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Sustainable Waste Management and Organizational Performance of brewery firms in Anambra State

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Abstract: *Today's leaders are becoming more aware of the implication of inadequate waste management methods engaged by manufacturing and production firms. It has become evident that numerous environmentally sustainability measures are been put in place, to help assuage the huge impact of uncontrollable solid waste disposal and combustion. This study was undertaking to investigate the impact of waste management on organizational performance of food and beverage firms in Aanmbra state, Nigeria. The independent variable which was sustainable waste management was proxied with recycling and incineration, while the dependent variable was measured with indicators such as resources conservation and employee health and safety. The study adopted the survey research design method of nine (9) food and beverage firms in Onitsha, Anambra State, Nigeria, and data were collected with the use of questionnaire from a sample population of one hundred and fifty-one (151), through a simple random sampling technique method. The validity was done using the test retest method, while the reliability of the research instrument was done using the cronbach alpha which gave a coefficient of 0.81 which indicated a positive coefficient. The multiple regression analysis contained in the Statistical Package for Social Sciences (SPSS) IBM version 23 was used to analyze the data gotten from the field of study. The findings from the study revealed a positive significant impact of recycling on resources conservation, while the second finding from the study showed a negative impact of incineration of waste on employee health and safety. Based on the findings established in the study, it was recommended that food and beverage firms should endeavour to recycle all forms of waste from the firms, and also avert from incineration processes which are harmful to human health.*

Keywords: *Reclying, Incineration, Resources Conservation, Health and Safety.*

1.1 Introduction

In the olden times of our forefathers here in Africa, when trading was done in a small scale, perishable and non perishable items were mostly packaged with plantain and cocoa yam leaves, in some cases they were even rapped with fibers made from palm frond to enable easy carriage and portability by their customers who must have traveled from far places. As time progressed into civilization, the need to package items whether they are perishable or not became a top priority for buyers and sellers. Hence, the mass production of several solid packaging containers evolved with the invention of standardized technology (Ebikapade and Jim, 2016). These solid packaging items used by food &beverage and breweries industries have over time constituted nuisance and have become hazardous to the eco systems, water animals, wild life and human environment (Brunner and Rechberger, 2014).

The population around the world is increasing, related to that, protecting public health and the environment becomes crucial problem (Berkun, Aras and Anılan, 2011). Increasing population means also, increasing garbage which is technically called as "solid waste" or only as "waste". Semi-solid food wastes and municipal sludge may also be included in solid waste. According to

Ebikapade and Jim (2016) liquid wastes such as lavatory and bathroom wastes are called as "greywater" or "waste water", which should also be collected and removed from the public life through sewer system.The main challenges facing waste management include inadequate financing, poor infrastructure and technology, lack of public awareness on good sanitary practices, inadequate legal and regulatory (Scanlon, 2007).

Human activities generate most of the waste in the Society that are hazardous to natural wellbeing of human and the atmosphere (Brunner and Rechberger, 2014). In spite of that, the production of wastes remains a major source of concern as it has always been since pre historic period (Chandler, Eighmy, Hjelmar, Kosson, Sawell, Vehlow andSloot, 1997). In the present days, the rate at which waste are generated have been so alarming. As the volume of wastes increases, so also does the variety of the waste increases (Vergara and Tchobanoglous, 2012). Unlike the pre-historic period, where wastes were merely some source of nuisance that is needed to be disposed.

Proper management was not a major issue as the population was within the control range of the society, and a vast amount of land was available to the population at that time for land fillings. In those days, the environment can easily absorb the volume of waste produced without any form of degradation (Tchobanoglous, Theisen and Vigil, 1993). Landfills were considered the last resort in the waste hierarchy, release methane, a very powerful greenhouse gas linked to climate change (Ngoc and Schnitzer, 2009). It is against these developed assertions that this study is carried out to investigate the impact of waste management on organizational performance of food and beverage companies in Onitsha,Aanmbra state, Nigeria.

1.2 Statement of the problem

When we talk about waste in the context of dangerous items that constitutes problem to societal well being, many will direct their assumptions to solid waste alone, forgetting that there exist other forms of waste generated during production processes, which may as well serve as a basic resource for another organization. Scanlon (2007) stated that Poor waste management contributes to climate change and air pollution, and directly affects many ecosystems and species. This form of waste according to Scanlon is carbon emission which is released to the atmosphere during production activities. In most of the developing countries like Nigeria, laws, policies, statutes, and regulations on waste management are less prioritized, and even the existing ones are poorly implemented (Ogunmakinde, Sherand and Maund, 2019).

