



WASTE MANAGEMENT PRACTICES AND ORGANIZATIONAL PERFORMANCE IN BEVERAGE MANUFACTURING FIRMS IN SOUTH-EAST NIGERIA

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Abstract

Waste Management Practices and Organizational Performance in Beverage Manufacturing Firms in South East Nigeria. With the growing concerns over environmental sustainability and corporate efficiency, waste management has become a critical focus in the manufacturing sector. This study investigates the effect of waste management practices on organizational performance in beverage manufacturing firms in South East Nigeria. The study seeks to find out specifically the effect of, waste recycling on organizational profitability and waste reduction on operational efficiency in beverage manufacturing firms in the region. Relevant conceptual, theoretical and empirical literature were reviewed, taking cognizance of the problem and hypothesis of the study. The study was anchored on Resource-Based View (RBV) theory developed by Wernerfelt (1996), which holds a reasonable explanation for the relationship that might exist between waste management and corporate sustainability. And also the theories of environmental sustainability by Robert Goodland (1995). Primary data was collected through survey method and interviews with managers and employees in selected beverage manufacturing firms. The population of the study comprised 2090 employees in selected Beverage Manufacturing firms in South-East Nigeria. A sample size of 408 was determined by using statistical formula devised by Borg and Gall (1973). The result showed that waste recycling had a significant positive effect on organizational profitability and this implies that firms with effective waste management strategies experience improved production process. Secondly, that Waste reduction had a significant positive effect on operational efficiency in beverage manufacturing firms in south-east Nigeria. The study concluded that waste management had a significant positive effect on organizational performance. This shows that the integration of efficient waste management systems not only contributes to environmental sustainability but also plays a pivotal role in enhancing the competitiveness and long term success of beverage manufacturing firms in south east Nigeria. Based on the findings, the study therefore recommended that Beverage manufacturing firms should formalize recycling initiatives as core components of their operational strategy as well as establish dedicated recycling units within the production plants to ensure systematic sorting, collection, and processing of recyclable materials, and that Beverage manufacturing firms should fully integrate Lean Manufacturing tools-such as 5S, kaizen, and Just-In-Time (JIT)- to systematically eliminate waste at every stage of production. This shows that waste management should be part of the organizations strategic goals by linking waste reduction targets with performance.

Keywords: Waste Management, Organizational Performance, Beverage Manufacturing Firms, South-East Nigeria, Recycling, Environmental Sustainability.

Introduction

In today's business environment, solid waste management becomes a complex and multidisciplinary problem that needs to be approached from technical, economic, and social points of view in order to ensure its sustainability, since the concept of Waste Management, Waste Recycling, Landfills, Corporate Sustainability, Economic Sustainability and environmental sustainability is a crucial criterion for designing waste management systems (Manfredi & Christensen 2009, cited in Ndubuisi-Okolo, Anekwe & Attah, 2016).



Waste is classified in different forms including, municipal solid waste, industrial solid waste, and agricultural solid waste. However, improper waste disposal causes air, soil, and water pollution, indirectly contributing to the greenhouse gas effect, which affects human health, the environment, and the economy (Kwun Omang et al., 2021)

Globally, of the total of 1.5 gigatonnes generated municipal solid waste (MSW) per year worldwide, over 50% are discarded in landfills and dumps. And of the remaining waste, approximately 20% is recycled, and 14% is treated with energy recovery (IPCC, 2011, cited in Fält & Gunnarsson, 2020). This can attest to the fact that improper waste disposal is a global phenomenon, and there is a need to map a way of transforming those to economic sustainability. In Nigeria, FGN (2012) and Ojo and Bowen (2014) reported that ineffective solid waste disposal is one of the environmental problems bedeviling the country, which produces over 63 million metric tonnes (0.45kg/capita/annum). A low waste collection rate, accumulation of waste, or illegal dumping or burning of waste could represent improper waste management. (Abdullahi, Jamiu, & Haruna, 2023). The impacts of improper waste disposal affect all aspects, such as social, environmental, and economic issues globally (Schenck et al., 2022)

The efforts to develop the environment have led to increasingly unfavorable climate changes and natural disasters, aided by political and socio-economic instability. The attempts to advance the environment have caused changes in behaviour, aiming towards more rational and efficient management of all resources that will allow less pressure and environmental impact (Klarin, 2018). Numerous earlier studies imply a connection between waste management and organizational success. The Global Waste Management emphasizes the need to move beyond the "waste era" and adopt a circular economy approach. UNEP (2024). The drivers of improper waste disposal in South Africa are exacerbated by poverty, rapid urbanization, and population explosion, leading to a decrease in waste management and in municipal failure to deliver services (Akmal and Jamil, 2021).

Waste management is a critical component of sustainable development, and it has become increasingly important for companies to effectively manage their waste to minimize environmental impact and improve their organizational performance. Waste management involves collecting, transporting, and disposing of waste in the best possible way to limit or eliminate the harmful effects of garbage (Amasuomo & Baird, 2016). Waste management practices refer to the methodologies, processes, and strategies used to dispose of or recycle waste materials while minimizing the negative impacts on the environment and human health (Yost & McCarthy, 2016).

