Global Journal of Finance and Business Review | *ISSN 1694-450X*
Published by AIR JOURNALS | *https://airjournal.org/gjfbr*
16/18 Avenue des Longaniers, Quatre Bornes, Mauritius
airjournals@gmail.com; enquiry@airjournal.org

RESEARCH ARTICLE

Effect of Product Safety on the Performance of Food and Beverage Firms in Ebonyi State

Ede, T. E.
Department of Psychological and Sociological Studies, Ebonyi State University, Abakaliki.

Citations - APA

Ede, T. E. (2024). Effect of Product Safety on the Performance of Food and Beverage Firms in Ebonyi State. *Global Journal of Finance and Business Review, 7(1), 54-70. DOI: https://doi.org/10.5281/zenodo.10691465*

ABSTRACT

The study evaluated the effect of product safety on the performance of food and beverage firms in Ebonyi State. The specific objectives were to; examine the effect of regulatory action on the product quality; and effect of monitoring action on the waste reduction of food and beverage firms in Ebonyi State. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. The population of the study was six hundred and twenty three (623) employees. The sample size of two hundred and thirty seven (237) was adopted using Ferund and Williams's formula. Two hundred and one (201) employees returned their questionnaire and accurately filled. That gave 85 percent response rate. Data was presented and analyzed by mean score (3.0 and above agreed while below 3.0 disagreed) and standard deviation using Sprint Likert Scale. The hypotheses were analyzed using Z- test statistic tool. The findings revealed that Regulatory action had significant positive effect on the product quality Z(95, n = 201), 5.220 < 6.701, P. < .05 and Monitoring action had significant positive effect on the waste reduction of food and beverage firms in Ebonyi State Z(95, n = 201), 5.978 < 7.671, P. < .05. The study concluded that Regulatory action and monitoring action had significant positive effect on the product quality and waste reduction of food and beverage firms in Ebonyi State. The study recommended among others that the food and beverage management should ensure that there is effective regulatory policy to guide and make sure they play by the same rules and protect citizens.

Keywords: *Product Safety; Performance; Food and Beverage Firms; Ebonyi State*

Background

Product safety is the potential of a product to be safe for consumers (Hennik, 2024). Any product that gets placed on retail shelves should not put anyone at risk and meet the standards for its intended use. This involves following established rules and guidelines on packaging, sanitation, preservation, and the like. Violations of such rules rightly subject manufacturers to recalls or litigation. Safety standards in drugs processing facilities are crucial, which is why equipment that detects foreign particles and other contaminants is used to ensure drugs safety. Manufacturing plants also follow strict protocols in food handling and sanitation and have regular training and certification of their staff to ensure that knowledge and skills are updated (Hennik, 2024). Achieving a competitive advantage requires that partners operating in the supply chains take improvement actions (Nikookar, Varsei & Wieland, 2021). This is particularly noticed by enterprises operating in production sectors, for which the competitive advantage is achieved mainly by improving the quality of products and by improving the effectiveness and efficiency of processes (Afraz, Bhatti, Ferraris and Couturier, 2021). To achieve a competitive advantage, many companies implement quality, environment and safety management systems as well as the concept of pharmaceutical companies (Islam 2019). When taking actions to improve processes and products, these enterprises also expect the implementation of improvement actions by suppliers (Adrian, 2023).

Organizations rely on employees to function and meet the set objectives. They use resources to sustain and maintain a productive workforce (Tetu, Paul & Jesse, 2023). Organizations have become more complex and safety-prone (Keraka, 2020). These changes could be affecting the productivity of the employees. To reduce the expected harm its product causes to consumers, a firm can invest in a product's safety before sale or mitigate harm after sale in the event product risks materialize. After-sale harm mitigation interferes with consumers' product use and reduces consumption benefits (Florian and Tim, 2020). However, on the backdrop the study the effect of product safety on the performance of food and beverage firms in Ebonyi State.