According to Adogame (2019) "Plastic is not just a litter problem; it is a pernicious pollution problem that starts as soon as the plastic is made. Nigeria's use of plastic in virtually every of life activities today is deeply interwoven with many of the problems facing our country today. Adogame further asserts that out of a total of 2,166 plastic materials gathered, 1247 (58%) were from 171 known brands. Out of the known brands, 5 had almost a third share of the total pollution from the known brands. These include Bigi, Pepsi, Nova Plastics, C-way Table water and Coca-Cola companies. The materials gathered were mostly for food packaging while high proportions (94%) of the materials collected were PET. Although the report from SRADev (2019), also revealed other top coastal polluters as Action Bitters, 7-up, Eva water, Pepsi, Viju water, Maltina, Mirinda, Fan milk juice, La Casera, Fanta, Aquafina, Nestle water, Dana plastics, Orijin bitters, Sabrina bitters, and Adonko bitters etc. And almost all the materials found are locally recyclable.

1.3 Objective of the Study

The major objective of the study is to investigate the impact of waste management on organizational performance of food and beverage firms in Onitsha, Anambra state, Nigeria. While other specific objectives are to;

1.Investigate the impact of Recycling of waste on Resource Conservation of food and beverage companies in Onitsha, Anambra State, Nigeria.
2. Investigate the impact of Incineration of waste on Employee Health and safety of food and beverage companies in Onitsha, Anambra State, Nigeria.

1.4. Research Questions

1. To what extent does Recycling of waste impact on Resourceconservation of food and beverage companiesin Onitsha, Anambra State, Nigeria?
2. To what degree does incineration of waste affects Employee Health and Safety of food and beverage companiesin Onitsha, Anambra State, Nigeria?

1.5 Hypotheses

1. There is no significant impact of Recycling on Resource Conservation of food and beverage companies in Onitsha, Anambra State, Nigeria.
2. There is no significant impact of Incineration of waste on Employee Health and safety of food and beverage companies in Onitsha, Anambra State, Nigeria.

Review of Related Literature

2.1 Conceptual Review

2.1.1 Waste Management

Waste management is the collection, transport, processing, recycling or disposal, and monitoring of waste materials (Ding, 2021). The term usually relates to materials produced by human activity, and is generally undertaken to reduce their effect on health, the environment or aesthetics. Waste management is intended to reduce adverse effects of waste on human health, the environment, planetary resources and aesthetics (Gollakota, Gautam and Shu, 2020). The aim of waste management is to reduce the dangerous effects of such waste on the environment and human health.

Waste arises in many different forms and its characterization can be expressed in several forms. Some commoncharacteristics used in the classification of waste includes the physical states, physical properties, reusablepotentials, biodegradable potentials, source of production and the degree of environmental impact (Demirbas,2011; Dixon & Jones, 2005). Waste management practices differ from nation to nation depending on the waste sources, types, and characteristics. It plays a vital role in nature's ability to sustain life within its capability (Afolalu, Oladipupo, Bose, Abioye, Adejuyigbe, Ajayi and Ongbali, 2019). In many developing nations of the world, it has become a recurrent challenge, especially in urban areas (Abdoli, 2020). Waste generation in Nigeria is on the increase due to the rise in population resulting from the techno-economic development in cities and the pattern of production and consumption of materials (Ahmed and Ahmaruzzaman, 2016).

The current waste management practices in the nation are fast becoming a national issue and unsustainable (Afolalu*et al,* 2019), leading to apparent environmental risk (Demirbas, 2010).Atif,Liu and Nadarajah,2022) are of the opinion that companies generate waste everyday but do not manage them properly. Waste management is very important for a company's profitability; this is because if a company can manage its waste properly, reduction in waste can help the company to reduce cost. However, cost control is one of the basic elements in performance management. The elimination of waste provides an increase in productivity and quality with a simultaneous reduction in cost and delivery time to the customer (Benjamin,Regasa, Wellalage and Marathamuthu, 2020).

2.1.2 Organizational Performance

Organizational performance refers to the degree to which the organization, with some informational, financial, and human resources, positions itself effectively on the business market (Padhaya, Munir and Blount, 2014).Organizational performance comprises the actual output or results of an organization as measured against its intended outputs (or goals and objectives). Mahmoudi and Javed (2022) stipulate that Organizational performance is also the success or fulfillment of an organization at the end of program or projects as it is intended. According to Richard, Devinney, Yip and Johnson (2009) organizational performance encompasses three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.