STATEMENT OF THE PROBLEM

Over the years, the issue of industrial waste management has become a growing concern in Nigeria, particularly in the manufacturing sector. Waste is a by-product of most human activities, which is tremendously unavoidable (Uzoagu & Eheazu, 2022). Poor waste disposal methods not



only pose serious environmental and public health risks but also have implications for the operational efficiency, cost-effectiveness, and reputation of these firms. Inefficient waste handling can lead to increased production costs, regulatory fines, community backlash, and loss of consumer trust which can collectively hinder organizational performance.

The issue of improper waste management has also attracted global concerns as the inability to manage waste can lead to economic loss and environmental threats to human health and existence. Waste management is a problem to the world at large, and it becomes more severe problems to developed countries.

In recent years, Nigeria has been facing an environmental waste management problem due to increased emissions, indiscriminate exploration, and industrial pollution. This can be attributed to a lack of transparency from government agencies in monitoring and regulating the level and rate of industrial waste disposal, recycling, and sand filling and if left unchecked, this could lead to environmental degradation, a lack of clean water, and poor environmental sanitation.

The activities of manufacturing industries through improper waste disposal and emissions that may arise from their plants could cause human and environmental hazards, creating nuisance and odour problems, air and environmental pollution, fire hazards, are generally threatening the physical well-being of the populace (Aliyu, Borori, Abdullahi, Jamiu, & Haruna, 2023). Wastes are poisonous substances or materials injurious to the public's well-being and the environment (Uzoagu & Eheazu, 2022).

Beverage manufacturing firms in south east Nigeria contribute significantly to the regional economy, yet they also generate large volumes of waste, including plastic, metal, organic, and chemical byproducts. Despite the existence of the environmental regulations and policies, many of these firms struggle to implement effective waste management practices. Therefore, this study seeks to examine the extent to which waste management practices influence organizational performance in beverage manufacturing firms in South-East Nigeria.

OBJECTIVES OF THE STUDY

The broad objective of the study is to investigate the effect of waste management practices on organizational performance in Beverage Manufacturing firms in South- East, Nigeria. However, the specific objectives are:

1. To determine the effect of waste recycling on organizational profitability.
2. To examine the effect of waste reduction on operational efficiency

RESEARCH QUESTIONS

1. How does waste recycling impact the profitability of beverage manufacturing firms?
2. To what extent does reducing production waste improve operational efficiency in beverage manufacturing firms in south-east Nigeria?



HYPOTHESIS OF THE STUDY

The following null hypotheses were formulated to guide the objectives of the study as well as strengthen the analysis:

Ho₁: Waste recycling does not have significant positive effect on organizations profitability in Beverage Manufacturing firms in South- East, Nigeria.

Ho₂: Waste reduction does not have significant positive effect on operational efficiency in Beverage Manufacturing firms in South- East, Nigeria.

SIGNIFICANCE OF THE STUDY

The study provides empirical data and because Beverage manufacturing firms generate substantial waste which include plastic, paper, and organic materials, this study provides insight into effective waste management strategies that can help firms reduce their environmental footprint thereby contributing to the broader goal of sustainable industrial development in south-east Nigeria.

To the managers and policy makers, the study to a greater extent will help identify how waste reduction, recycling, and resource optimization correlate with financial and operational performance in the beverage sector and highlight successful waste management practices that can be adopted to improve performance, reduce operational costs, and enhance compliance with environmental standards as well as developing environmental regulations and industrial waste policies.

The study contributed to the existing body of knowledge on environmental management, operations management and organizational performance in the Nigerian context and also serve as a reference foundation for further research.

REVIEW OF RELATED LITERATURE

CONCEPTUAL REVIEW

Waste management is an organized way of monitoring waste, energy, and other consumption that aims to transfer the tax burden on waste users as an incentive to increase further efficiency, green investments, and innovations in the consumption field. Waste management is based on the collection, transportation, disposal, handling, and monitoring of waste materials to facilitate the cleanliness of our environment. The aim of waste management is to reduce the dangerous effects of such waste on the environment and human health (Todorovic,2019).

Waste arises in many different forms and its characterization can be expressed in several forms. Some common characteristics used in the classification of waste includes the physical states, physical properties, reusable potentials, biodegradable potentials, source of production and the degree of environmental impact (Demirbas,2011; Dixon & Jones, 2005)



Adewole (2009) and Ndubuisi-Okolo et al (2016) viewed waste management as the collection, keeping, treatment, disposal, and recycling of waste in such a way as to render it harmless to human, animal, and ecological life. Waste management cannot be overemphasized because the production in the manufacturing industry is a daily routine. Waste management can be done in a hierarchical order, which involves reducing the amount of waste produced, reusing some or all the waste produced, recovering the waste recycling, composting, or converting waste to energy, and finally, landfilling (Aliyu, 2023, Zhang, (2010) opined that waste management involves all techniques and actions used to manage waste throughout its lifecycle, with increasing emphasis on reducing waste generation and enhancing recycling and energy recovering.