Statement of the Problem

A product's safety is a top priority for any seller or manufacturer because any damage caused by the product could lead to legal actions being filed against them. Design and formulation can have an impact on an item's inherent safety. Adopting an efficient product safety management system is essential for ensuring product safety. It is possible to avoid accidents and recalls by implementing an efficient product safety management program. This can reduce insurance costs, improve product quality, and reduce the risk of punitive damages. As defined by recognized standards, product safety is the capacity of a product to be considered safe for its intended use. In this context, policies aimed to safeguard individuals from the dangers of thousands of everyday goods are sometimes referred to as product safety.

The pharmaceutical manufacturing industry presents unique risks to employees due to the increased likelihood of interacting with hazardous chemicals. Performing regular and frequent risk assessments is one of the best ways to keep pharmaceutical manufacturers safe. The problem facing product safety of the pharmaceutical firms includes; poor product quality; and waste reduction. Manufacturing has gone a long way from the simple assembly lines of the past. Its current implementation of digital technology has made it safer, faster, and more cost-effective.

Organizations need to focus on creating products that are high quality enough to meet or exceed the customer's needs if they want to be successful. A company that puts out low-quality products won't be able to attain the level of customer satisfaction that will keep consumers coming. A company that's serious about manufacturing high-quality products must make dedicated efforts to monitor the quality of its output, assess the procedures that work well, and identify areas that could benefit from improvement. However, this is why product safety is such a key aspect of manufacturing. No amount of production optimization can be worth anything if it doesn't follow consumer safety standards. Based on this, the study aimed at studying effect of product safety on the performance of food and beverage firms in Ebonyi State.

Objective of the Study

The main objective of the study was to evaluate the effect of product safety on the performance of food and beverage firms in Ebonyi State. The specific objectives were to;

i. Examine the effect of regulatory action on the product quality of food and beverage firms in Ebonyi State.

ii. Evaluate the effect of monitoring action on the waste reduction of food and beverage firms in Ebonyi State.

Research Question

The following questions guided the study;

i. What is the effect of regulatory action on the product quality of food and beverage firms in Ebonyi State?

ii. What is the effect of monitoring action on the waste reduction of food and beverage firms in Ebonyi State?

Statement of Hypotheses

The following hypotheses guided the study

i. Regulatory action has effect on the product quality of food and beverage firms in Ebonyi State.

ii. Monitoring action has effect on the waste reduction of food and beverage firms in Ebonyi State.

Scope of the Study

The study examines the effect of product safety on the performance. The study focused on food and beverage firms. The geographical area was Ebonyi State. It was based on effect of regulatory action on the product quality; and monitoring action on the waste reduction of food and beverage firms

i. Examine the effect of regulatory action on the product quality of food and beverage firms in Ebonyi State.

ii. Evaluate the effect of monitoring action on the waste reduction of food and beverage firms in Ebonyi State.

Significance of the Study

The study is significance for the following people;

Employee: The study presents unique risks to employees due to the increased likelihood of interacting with hazardous chemicals. Performing regular and frequent risk assessments is one of the best ways to keep food and beverage manufacturers safe.

Organization: The study help in protecting company's standing in inadvertently causing harm to consumers that shouldn't happen. Organizations owners are morally obliged to keep their products in the best condition for consumer use.

Consumer: Ensuring product safety is of paramount importance for every stage of the product manufacturing process. It is always imperative to ensure that measures are taken when considering safety and preventing the injury of consumers.

Students: The study is vital because it help in increasing the knowledge level of consumers with respect to safety principles has been suggested as one method of reducing the number of consumer product related injuries.

Review of the Related Literature

Conceptual Framework

Product

Product is a description of a product or service, at an early stage in the product lifecycle. It is generated before any detailed design work is undertaken and takes into consideration market analysis, customer experience, product features, product cost, strategic fit, and product architecture. Products are made using commodities and are then put on the market and sold to consumers. Products, which are also referred to as consumer goods or final goods, are purchased for consumption by the average consumer. A product is an object, or system, or service made available for consumer use as of the consumer demand; it is anything that can be offered to a market to satisfy the desire or need of a customer (Kotler, Armstrong, Brown and Adam, 2016).