Organizational performance depends on leaders' mastery to create a cooperative working climate and on their ability to lead a team (Conțu, 2020). Achieving organizational performance depends largely on how an organization adapts to changes in the external environment. Hence, sod that me scholars have stated performance is "the degree to which an organization, as a social system, with certain resources and means, achieves its objectives (Richter, Schmidt, Ladwig and Wulhorst, 2017).Sveiby (2007) stated that Business enterprise wishes to develop continuously, and it is very pertinent to note that organizational performance works in a great consonance with the individual performance of the members of the team working at the organization level. According to Padhaya *et* al. (2009) Performance within an organizational setting will include integrating a pleasant work environmentwhich is safe and secured for employees to bring out their best qualities, positive relationships and communication within organizations, and highlighting a significant positive sense of work (Horga, 2012).

2.1.3 Recycling of Waste

Recycling is a resource recovery practice that refers to the collection and reuse of waste materials such as empty beverage containers, these containers can be in plastic or aluminum forms (Walker, 2018). However, this process involves breaking down and reusing materials that would otherwise be gotten rid of as waste or trash. There are several benefits of recycling, and with so many new technologies making even more materials more recyclable, it is possible to clean up the Earth surface through the invention of relying *(Chen, Yin, Wang and He, 2014)*.According to Abdoli (2020) Recycling does not only benefits the environment, but it also positively affects the economy of a nation. The materials from which the items are made can be made into new products. Materials

for recycling may be collected separately from general waste using dedicated bins and collection vehicles, a procedure called kerbside collection (Zafar, 2020).

In some communities in recent days, the owner of the waste is required to separate the materials into different bins; such waste can include paper, plastics, metals, and prior to its collection. In other communities, all recyclable materials are placed in a single bin for collection, and the sorting is handled later at a central facility(*Czajczyńska, Anguilano, Ghazal, Krzyżyńska, Reynolds, Spencer and Jouhara, 2017).* The latter method is known as "single-stream recycling.

The most common consumer products recycled include aluminium such as beverage cans, copper such as wire, steel from food and aerosol cans, old steel furnishings or equipment, rubber tyres, polyethylene and PET bottles, glass bottles andjars, paperboard cartons, newspapers, magazines and light paper, and corrugated fiberboard boxes.PVC, LDPE, PP, and PS are also recyclable(*Von-Sperling, 2015).* These items are usually composed of a single type of material, making them relatively easy to recycle into new products. The recycling of complex products such as computers and electronic equipment is more difficult, due to the additional dismantling and separation required.

The type of material accepted for recycling varies by city and country. Each city and country has different recycling programs in place that can handle the various types of recyclable materials *(Carroll, Thurnau and Fournier, 2012).* However, certain variation in acceptance is reflected in the resale value of the material once it is reprocessed (Davidson, 2011). Some of the types of recycling include waste paper and cardboard, plastic recycling, metal recycling, electronic devices, wood recycling, glass recycling, cloth and textile and so many more. In July 2017, the Chinese government announced an import ban of 24 categories of recyclables and solid waste, including plastic, textiles and mixed paper, placing tremendous impact on developed countries globally, which exported directly or indirectly to China (Kabongo, 2013).

2.1.4 Incineration of Waste

Incineration is a disposal method in which solid organic wastes are subjected to combustion so as to convert them into residue and gaseous products (Jing, El-Houjeiri, Monfort, Brandt, Masnadi, Gordon and Bergerson, 2020). This method is useful for disposal of both municipal solid waste and solid residue from waste water treatment (Lindgreen and Bergsma, 2018).This process reduces the volumes of solid waste by 80 to 95 percent (De Leeuw and Koelemeijer, 2022). Incineration and other high temperature waste treatment systems are sometimes described as "thermal treatment". Incinerators convert waste materials into heat, gas, steam, and ash (Lu, Zhang, Hai and Lei, 2017).

According to Makarichi, Jutidamrongphan and Techato (2018) Incineration is carried out both on a small scale by individuals and on a large scale by industry. It is used to dispose of solid, liquid and gaseous waste. It is recognized as a practical method of disposing of certain hazardous waste materials (such as biological medical waste) (Schnell, Horst and Quicker, 2020). Incineration is a controversial method of waste disposal, due to issues such as emission of gaseous pollutants including substantial quantities of carbon dioxide (Poblete, Ofélia de Queiroz and de Medeiros, 2022).