Hoornweg and Bhada-Tata (2012) on World Bank Report on Waste define solid waste management as the collection, transport, processing, recycling or disposal, and monitoring of waste materials. It is a critical municipal service affecting the cleanliness and health of urban areas. Kadafa (2012)- in environmental sustainability studies viewed waste management as the process of handling waste materials, from their origin to their final disposal, through strategies like recycling, compositing, and incineration aimed at reducing their impact on health and the environment.

Waste management refers to the activities and actions required to manage waste from its inception to its final disposal. This includes collection, transport, treatment, and disposal of waste, together with monitoring and regulation. (United Nation Environmental Programme).

Wilson (2007) in his book- Waste Management: An Integrated Vision defined waste management as a complex and evolving discipline that includes not only the collection, transportation, and disposal of waste but also waste minimization, resource recovery, and environmental protection. Tchobanoglous, Theisen, and Vigil (1993) in their book: Integrated Solid Waste Management defined waste management as the discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid waste in a manner that is in accord with the best principles of public health, economics, engineering, conservation, aesthetics, and other environmental considerations.

WASTE MANAGEMENT STRATEGIES

The long-recognized hierarchy of management of wastes, in order of preference consists of prevention, minimization, reuse, recycling, energy recovery, and disposal. The hierarchy of management of wastes in order or preference, starting with prevention as the most favorable to disposal as the least favorable option. Effective waste management in Nigeria involves a combination of these strategies with a strong emphasis on public awareness and participation.

WASTE PREVENTION

The ideal waste management alternative is to prevent waste generation in the first place. Hence, waste prevention is a basic goal of all the waste management strategies.



WASTE MINIMIZATION

Numerous strategies can be implemented to reduce or minimize waste generation. This shows that wastes cannot be outright eliminated from a variety of processes. However, Waste minimization, or source reduction, refers to the collective strategies of design and fabrication of products or services that minimize the amount of generated waste and/or reduce the toxicity of the resultant waste. In industry, waste can be reduced by reusing materials, using less hazardous substitute materials, or by modifying components of design and processing.

LANDFILL DISPOSAL

Landfill disposal remains the primary waste disposal method in the United States. Landfills can be designed and permitted to accept hazardous wastes. Regardless of their waste designation, landfills are engineered structures consisting of bottom and side liner systems, leachate collection and removal system. Many landfills undergo “land recycling” and redeveloped as golf courses, recreational parks, and other beneficial uses.

WASTE RECYCLING

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. Recycling is the process of separating secondary materials that can be reused. This process significantly reduces uncontrolled waste disposal and creates job opportunities.

Although, the process demands a lot of infrastructure, governance, and financial aid (Eawag, 2008, cited in Fält & Gunnarsson, 2020). Waste recycling is the organized collection, classification, and treatment of waste materials (Pattnik & Reddy, 2009). Waste recycling is the most environmental waste management method in Nigeria. The direct socioeconomic advantage of recycling is the potential for income generation for the community and for formal/informal recyclable collecting companies and recycling companies (Menikpura, Gheewala, Bonnet, & Chiemchair, 2013). As far as environmental friendliness is concerned, recycling activities have significant positive influences by preventing greenhouse gas emissions and water pollution, saving energy by avoiding virgin production process chains, and diverting the waste from landfills and incinerators (Agarwal, Singhmar, Kulshrestha, & Mittal, 2005). 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). 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. (Davidson, 2011)

WASTE REDUCTION

Waste reduction, also known as source reduction, is the practice of minimizing waste generation by using fewer materials and energy in the first place. It is a broader concept than recycling, as it focuses on preventing materials from becoming waste before they even reach the recycling stage. It is the reduction of wastes at the point of generation or before final disposal. It also involves the consideration and incorporation of necessary Solid Waste management principles starting from the material design through all the processes to the eventual material consumption. It significantly reduces the quantity as well as the harmful effects of Solid Waste generated. This can also be achieved by the use of less but quality material resources in product manufacturing incorporating the principle of reusability of the products through the production and design stages. This will contribute immensely in actualizing solid waste reduction strategy. Industries have major roles to play in the reduction of solid wastes. They can adopt more efficient manufacturing processes by making larger quantities of products without increasing the use of raw materials. In other words, incorporating lesser materials in making products. Another important strategy of achieving waste reduction is the separation at source. This is achieved by providing separate bins/containers, which are clearly labeled, at designated places of collection or generation points like households, industries, workplaces, commercial areas, offices, etc. Reducing waste can be as simple as using both sides of a sheet of paper, using ceramic mugs instead of disposable cups, or buying in bulk rather than individually packaged items.⁵ R's of waste reduction include refuse, reduce, reuse, repurpose, and recycle. Reducing waste will not only protect the environment but will also save on costs or reduce expenses for disposal.