In retailing, products are often referred to as merchandise, and in manufacturing, products are bought as raw materials and then sold as finished goods. A service is also regarded as a type of product. A product can be classified as tangible or intangible. A tangible product is an actual physical object that can be perceived by touch such as a building, vehicle, gadget, or clothing. An intangible product is a product that can only be perceived indirectly such as an insurance policy.

A product needs a name: a name that people remember and relate to. A product with a name becomes a brand. It helps it stand out from the clutter of products and names. A product should be adaptable: with trends, time and change in segments, the product should lend itself to adaptation to make it more relevant and maintain its revenue stream (The Economic Times, 2024). Products are typically classified as either durable or consumable goods. Durable consumer goods, such as appliances, furnishings, and jewelry, are generally long-lasting and purchased infrequently. Consumable goods, which include gas, groceries, and tobacco products, are used quickly or need frequent replacement. Since people still need to purchase basic goods even in a faltering economy, the demand for consumables remains strong through economic or market fluctuations. Despite their stability, consumable goods are sensitive to competition and to changes in the prices of the commodities used to make the consumable goods (Nick and Brown, 2023).

Safety

Safety is the state of being *safe*, the condition of being protected from harm or other danger. Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk (Wikipedia, 2024). Safety is a concept that includes all measures and practices taken to preserve the life, health, and bodily integrity of individuals. In the workplace, safety is measured through a series of metrics that track the rate of near misses, injuries, illnesses, and fatalities. In order to improve these metrics, employers and safety officials must also conduct investigations following any incident to ensure that all safety protocols and measures are being followed or to implement new ones if needed. Ensuring the safety of workers is both necessary and beneficial for any organization (Safeopedia, 2018).

Product Safety

Product safety is hence an important task of consumer protection. Whether the different products involve a health risk depends not only on the ingredients but primarily on how the consumer comes into contact with them. Consequently, it is decisive whether the products are firmly integrated into the products or whether they are released. Good manufacturing practice in the drug industry encompasses several key components, including personnel, facilities and equipment, sanitation and hygiene, documentation and record-keeping, and quality control and testing. By prioritizing these components, drugs manufacturers can uphold the highest standards of safety, quality, and regulatory compliance. Good manufacturing practice is a crucial framework that ensures the quality, safety, and consistency of products in the food industry (SGS Digicomply, 2022).

Product safety is the risk of injury or sickness associated with a product or service. This considers hazards related to the product in real world condition. Safe products seek a wide range of safety certifications and the firms behind the product are well versed in safety standards (John, 2018).

Product safety is part of a broad consumer movement commonly referred to as consumerism. Consumerism refers to a number of activities designed to protect consumers from a wide range of practices that can infringe on their rights and in some cases their safety in the marketplace. The consumer movement is generally supported by consumers, many business organizations, and various levels and branches of government, most especially the judicial branch, but also in the executive and legislative branches to varying degrees. Product safety refers to the production, distribution, and sale of products that from various perspectives are either potentially unsafe or inherently unsafe to consumer use. Reasons for a product being unsafe include design defects, misrepresentation as to use, or the absence of adequate warnings as to potential dangers and hazards of the product even when it is used as intended. Product safety and product liability are inseparable. Product liability is concerned with the legal responsibility for injuries caused by one or more of the above factors. If an injury occurs through the use of a product the producer is offered, as prescribed by law and judicial precedent, various defenses. Generally speaking, sellers and manufacturers are expected, as also prescribed by law and judicial precedent, to provide adequate instructions and warnings regarding products use (Michael, 2024).

Components of Product Safety used in the Study

The seven components of product safety by Erin (2021), personnel, facilities and equipment, sanitation and hygiene, documentation and record-keeping, and quality control and testing.

Regulatory Action

Regulatory actions means any material claim, demand, action or proceeding brought or instigated by any governmental authority in connection with any Environmental Law (including, without limitation, civil, criminal and/or administrative proceedings), whether or not seeking costs, damages, penalties or expenses. Regulatory action means an allegation of wrongdoing by a Governmental Authority, including requests for information, investigations and formal complaints. Regulatory bodies such as OSHA and the NFPA mandate a variety of safety measures employers must take and have the authority to impose fines if their investigations reveal a violation of these standards. Safety is also beneficial for all organizations since, in addition to avoiding costly fines, it ensures increased productivity, better morale, and fewer lost work days (Safeopedia, 2018).