Wienchol, Szlęk and Ditaranto (2020) emphasized that Incineration is common in countries such as Japan where land is scarce, as the facilities generally do not require as much area as landfills. Waste-to-energy (WtE) or energy-from-waste (EfW) are broad terms for facilities that burn waste in a furnace or boiler to generate heat, steam or electricity (Tang and You, 2018).Rollinson and Oladejo (2019) lamented that Combustion as an incinerator is not always perfect and there have been concerns about pollutants in gaseous emissions from incinerator stacks. Particular concern has focused on some very persistent organic compounds such as dioxins, furans, and PAHs, which may be created and which may have serious environmental consequences and some heavy metals such as mercury and lead which can be volatilized in the combustion process (Roussanaly, 2019).

2.1.5 Resource Conservation

Resource Conservation means that those resources on which sustainability depends are conserved and even enhanced by agronomic management (Robertson andHarwood, 2013). According to an argument by Master Class in 2021, reducing humanity's collective carbon footprint and conserving our natural resources to fight climate change will help leave our planet habitable for future generations. Natural resources are resources that occur in nature without any manmade assistance. Any naturally occurring substance qualifies as a natural resource, including animals, plants, water, oil, coal, minerals, timber, land, light, soil, and energy. Natural resources can be renewable or nonrenewable. Conservation means usage, improvement, protection of human and natural resources in a wise manner. It is also the restoration of cultural heritage, protection and restoration of cultural heritage, including works of art and architecture, as well as archaeological and historical artifacts.

The Tutorial Point (2022) observed that as the population of the world is increasing at an alarming rate, the consumption of natural resources is also increasing. Hence, these resources should be conserved to maintain ecological balance and save them for future generations. The proper management of a resource to prevent its destruction or exploitation is called conservation.Nature provides us with all the essentials for our daily needs. Due to overpopulation and human negligence we started to over-exploit our resources. If this continues, there will no resources left for our future generation. The needs to conserve the resources are

- To support life by supporting ecological balance
- To ensure that the future generations will be able to access the resources
- To preserve the biodiversity
- To make sure human race survives.

According to Rick (2022) plastics, especially single-use plastics have often made international headlines and for with good reason. According to the United Nations, the world and its oceans are being overrun by plastics. So much so, the Ellen MacArthur Foundation reports, that by 2050 there will be more plastic in the oceans than fish. Although plastic-strewn oceans get most attention, the UN Food and Agricultural Organization (FAO) points out those plastics in soil threaten human health and food security. Last December, the FAO published a striking report, Assessment of agricultural plastics and their sustainability: a call for action, which described in detail how a multitude of agricultural plastics, especially micro plastics, find their way into the food chain.

By 2020, the exponential growth in plastic production increased that figure to about 400 MT. At this rate, plastic production is expected to double by 2040 and increase by 2.5 times by 2050 (Bernardo, Simões and Pinto, 2016). Unless we change how we make and manage plastics, the problem of plastic pollution will keep on growing (Geyer, Jambeck and Law, 2017).In theory, plastics should be readily recycled or at least reused (Van Ewijk, Stegemann and Ekins, 2017). Yet, according to the Organization for Economic Co-operation and Development (OECD), less than 20 % of all plastics are recycled, leaving more than 80 % of plastics at large in the environment. The OECD, in turn, has characterized the global market for plastics as dysfunctional because of the growing mountain of plastic waste and very low rates of recovery, reuse and recycling.

2.1.6 Employee Health and Safety

A safe and healthy working environment is vital for overall sustainability, due to the fact that it counteracts opportunities in economic and social development (Nordin, Rizal, Rashid, Che-Omar and Priyadi, 2021). However, according to the International Labour Organization (2018), despite the international commitment to Occupational Safety and Health (OSH), via 2030's Sustainable Development Goals (SDGs), work-related accidents and diseases are still far too common. Specifically, according to the ILO, OSH is directly impacting SDG, which aims to secure healthy lives and promote the well-being people of all ages.