WASTE MANAGEMENT POLICIES IN NIGERIA

The basis of environmental policy in Nigeria is contained in the 1999 Constitution of the Federal Republic of Nigeria. Pursuant to section 20 of the Constitution, the State is empowered to protect and improve the environment and safeguard the water, air and land, forest and wildlife of Nigeria. Nigeria's environmental policies on waste management are primarily aimed at establishing a clean and healthy environment, with a focus on waste minimization, re-use, recycling, and energy recovery before final disposal. Key policies include the National Environmental Sanitation Policy, the NESREA Act of 2007, and the Environmental Impact Assessment Act of 1992, which guide waste management practices and address environmental pollution.

WASTE MANAGEMENT RESPONSIBILITIES:

- **Local Governments:**

Constitutionally, local governments are responsible for waste collection and disposal within their jurisdictions, including maintaining public convenience, sewage, and waste disposal.

- **Federal Government:**



The Federal Government, through NESREA and other agencies, provides oversight and enforcement of environmental regulations, including those related to waste management.

ORGANIZATIONAL PERFORMANCE

Performance in an organization is a multi-dimensional concept whose complexity makes it difficult to be defined from a simple perspective, (Hendry, 2012). Organizational performance alone could be gauged in many different ways, with financial or non-financial indicators. 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) 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). Organizational performance reflects an organization's understanding and knowledge regarding customer needs and expectations (Slater & Narver, 1995).

Achieving organizational performance depends largely on how an organization adapts to changes in the external environment. Hence, so 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. (2014) Performance within an organizational setting will include integrating a pleasant work environment which 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.

ORGANIZATIONAL PROFITABILITY

Profit is something for which most companies, large or small, strive for. Small firms want to get big, big firms want to get bigger. Indeed, companies have to grow. Most firms, of course, desire



profit in order to prosper, and not just to survive. Organizational profitability, however, means different things to different organizations.

Organizational profitability refers to a company's ability to generate revenue that exceeds its expenses, resulting in a net profit. It is a key measure of financial health and success, indicating how efficiently a company utilizes its resources to achieve its objectives. Profitability can be expressed as an absolute number (total profit) or a percentage (profit margin). Organizational profitability is the ratio between profit and total revenue, often expressed as a percentage. Profitability is measured by comparing income (revenue) to expenses.

Organizational profitability, in simple terms, is how much money a company makes after paying all its expenses. It's a key measure of financial health and success, indicating how efficiently a company converts revenue into profit. Profitability is calculated by subtracting total expenses from total revenue.

Importance of Profitability:

It demonstrates a company's ability to generate value and grow.

It's a key factor in attracting investors and securing funding.

It impacts a company's ability to reinvest in its business and innovate.

It is a major indicator of a company's overall performance.

Profitability is a crucial indicator of a company's ability to generate a return on investment and its overall success. Several factors that influence organizational profitability, include:

Efficiency: Efficient operations and resource utilization are key to maximizing profit.

Product Differentiation: Unique products or services can command higher prices and increase profitability.

Pricing Strategies: Effective pricing strategies are crucial for maximizing revenue and profit.

Customer Relationship Management: Strong relationships with customers can lead to increased sales and repeat business.

Organizational Structure: A well-structured organization with effective communication can improve efficiency and profitability.

OPERATIONAL EFFICIENCY

Operational efficiency is used as a measure of non-financial performance as outlined by Richard *et al.* (2009) and Kamanga and Ismail (2016) who averred that operational efficiency leads to improved productivity and consequently profitability as compared to other non-financial performance measures (Ndolo, 2015). Kalluru and Bhat (2009) define operational efficiency as the proficiency of a corporation to curtail the unwelcome and maximize resource capabilities so as to deliver quality products and services to customers.

An organizational operational efficiency depends on factors like skillful and proficient workers, proper technological progression, proper procurement carries out, return to scale of the businesses, supply chain controlling among many others. Operational efficiency is suitable in the banking industry because, the key to create value and achieve competitive edge among banks lies



in the better operational efficiency and productivity (Kalluru et al, 2009; and Bhagavath, 2009; in Ndolo, 2015).

THEORETICAL REVIEW

The study was anchored on the Resource -Based View (RBV) theory, which holds a reasonable explanation for the relationship that might exist between waste management and corporate sustainability. Developed by Wernerfelt (1986), it emphasizes the importance and influence of an organization's resources on its short-term performance and long-term survival. To such an extent, corporate sustainability is also dependent on the resources at the disposal of firms. Moreover, resources in this context could either be human or material. Therefore, resources used in this study include all assets, especially inventory and secondary materials. As practiced by trained and skilled managers, waste management can harness and recycle other resources in the possession of business entities for economic sustainability and overall profitability. Resource-based perspective theory is relevant because it offers a strong framework for comprehending how Beverage firms in South-East Nigeria can efficiently manage waste and advance corporate sustainability. The study is also anchored on environmental sustainability theory by Robert Goodland (1995) which focuses on managing resources and waste to maintain ecological balance. It emphasizes the reduce, reuse, recycle hierarchy and supports circular economy practices. Through the utilization of distinctive resources, innovation, and a long-term orientation, the Beverage companies may bolster its competitive edge and make a constructive impact on environmental sustainability.