Regulation has a variety of meanings that are not reducible to a single concept. In the field of public policy, regulation refers to the promulgation of targeted rules, typically accompanied by some authoritative mechanism for monitoring and enforcing compliance. Regulation moves beyond an interest in the state and focuses on all means of social control, either intentional or unintentional (Woll, 2023). Regulatory action is a government authority that is responsible for exercising autonomous dominion over some area of human activity in a licensing and regulating capacity. These are customarily set up to strengthen safety and standards, and/or to protect consumers in markets where there is a lack of effective competition.

Monitoring Action

Monitoring is a process to periodically collect, analyse and use information to actively manage performance, maximise positive impacts and minimise the risk of adverse impacts. It is an important part of effective management because it can provide early and ongoing information to help shape implementation in advance of evaluations. Action control does not end with preparing an action and initiating its execution (Bernhard, Brown Brown & Dieter, 2016). Monitoring brings evaluative thinking into the periodic collection, analysis and use of information during implementation, as distinct from single discrete evaluation events or even several linked discrete evaluation events (such as a mid-term and final evaluation). Newer forms of evaluation, such as developmental evaluation and real-time evaluation, have blurred this distinction, as they involve ongoing collection, interpretation and use of evaluative data. Monitoring of activities, outputs, and outcomes can be conducted at different levels and across multiple entities (Hall, Rogers & Moore, 2022). Monitoring is the systematic and continuous collection and analysis of information about the progress of a development intervention. Monitoring is done to ensure that all the people who need to know about an intervention are properly informed, and so that decisions can be taken in a timely manner. There are many different types of monitoring, including financial monitoring, process monitoring and impact monitoring (INTRAC 2017). Monitoring action has been conceptualized as awareness of the current experience without necessarily influencing the course of action or disrupting automated motor processes.

Performance

Performance can be described as the relationship between input and outcomes result of the firm for a specific period. It shows the level of success or failure of a firm. Performance can help identify their strength and weaknesses in the light of existing results (Eniola & Entenbeng, 2015 & Ugwu, Orga and Okonkwo, 2023). Growth of sales, profit increase, market share, increase in employment and return of investment are used by scholars to measure performance (Rizal, Suhadak & Kholid 2017). Financial indicators in this case were the sole measurement of performance such as profit, return on investment, sales per employee, market share, and productivity. Performance is the capability of the service-oriented systems to achieve its functionality well, which can be measured by the throughput and the response time (Wang, Jiang and Pan, 2018). Performance management is a tool that helps managers monitor and evaluate employees' work. The goal of performance management is to create an environment where people can perform to the best of their abilities and in alignment with the organization's overall goals (Carla, David & Vikki, 2023).

Components of Performance

The five components of performance by Sharlyn (2017) include; management Involvement; goal setting; learning and development; feedback and coaching; ongoing conversations. The components used in the study were; product quality; waste reduction

Product quality

In any organization, product quality earns customer loyalty, helps establish brand recognition and manages costs. Customers often buy more from companies they know and trust, and businesses can reduce costs that result from product returns, defects and losses through product quality control. By ensuring product quality, you can help customers get to know your brand, encourage them to buy your products and increase your revenue. Product quality refers to how well a product satisfies customer needs, serves its purpose and meets industry standards. When evaluating product quality, businesses consider several key factors, including whether a product solves a problem, works efficiently or suits customers' purposes. Quality has been an important part of human activities since the emergence of human history. Before now, manufacturing was essentially conducted by the cottage industry and heavily relied on craftsmen. The manufacturers were merely in seller's market; however, the trend has changed from seller's market to the buyer's market. The consumers have become more aware of the variety of products in the market. Thus, customers are the focus of manufacturing such that every organization has to study what customers' needs are and satisfy them in order to remain in business by offering products of desired quality (Nnadi, Akawnonu & Okafor, 2018; Ugwu, Eneh, & Orga, 2023).

