed resources for wood waste management. The study therefore concluded that, these resources must be put in place by SMEs and the necessary stakeholders for an effective and sustainable wood waste management.

Recommendations

(i) The resources identified in the study for waste collection, storage, recycling and utilization should be made available in Niger State by the government so as to maximize wood waste utilization and create wealth and jobs in the state.

(ii) The state government and its relevant waste management agencies should work in collaboration with SMEs by conducting seminars and workshops for SMEs that generate wood waste so as to see the economic and health importance of wood waste management.

(iii) SMEs generating wood waste should explore the business dimension wood waste management, acquire the necessary resources so as to generate more revenue and create jobs.

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