EMPIRICAL REVIEW

A number of researchers have argued that waste management is a crucial instrument for achieving good performance in commercial firms.

Ali, Atif, Ahsan, & Derouiche (2022) carried out a study on Does waste management affect firm performance? International evidence. The study examines an important yet underexplored aspect of firms' sustainability practices, i.e., waste management, in order to analyze its impact on financial performance. Thus, using the 2002–2019 data of listed firms from 41 countries, the study found a significantly negative (positive) relationship between waste generation (recycling) and financial performance. The findings suggest that environmental initiatives are beneficial for firms and present important policy implications for regulators and firms.

Onamade, Alagbe, Oladipo and Daramola (2022) 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.

Aidoo (2024) studied the impact of landfill viability on sustainability dynamics in the Cape Coast Metropolis. Using the Smart PLS4 Structural Equation Modelling and the incapacitated facility location problem paradigm, the study examined the sustainability and viability of the landfill locations that were suggested. Using a stratified sampling technique, 400 samples were chosen for investigation within the Cape Coast Metropolis; of these, 320 valid respondents served as the foundation for the analysis. Significant relationships between community acceptance, environmental effect, facility accessibility, site sustainability, and operational efficiency were found through statistical research. However, there was no discernible relationship between site sustainability and economic viability. Additionally, there was no statistically significant relationship between the suggested indirect mediation pathway through facility accessibility, operational efficiency, and site sustainability.

Aliyu, (2023) highlighted the present condition of solid waste management in Federal Polytechnic Nasarawa, Nigeria. A descriptive survey using the research method was used. A total of one hundred (100) questionnaires were administered to gather information on primary sources, and seventy (70) were returned. The method of data collection was through questionnaire administration and direct physical observation. The collected data were analyzed using simple percentage statistical techniques to achieve the desired results. The findings revealed little orientation on the importance of reduce, reuse, and recycle approach. Moreover, laxity on the part of the authorities to punish environmental saboteurs.

Bartolacci, Paolini, Soverchia, & Zigiotti (2016) studied Waste management and financial performance: Evidence from Italian companies. The aim was to analyze the profitability of these companies and find out if they relate to waste management best practices in particular separate collection. Population of 298 Italian companies were studied.

Olayiwola, (2023) conducted a study on waste management administration and environmental sustainability in Nigeria. The study employed a survey research design. The population comprised 700 waste administrators in Ikeja Local Government Area; 250 were selected using the Yamen sample technique. However, 233 of the 250 distributed questionnaires were retrieved. In order to determine the ANOVA and coefficient results, linear regression (at a significance level of 5% or 0.05) was utilized. The results revealed a negative correlation between waste management agency operations and environmental sustainability, as well as between waste disposal, waste separation, and environmental cleanliness. Furthermore, a negative correlation between waste recycling and pollution control was discovered.

Oranefo, (2022) carried out a study on the impact of garbage recycling on the financial performance of small and medium-sized businesses (SMEs) in Nigeria. The questionnaires that



were given to the respondents produced the data. With the help of SPSS version 20.0, regression analysis was performed to evaluate the proposed hypothesis at the 5% level of significance. The study discovered that the profitability of small and medium-sized businesses (SMEs) in Nigeria is significantly impacted by waste recycling, resource recycling, solid waste management, and municipal garbage collection crews. This impact was statistically significant at the 5% level of significance.

Sahar, (2019) examined waste management analysis from an economic-environment sustainability perspective in Malaysia. The study aims to investigate the general public and informal garbage collectors' perceptions from social, environmental, and economic aspects. 300 respondents (125 households and 125 informal garbage collectors) were interviewed from seven districts of Faisalabad. The results reported that most residents blamed themselves for poor solid waste management, leading to different environmental issues. Lack of awareness among the general public about waste management practices is one of the critical factors for environmental issues. Further, solid waste collection by informal garbage collectors would improve social and environmental sustainability and serve as a source of income (economic value). The ordinary least squares (OLS) method was also used to check the impact of different factors on garbage collectors' income levels. Working hours were the only variable that had a significant impact on income.

Udodiugwu, (2024) studied Sustainable Waste Management and Organizational Performance of brewery firms in Anambra State. This study was undertaken to investigate the impact of waste management on organizational performance of food and beverage firms in Anambra State, Nigeria. 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.

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. Chikezie, Adedeji, Onihunwa, Meduna, & Joshua (2023) of Federal College of Wildlife Management, New-Bussa, Niger State. Nigeria studied Waste Management Practices and Operational Performance of Hotels in Lagos State, Nigeria. The objective of this study was to determine waste management practices influencing the operational performance of hotels in Lagos State, Nigeria. 20 hotels were studied and the Results showed that waste management practices in hotels are very important (3.83), while levels of their operational performance is to a large extent (3.16). Linear Regression showed that waste reduction, reuse and recycling practices ($\beta = 0.383$), waste collection and depositing practices ($\beta = 0.413$) and waste composting and treatment practices ($\beta = 0.258$) significantly.