Sotirios, Ioannis, Roido, Antonis, Zorpas and Panagiotis (2022) posited that an accident, in its most often used definition, is defined as "any unplanned event that resulted in injury or ill health of people, or damage or loss to property, plant, materials or the environment or a loss of business opportunity" (Maalouf, Hasle, Vang and Hamja, 2021). Historically, in the early days, work-related accidents have been regarded as a natural aspect of life. Accidents do happen at work, and working feeds the life cycle (Olcay, Temur and Sakallı, 2021). However, due to insufficient proof or biased witnesses, early thinking about how an accident occurred was that these were random Acts of God (Vaquero, Cubero, Martínez, Vaquero, Redel and Aparicio, 2020). Later on, in very early modern times the most controversial theory of accident causation was the 'accident pronenesstheory' (Xu, Wang, Wang, Guo, Han, Xu, Chen and Zhu, 2020). This theory assumed that a small proportion of people are much more likely to get involved in accidents than others (Browning and Rigolon, 2019).

In many studies, effective management of occupational safety and health found to play a pivotal role in running a successful business (Garretti, 2012). The global issue for sustainable development of the citizen is the health and safety of working groups at their workplace (Shahzalal and Hassan, 2019). In order to achieve this, organizations must inculcate and adhere to the development of sustainable occupational safety and health environments (Pierobon, 2019; Abubakar, 2017). Kassu and Daniel (2017) are of the opinion that the dynamism of socio-economic development has brought change on all aspects of the expansion. Dynamical change on workplace health and safety innovation, high prevalence of occupational diseases and accidents registration are the initial factors of sustainable development.

2.2 Theoretical Review

Waste Management Theory (WMT) has been introduced to channel environmental sciences into engineering design (Pongrácz, Phillips and Keiski, 2004). WMT is a unified body of knowledge about waste and how it is effectively managed. It is an effort to organize the diverse variables of the waste management system as at today. WMT is considered within the paradigm of Industrial Ecology, and built hands-in-glove with other relevant theories. According to Hiriya (2003) the functional elements of Municipal Solid Waste are Waste generation which encompasses activities in which materials are identified as no longer being of value and are either thrown away or gathered together for disposal, and also Waste handling, separation, storage and processing at the source: Waste handling and separation involves the activities associated with management of waste until they are placed in storage container for collection

2.3 Empirical Review

Onamade, Alagbe, Oladipo and Daramola (2022) from Nigeria embarked on an empirical study on domestic solid waste collection and management systems in public housing estates to discover strategies for effective solid waste management. A mixed approach research method that involved a systematic review of literature was done considering. However, primary data was collected using a structured questionnaire randomly administered to the residents of selected public housing estates in Lagos metropolis. The findings from this study showed a significant positive relationship between Solid Waste Collection and Management Systems, and therefore recommended food waste and plastic waste be given priority in waste management system and policy to reduce food and plastic waste should be made and implemented.

Rozhdestvenskaya, Cherednichenko, Malchugova and Korotenko (2021) from Russia conducted a research on the concept of waste management at the upcoming World Junior Ice Hockey Championship in 2023 in Novosibirsk. Their work also discusses the types of waste generated in the functional areas of the competition grounds, and studied the practice of handling solid waste: possible technologies for utilization and collection. Based on the results of the research, the main methods and recommendations for effective waste management at WJC-2023 were identified.

Abubakar, Maniruzzaman, Dano, AlShihri, AlShammari, Ahmed, Al-Gehlani and Alrawaf (2022) from Saudi-Arabia assessed the human and environmental health impacts of SWM practices in the Global South cities that are the future of global urbanization. The study employs desktop research methodology based on in-depth analysis of secondary data and literature, including official documents and published articles. It findings revealed that the commonplace SWM practices include mixing household and commercial garbage with hazardous waste during storage and handling. While waste storage is largely in old or poorly managed facilities such as storage containers, the transportation system is often deficient and informal. The disposal methods are predominantly via uncontrolled dumping, open-air incinerators, and landfills. The study concluded with recommendations for mitigating the public and environmental health risks associated with the existing SWM practices in the Global South.

3.1 Methodology

The study adopted the descriptive survey research design method which allowed for the collection of primary data through the use of questionnaire from the field of study. The population of the

study comprised ofone hundred and eighty-one employees in the three (3) departments which included Quality Assurance, Production and Safety Department of thenine (9) food and beverage companies in Onitsha, Anambra state, which included the International Brewery plc Onitsha, Eastern Distilleries & food industries ltd Onitsha, G & C Special foods Onitsha, Zobo Cola ltd, Nigerian Bottling Company ltd Onitsha, Zephyhills foods & Beverages Onitsha, Tiger foods ltd Onitsha, Aliban De Great Industries ltd and DD Soy-Foods ltd as displayed in the table below. The simple random sampling techniques were adopted to ensure that the population under study is adequately represented. However, the independent variable sustainable waste management was measured with recycling and incineration, whereas the dependent variable organizational performance was measured using resource conservation and employee health & safety. The validity was done using the test retest method, while the reliability of the research instrument was done using the cronbach alpha which gave a coefficient of 0.81 which indicated a positive coefficient. The multiple regression analysis was used to test the impact of the independent variable (sustainable waste management) on the dependent variable (organizational performance).