Product Quality is the collection of all the features and characteristics of a product that contribute to its ability to meet the customer needs and requirements. It's the ability of the product to fulfil what the end user wants and perceives as value. For a product to be of good quality it should be reliable and perform all its functions smoothly. Product quality is single most important parameter for a product, brand or organization. The quality determines the customer experience and repeat business. If the product quality is poor and the product is not able to do its job reliably and safely then the brand image suffers. Product quality can make or break a brand in the market hence the businesses need to focus on product quality before anything (Product quality is single most important parameter for a product, brand or organization. The quality determines the customer experience and repeat business. If the product quality is poor and the product is not able to do its job reliably and safely then the brand image suffers. Customers would not buy them again and overall market position will decline. Product quality can make or break a brand in the market hence the businesses need to focus on product quality before anything (Perfektni, 2023).

Waste Reduction

Waste reduction or source reduction is the practice of preventing waste by decreasing or eliminating the amount of materials initially used. Some examples of waste reduction include purchasing products in bulk quantities rather than single servings, like cereal or potato chips. Waste reduction is a process of reducing the amount and activity of waste materials to a level as low as reasonably achievable. Waste reduction is now applied at all stages of nuclear processing from power plant design through operation to decommissioning. It consists of reducing waste generation

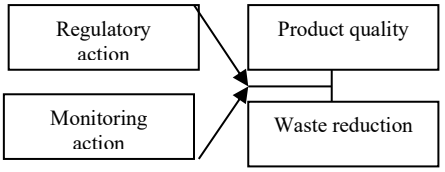
as well as recycling, reuse and treatment, with due consideration for both primary wastes from the original nuclear cycle and secondary wastes generated by reprocessing and clean-up operations (Michael and Stepan, 2019; Mbah, & Ajagu,2020).

Waste reduction refers to the strategies that minimize the amount of generated waste and/or reduce the toxicity of the resultant waste when designing or manufacturing products or services. Waste can be reduced by reusing materials, using less hazardous substitute materials, or by modifying components of design and processing. Source reduction in manufacturing not only saves resources, but it also reduces costs for the manufacturer and indirectly for the consumer. For example, minimal packaging reduces material use, increases distribution efficiency, and reduces fuel consumption and resulting air emissions. Similarly, building materials can be designed to reduce the overall mass of material needed for a given structure (Melissa and Rachel, 2023). Waste reduction is a set of processes and practices intended to reduce the amount of waste produced. By reducing or eliminating the generation of harmful and persistent wastes, waste reduction supports efforts to promote a more sustainable society (United States Environmental Protection Agency, 2012).

Waste reduction involves redesigning products and processes and/or changing societal patterns of consumption and production (Davidson, 2011). The most environmentally resourceful, economically efficient, and cost effective way to manage waste often is to not have to address the problem in the first place. Waste reduction encourages less waste production by modifying processes involved with waste source. Managers see waste reduction as a primary focus for most waste management strategies. Proper waste treatment and disposal can require a significant amount of time and resources; therefore, the benefits of waste reduction can be considerable if carried out in an effective, safe and sustainable manner. Traditional waste management focuses on processing waste after it is created, concentrating on re-use, recycling, and waste-to-energy conversion (Davidson, 2011).

Conceptual Framework used in the Study

A conceptual framework shows how your variables should relate to one another. It lays out the pertinent goals for your investigation and shows how they connect to produce logical findings. Conceptual frameworks show cause-and-effect relationships and are frequently displayed visually (Bas and Tegan, 2022).



Source: Field Survey, 2024

Theoretical Framework

Kano's Theory of Attractive Quality and Packaging (1984)

The theory of attractive quality predicts that product attributes are dynamic, that is, over time an attribute will change from being indifferent, to attractive, to one-dimensional, to must-be. The traditional role of packaging in consumer products has been to store and protect the content (Kano, Seraku, Takahashi, and Tsjui, 1984). Current consumer and industry trends, however, suggest an increasingly important role for packaging as a strategic tool as well as a marketing vehicle. One question of immediate interest is how packaging should be designed to be competitive and associated with high quality from a customer perspective. The change of customer expectations, however, as customers become more demanding, means that the role of packaging becomes more important as it can be used to provide information and functions. This may mean that certain functions of the package are modified or intensified, compared to the package's previous function of merely protecting the merchandise, and facilitating storage and transportation. This addition of new services or functions to the package of the goods can be viewed as a transition of a product on the goods to-services continuum. Since customers perceive goods and services in different ways, such a transition makes it important for organizations to reconsider what quality means and how it is related to customer satisfaction (Kano *et al*., 1984).