Ndubuisi Okolo et al. (2016) investigated Nigeria's waste management and sustainable development, mainly referring to the Anambra State Waste Management Agency (ASWAMA). A survey research design was adopted, and the primary instrument used for data collection was a structured questionnaire. Pearson product Moment Correlation coefficient and one-sample Kolmogorov Smirnov Test were employed to analyze the data generated. The findings revealed that waste management practice significantly impacts environmental sustainability in Anambra State.

Abubakar, Maniruzzaman, Dano, AlShihri, AlShammari, Ahmed, Al-Gehlani and Alrawaf (2022) from Saudi-Arabia assessed the human and environmental health impacts of Waste Management 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. Its findings revealed that the common place Waste Management 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.

GAP IN KNOWLEDGE

The study examined the effect of waste management practices on organizational performance. In the course of our empirical review, we came across quite a number of studies on waste management and its effect or impact on organizational productivity, and to the best of our knowledge, majority of such studies were in different manufacturing firms such as breweries, and not in the beverage manufacturing sub- sector.



However, there were equally very few on organizational performance in the beverage manufacturing companies but were carried out in different countries, geographical zones or states with different operational policies and environments.

Existing research often focuses on general environmental impacts or regulatory compliance, without adequately linking specific waste management strategies such as recycling, waste reduction –to key performance indicators like organizational profitability or operational efficiency. Limited empirical data exist on the challenges and constraints that firms in south east Nigeria face in implementing effective waste management systems, as well as on the best practices that have proven successful in improving both environmental and financial outcomes.

These studies revealed the existence of a strong positive correlation between waste management and organizational performance. Others used different variables to decompose the dependent and independent variables. This study therefore, considered the operational realities of beverage manufacturing firms in south-east Nigeria as well as offer practical insight for managers and policymakers aiming to align environmental sustainability and business outcomes.

METHODOLOGY

The study adopted descriptive survey research design which enables the researcher to generalize the result of the study for the entire population of interest. The study was carried out in South-East, Nigeria. The South East is the one of the six geopolitical zones in Nigeria. It comprised five states – Abia, Anambra, Ebonyi, Enugu, and Imo. The population of the study comprised 2090 employees of Beverage Manufacturing firms in South East, Nigeria. The statistical formula devised by Borg and Gall (1973) was employed to determine the sample size. The systematic sampling technique was used because It gives each member of the population equal chance of being included in the sample. Primary source of data was employed and the instrument used for data collection was structured questionnaire. Through the expert option, the content and face validity were used to validate the research instrument. The reliability of research instrument was determined through a test re-test method. The test and re-test responses were collated and analyzed for consistency, through the application of Spearman’s rank order correlation coefficient. The data generated were analyzed through simple percentages, and correlation using the statistical package for Social Science (SPSS).

Table 3.1

Names and Population of the selected Beverage firms.

SNO	Name and location of Beverage Company	Population
	Anambra State	
1	<u>Asamma Foods & Beverages Limited</u>	133
2	<u>Zobo Cola Ltd</u> Onitsha	106
3	<u>Eastern Distilleries & Food Industries Ltd</u>	130
4	Zephyhills Foods and Beverages Onitsha	121



5	<u>Tiger Food Ltd Onitsha</u>	90
	Total	580
	Ebonyi State	
1	Osikapa Foods Limited	50
2	<u>Emma Food Company</u>	48
3	<u>Jaypee Enterprises Nigeria</u>	40
4	Rachina Food And Beverages Ltd	28
5	Jannachs Global Beverages & Food processing company	48
	Total	214
	Abia State	
1	<u>Sunrise Food Company Limited</u>	77
2	<u>Matnad Industries Limited</u>	76
3	<u>New Era food Ltd</u>	62
4	Phinnokey Food and Beverages Company	80
5	Onyi Sons Nigeria Company	70
	Total	365
	Imo State	
1	<u>Cashewfield Nigeria Limited</u>	97
2	<u>Daico Beverages Nigeria Ltd</u>	66
3	<u>Rapido Foods</u>	70
4	<u>Naxson Switz Co. Nigeria Ltd</u>	80
5	<u>Emerald Food & Beverage Company Limited</u>	84
	Total	397
	Enugu State.	
1	<u>Pon Beverages & General Foods Ltd</u>	160
2	<u>Onwe Industries Ltd</u>	80
3	<u>Bosotex International Ltd</u>	88
4	Sternel foods and beverages	90
5	Jochinnese Food And Beverages	89
	Total	507
	Grand Total	2090

Source: researchers survey, 2025



Table 3.2:
Population and Sample Allocation

S/N	Firm	Population	Sample Allocation
1.	Abia State	365	71
2.	Anambra State	580	113
3.	Ebonyi State	241	42
4.	Enugu State	507	99
5	Imo State	397	78
	Total	2090	408

Source: Field Survey, 2025

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

In this section, the data generated from the employees of the sampled Beverage manufacturing firms in South-East Nigeria were presented, analyzed and interpreted.