4.1 Data Presentation and Analysis

Table 1 Population of the study

s/n	Name of Companies	Number	Percentage%
1	International Brewery plc Onitsha	46	25.4
2	Eastern Distilleries & food industries ltd Onitsha	15	8.2
3	G & C Special foods Onitsha	14	7.7
4	Zobo Cola ltd	17	9.3
5	Nigerian Bottling Company ltd Onitsha	51	28.1
6	Zephyhills foods & Beverages Onitsha	11	6.1
7	Tiger foods ltd Onitsha	9	4.9
8	Aliban De Great Industries ltd	8	4.4
9	DD Soy-Foods ltd.	10	5.5
	Total	181	100

Source: Field Survey 2023

4.2 Distribution of Questionnaire

Table 2 Information on Distribution of Questionnaire

s/n	Options	No of Respondents	Percentage %
1	Questionnaire Distributed	181	100%
2	Questionnaire Returned	159	87.8%
3	Questionnaire Completed	151	83.4%
4	Questionnaire Not Duly Completed	8	4.4%
5	Questionnaire Missing	22	12.2%

Source: Field Survey, 2023

Table 2 gives a comprehensive analysis on how the questionnaires designed for the study were adequately distributed to the respondents in the field of the study. A total of one hundred and eighty-one (181) questionnaires were distributed, one hundred and fifty-nine (159) representing

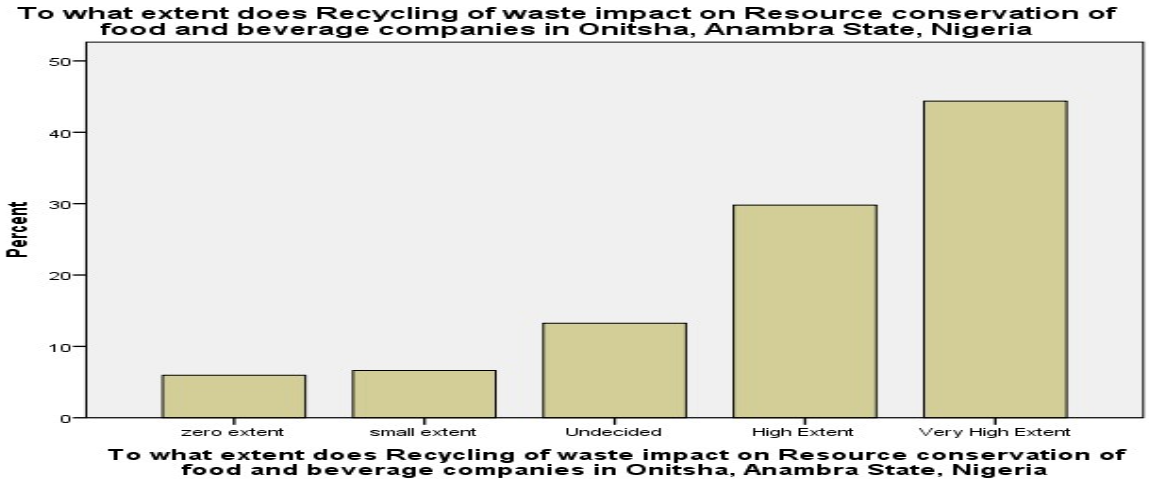
87.8% were returned, one hundred and fifty-one (151) representing 83.4% were duly completed; eight (8) representing 4.4% were not duly completed, whereas twenty-two (22) representing 12.2% were missing. However, the study adopted the one hundred and fifty-one (151) questionnaires which were duly completed for analysis.

4.3 Analysis of Research Questions

4.3.1 Analysis of Research Question One

To what extent does Recycling of waste impact on Resource conservation of food and beverage companiesin Onitsha, Anambra State, Nigeria?