Table 4.1
Questionnaire Response Rate

ITEMS DISTRIBUTED	NUMBER	PERCENTAGE
Copies of the questionnaire distributed	408	100
Copies of the questionnaire Returned	400	98.0
Copies of valid questionnaire	400	98.0
Copies of questionnaire not returned	8	2.0
Total	408	100

Author's compilation 2025

A total of four hundred and eight copies of questionnaire were distributed to the respondents, out of 408 copies of the questionnaire, four hundred were properly filled and found relevant to the study eight copies of the questionnaire were not returned. Therefore, the analysis in this section was based on the four hundred relevant copies. The first section covers the demographic features of the respondents. The second section analyzed the data relevant to research questions.



Research Question One: How does waste recycling impact the profitability of Beverage Manufacturing firms in South- East, Nigeria?

Table 4.2

Respondents' view on investing more in waste recycling would further improve the organization's profitability.

	Frequency	Percent
Strongly Disagree	30	7.5
Disagree	40	10.0
Undecided	20	5.0
Agree	170	42.5
Strongly Agree	140	35.0
Total	400	100.0

Source: Field Survey, 2025/SPSS

Table above showed that greater percentages 42.5% of respondents agree that investing more in waste recycling would further improve the organizations profitability, 35% strongly agree, 5 % are undecided, 10%disagree while 7.5%of respondents strongly disagree.

Table 4.3

Respondents' view on recycling enhances the company's reputation and market value

	Frequency	Percent
Strongly agree	109	27.3
Agree	191	47.7
Neutral	19	4.8
Disagree	48	12.0
Strongly	33	8.2
Total	400	100.0

Source: Field Survey, 2025/SPSS

The above table reveals that 27.3% of the respondents strongly agree that recycling enhances the company's reputation and market value. 47.7% agree, 34.8% are neutral, 12% disagree while 8.2% of respondents strongly disagree.

Research Questions Two: To what extent does reducing production waste improve operational efficiency in Beverage Manufacturing firms in South- East, Nigeria?



Table 4.4

Respondents' view on opinion that waste reduction improves process efficiency

	Frequency	Percent
Strongly Disagree	30	7.5
Disagree	36	9.0
Neutral	24	6.0
Agree	180	45.0
Strongly agree	130	32.5
Total	400	100.0

Source: Field Survey, 2025/SPSS

The table above reviewed that 32.5% of respondents strongly agree that waste reduction improves process efficiency, 45.0 % agree, 6.0% are neutral, 9% disagree while 7.5% of respondents strongly disagree.

Table 4.5

Respondents' View on the opinion that reducing waste has led to cost savings

	Frequency	Percent
Strongly Disagree	14	3.5
Disagree	26	6.5
Neutral	50	12.5
Agree	180	45.0
Strongly Agree	130	32.5
Total	400	100.0

Source: Field Survey, 2025/SPSS

The table above showed that 32.5% of the respondents strongly agree that reducing waste has led to cost savings, 32.5% agree, 12.5% are neutral, 6.5% disagree while 3.5% of respondents strongly disagree.

TEST OF HYPOTHESES

Correlation analysis was used to measure the effect of the independent variable to the dependent variable of hypotheses 1-2 and proper interpretation and analysis techniques were used to explain the hypotheses testing. All tests were conducted at 0.05 level of significance.

Hypothesis One

H₀: Waste Recycling does not have significant positive effect on organizational profitability in Beverage Manufacturing Firms in South- East, Nigeria.

H₁: Waste Recycling had a significant positive effect on organizational profitability in Beverage Manufacturing firms in South- East, Nigeria.



Table 4.6

Correlation Model Summary for Hypothesis one

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.882 ^a	.848	.841	.196

a. Predictors: (Constant), waste recycling

b. Dependent (Variable): organizational profitability

From Table above, it was clear that the R value was .882 showing a positive direction of R as the correlation between the observed and predicted values of the dependent variable. The values of R range from -1 to 1 (Wong & Hiew, 2005). The sign of R indicates the direction of the relationship (positive or negative). The absolute value of R indicates the strength, with larger absolute values indicating stronger relationships. Thus the R value at .882 shows a stronger relationship between observed and predicted values in a positive direction. The coefficient of determination R² value was 0.841. This shows that 84.1 percent of the variance in dependent variable (organizational performance) was explained and predicted by independent variable (waste recycling)

Decision

The significance level below 0.05 implies a statistical confidence of above 99%. This implies that waste recycling had a significant positive effect on organizational profitability in Beverage Manufacturing firms in South East, Nigeria. Thus, the decision would be to reject the null hypothesis (H₀), and accept the alternate hypothesis (H₁). Therefore, we can state that waste recycling had a significant positive effect on organizational profitability in Beverage Manufacturing firms in South East, Nigeria.