Figure 1



Source: Researchers Analysis using SPSS Version 23

Table 3	Descriptive Statistic				
RQ:1-To what extent does Recycling of waste impact on Resource conservation of food and beverage companies in Onitsha, Anambra State, Nigeria		Frequency	Percent %	Valid Percent %	Cumulative Percent
Valid	Zero extent	9	3.4	6.0	6.0
	Small extent	10	3.7	6.6	12.6
	Undecided	20	7.5	13.2	25.8
	High Extent	45	16.9	29.8	55.6
	Very High Extent	67	25.1	44.4	100.0
	Total	151	56.6	100.0	
Missing	System	116	43.4		
Total		267	100.0		

Source: Researchers Analysis using SPSS Version 23

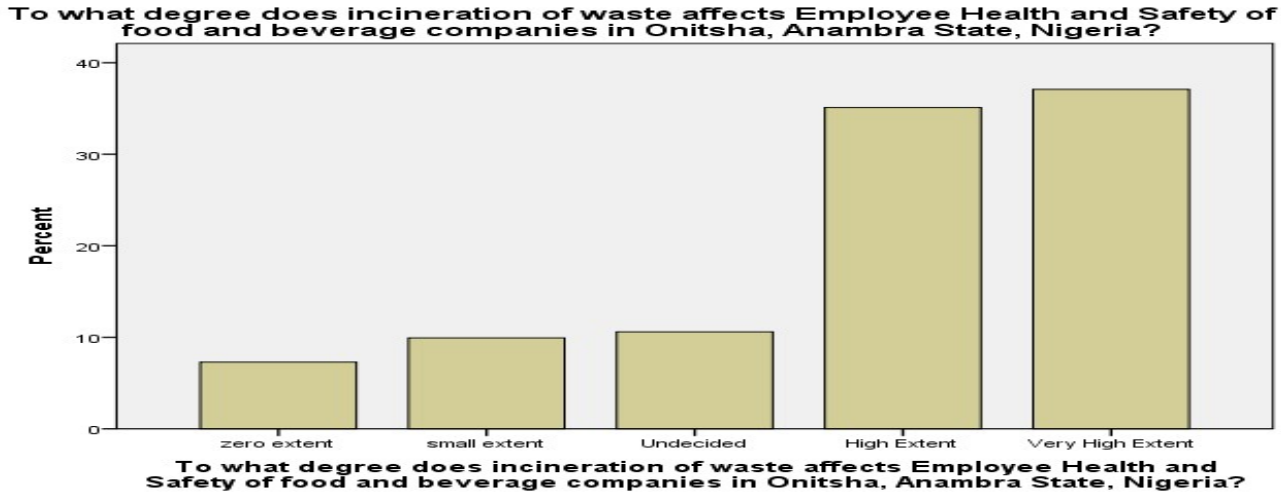
Table 3 indicates the response of respondents with regards to the research question one on the extent to which Recycling of waste impact on Resource conservation of food and beverage companies in Onitsha, Anambra State, Nigeria. nine (9) respondents representing 6.0% responded to zero extent, ten (10) respondents representing 6.6% responded to small extent, twenty (20) respondents representing 13.2% responded to undecided, forty-five respondents representing

29.8% responded to high extent, while sixty-seven (67) respondents representing 44.4% responded to very high extent.

4.3.1 Analysis of Research Question Two

To what degree does incineration of waste affects Employee Health and Safety of food and beverage companies in Onitsha, Anambra State, Nigeria?

Figure 2



Source: Researchers Analysis using SPSS Version 23

Table 4 Descriptive Statistics

RQ:2-To what degree does incineration of waste affects Employee Health and Safety of food and beverage companies in Onitsha, Anambra State, Nigeria?		Frequency	Percent %	Valid Percent%	Cumulative Percent
Valid	Zero extent	11	4.1	7.3	7.3
	Small extent	15	5.6	9.9	17.2
	Undecided	16	6.0	10.6	27.8
	High Extent	53	19.9	35.1	62.9
	Very High Extent	56	21.0	37.1	100.0
	Total	151	56.6	100.0	
Missing	System	116	43.4		
Total		267	100.0		

Source: Researchers Analysis using SPSS Version 23

Table 4 indicates the response of respondents with regards to the research question two on the degree to which incineration of waste affects Employee Health and Safety of food and beverage companies in Onitsha, Anambra State, Nigeria. eleven (11) respondents representing 7.3% responded to zero extent, fifteen (15) respondents representing 9.9% responded to small extent, sixteen (16) respondents representing 10.6% responded to undecided, fifty-three (53) respondents representing 35.1% responded to high extent, while fifty-six (56) respondents representing 37.1% responded to very high extent.

4.4 Test of Hypotheses

4.4.1 Test of Hypothesis One

$H0_1$: There is no significant impact of Recycling on Resource Conservation of food and beverage companies in Onitsha, Anambra State, Nigeria.

Table 5 **ANOVA[a]**

Recycling < Resource Conservation		Sum of Squares	df	Mean Square	F	Sig.
1	Multi Regression	14.831	1	14.831	31.645	.000""
	Residual	69.362	148	.469		
	Total	84.193	149			

a. Dependent Variable: Resource Conservation
b. Predictors: (Constant).RCY

Source: Researchers Analysis using SPSS Version 23

Table 5shows the impact of the independent variable Recycling (RCY) and the dependent variableResource Conservation (RC). At a 0.05 level of significant, sum of squares of 84,193, mean square of 14831, and also with a frequencyof 31645. The multi regression residual value was therefore given as0.000**.

Decision Rule: Accept the null hypothesis if the p-value is greater than 0.05, otherwise, reject.

Decision: Since the P-value is 0.000** which is less than the critical value 0.05, this study reveals that Recycling has a significant impact on Resource Conservation of food and beverage companies in Onitsha, Anambra State, Nigeria.

4.4.2 Test of Hypothesis Two

$H0_2$: There is no significant impact of Incineration of waste on Employee Health and safety of food and beverage companies in Onitsha, Anambra State, Nigeria.

Table 6 **ANOVA[a]**

Incineration < Employee Health & Safety		Sum of Squares	df	Mean Square	F	Sig.
1	Multi Regression	15.943	1	15.943	34.571	.000""
	Residual	68.251	148	.461		
	Total	84.193	149			

a. Dependent Variable: Employee Health & Safety
b. Predictors: (Constant), INC

Source: Researchers Analysis using SPSS Version 23

Table 5shows the impact of the independent variable Incineration (INC) and the dependent variableEmployee Health & Safety (EHS). At a 0.05 level of significant, sum of squares of 84,193, mean square of 15943, and also with a frequencyof 34571. The multi regression residual value was therefore given as0.000**.

Decision Rule: Accept the null hypothesis if the P-value is greater than 0.05, otherwise, reject.

Decision: Since the P-value is 0.000^{**} which is less than the critical value 0.05, this study reveals thatIncineration of waste has a significant negative impact on Employee Health & safety of food and beverage companies in Onitsha, Anambra State, Nigeria.

5.1 Discussions of Findings

Based on the tested hypothesis, the first finding of this study indicated that Recycling has a positive significant impact on Resource Conservation of food and beverage companies in Onitsha, Anambra State, Nigeria. The finding from the first hypotheses confirms with the finding of Abdoli (2020)which argued that Recycling does not only benefits the environment, but that it also positively affects the organizations that practices it and the economy of a nation at large. More so, is has been empirically proven by Onamadeet el. (2022) that Recycling reduces the use of natural resources by reusing materials: 94% of the natural resources used by Americans are non-renewable. Non-renewable, natural resource use has increased from 59% in 1900 and 88% in 1945. Recycling saves non-renewable resources.

The second finding of the study indicated that Incineration of waste has a significant negative impact on Employee Health & safety. It was revealed by Allsopp, Costner, and Johnston (2018)that due to the increasing quantities of waste sent for incineration, incinerators will emit more toxins and pollutants that harm local air quality. However, Incineration makes a more significant negative contribution to local air quality than landfill. ENDS (2000b) had observed that such effects include cancer among both children and adults, adverse impacts on the respiratory system, heart disease, immune system effects, increased allergies and congenital abnormalities. Some studies, particularly those on cancer, relate to old rather than modern incinerators.

5.2 Conclusion

The study having revealed that waste management is very crucial to the performance of food and beverage organization through ensuring that waste materials are adequately recycled into useful resources paving ways for the conservation of our untapped natural resources. The study concludes that food and beverage firms should endeavour to queue into the technology of recycling waste, and also avert from the waste management method of incineration of waste since it poses a greater negative impact to the environment and to human.

5.3 Recommendations

Based on the findings established, the study recommends as follows:

1. Solid waste in the form of left over raw materials should be gathered during production processes in the food and beverage firms, and be adequately utilized for new production, instead of throwing away. More so, other solid waste materials in the form of beverage cans, bottle and tins after usage should be landfill and sent to the parent companies for recycling.
2. The health and safety of employees and the communities is very vital, so the idea of reducing solid waste by combusting them in incinerators should be totally avoided, to eradicate its negative health consequences.

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