Hypothesis Two

Ho: Waste reduction does not have significant positive effect on operational efficiency in Beverage Manufacturing firms in South- East, Nigeria.

H₁: Waste reduction had a significant positive effect on operational efficiency in Beverage Manufacturing firms in South- East, Nigeria

All tests were conducted at 0.05 level of significance.

Table 4.7

Correlation Model Summary for Hypothesis two

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1	.883 ^a	.849	.842	.197

a. Predictors: (Constant), waste reduction



b. Dependent Variable: operational efficiency.

From Table above, it was clear that the R value was .883 showing a positive direction of R as the correlation between the observed and predicted values of the dependent variable. The values of R range from -1 to 1 (Wong & Hiew, 2005). The sign of R indicates the direction of the relationship (positive or negative). The absolute value of R indicates the strength, with larger absolute values indicating stronger relationships. Thus the R value at .883 showed a stronger relationship between observed and predicted values in a positive direction. The coefficient of determination R^2 value was 0.842. This showed that 84.2 percent of the variance in dependent variable (operational effectiveness) was explained and predicted by independent variable.

Decision

The significance level below 0.05 implies a statistical confidence of above 99%. This implies that waste reduction has a significant positive effect on operational efficiency in Beverage Manufacturing firms in South East, Nigeria. Thus, the decision would be to reject the null hypothesis (H_0), and accept the alternate hypothesis (H_1). Therefore, we state that waste reduction had a significant positive effect on operational efficiency in Beverage Manufacturing firms in South- East, Nigeria.

DISCUSSION OF FINDINGS

The effect of waste management practices on organizational performance in Beverage Manufacturing firms in South East, Nigeria. The data were analyzed using, simple percentage and correlation.

Waste Recycling and Organizational Profitability

The result of the linear analysis showed that waste recycling had a significant positive effect on organizational profitability in Beverage manufacturing firms in South East, Nigeria. This finding conforms with the findings of Ikeagbo (2021) who had observed that waste recycling significantly influences technological sustainability and enhances business continuity, thereby improving organizational profitability. Incorporating waste recycling into organizational practices offers multifaceted benefits, including cost savings, enhanced governance, improved employee engagement, and alignment with sustainable development goals. Organizations that proactively implement recycling initiatives are better positioned to achieve long-term productivity and sustainability. This is in line with Nersinger (2005) argument that effective recycling generate revenue and enhances corporate image, thereby improving organizational profitability.

Waste Reduction and Operational Efficiency

The result showed that waste reduction had a significant positive effect on operational efficiency in Beverage Manufacturing firms in South- East, Nigeria. In line with Causevic, (2024) it demonstrates how integrating advanced enterprise resource planning functionalities with Lean



principles can significantly reduce waste, enhance resource efficiency, and improve operational performance.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter is a synthesis of the entire report and contains summary of findings, conclusions arrived at, the recommendations and contribution to knowledge.

Summary of Findings

The findings of the study were summarized as follows:

1. Waste recycling had a significant positive effect on organizational profitability in Beverage Manufacturing firms in South East, Nigeria. Waste recycling had a Coefficients of 9.059 490 with a p value of 0.000 (Sig. $p < 0.05$)
2. Waste reduction had a significant positive effect on operational efficiency in Beverage Manufacturing firms in South- East, Nigeria. Waste reduction had a Coefficients of 23.490 with a p value of 0.000 (Sig. $p < 0.05$)

Conclusion

This study examined the effect of waste management practices on organizational performance in Beverage Manufacturing firms in South East, Nigeria. Data were sources from primary sources and were analyzed using Simple Percentage and Correlation. The result showed that waste recycling had a significant positive effect on organizational profitability and that waste reduction had a significant positive effect on operational efficiency in Beverage Manufacturing firms in South East, Nigeria. Therefore, the study concluded that waste management practices had a significant positive effect on organizational performance in Beverage manufacturing firms in South East, Nigeria.

Recommendations

The following are recommendations based on the findings of the study.

*Beverage manufacturing firms should formalize recycling initiatives as core components of their operational strategy as well as establish dedicated recycling units within the production plants to ensure systematic sorting, collection, and processing of recyclable materials. This means that organizations should institutionalize waste recycling programs across all operations.

*Beverage manufacturing firms should fully integrate Lean Manufacturing tools-such as 5S of (sort, set in order, shine, standardize and sustain), kaizen (continuous improvement), and Just-In-Time (JIT)- to systematically eliminate waste at every stage of production. This implies that Lean practices reduce downtime, eliminate excess inventory, and optimize resource use which are all directly enhance operational efficiency.

Suggestions for Further Studies

This study was carried out to examine the effect of waste management on organizational performance in beverage manufacturing firms in South-East Nigeria. The study only focused on Beverage Manufacturing firms within South-East Nigeria, hence it is limited in scope and the



findings cannot be generalized to other geographical Zones both in Nigeria and outside Nigeria. The study therefore recommended that another research be done on some wider geographical areas and countries as well as other sector of manufacturing firms.

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