In the study was anchored on this theory and also in line with objective one of the study, quality attributes in technical terms can be considered creators of attractive quality. The technical entity is required for creating an advantage that makes the product unique on the market. The product packaging is difficult to use or non-functional, the buyer will probably consider purchasing a different brand next time. The communicative entity contributes little to the creation of customer satisfaction (Maja, Dorotea and Josip, 2021).

Empirical Review

Regulatory Action on the Product Quality

Putu and Ni (2021) conducted a study on the effect of product quality, service quality, and atmosphere stores on customer satisfaction and its impact on repurchase intention. The purpose of this study was to determine the effect of product quality, service quality, and store atmosphere on customer satisfaction and its impact on repurchase intention of Warunk Upnormal Renon consumers. The sample size used was one hundred and twenty (120). The study used regression analysis. The findings showed that product quality has a positive and significant effect on customer satisfaction, service quality has a positive and significant effect on customer satisfaction, store atmosphere has a positive and significant effect on customer satisfaction, and customer satisfaction has a positive and significant effect on repurchase intention

Ejika Ukpata, Atiga & Fumba (2020) conducted a study on the impact of product quality on customer satisfaction and loyalty. The main aim of this work is to evaluate the impact of product quality on customer satisfaction and loyalty. The study adopted a survey research design. The population of the study was 264 staff of Adama Beverages Ltd. The data were analysed using linear regression analysis. The finding showed that when it comes to customer satisfaction, product quality is a major determinant and that reduction in level of customer loyalty, might be due to variation in the firm's product quality and the customer's level of satisfaction as regard the product quality. The study recommended that since product quality happens to be one of the major determinants of customer satisfaction and customer loyalty and as such management of firms must establish an interactive metrics that will keep track of the level of their product quality based on the customer perceptions.

Ismail (2016) conducted a study on the impact of product quality and price on customer satisfaction with the mediator of customer value. The purpose of the study was to test the product quality and price towards customer satisfaction and to test the mediating role of customer value in improving customer satisfaction. Structural Equation Modeling was used. The sample size of one hundred and ten (110) was used. The finding shows that the functional value of the toothpaste product bought by the customer is not optimal yet to be a major consideration to satisfy the customers.

Nnadi, Akawnonu & Okafor (2018) conducted an empirical analysis of quality control techniques and product quality in manufacturing firms in South East Nigeria. The study sought to examine the effect of inspection technique on relationship between quality control technique and product designing was used in this study. The total population used for the study was nine thousand two hundred and eighty-five (9,285); and a total sample size of five hundred and sixty four (564) was used. Data were analyzed using Pearson Correlation with the aid of Statistical Package for Social Sciences (SPSS). The finding showed that inspection technique has a significant positive effect on production control and that quality control technique has a significant positive effect on product designing. The study recommended that inspection technique has to be maintained to facilitate the utilization of best practices, and total and also because of globalization quality control technique has to gain way for best practices in global manufacturing.

Monitoring Action on the Waste Reduction

Kingsley-Omoyibo (2020) conducted a study on the comparative analysis of waste reduction methods for sustainable manufacturing systems using concurrent triangulation model. The study adopted Cronbach alpha and concurrent triangulation model. The objective was to establish an ideal sustainable manufacturing waste disposal method. The finding showed that internal consistency of responses recorded for recycling, reuse, reduce, remanufacture and landfilling with recycling recording the highest internal consistency. The study concluded that recycling method of waste disposal proved to be the most appropriate method for sustainable manufacturing waste disposal method to power sustainable manufacturing systems.

Dodokhan, Aiza, Annam and Mahar, Q. (2023) conducted a study on the impact of reduction of waste and waste, green employee behavior and reduction of resource use on environmental strategy: manufacturing companies top management's perception. The study explores the impact of reduction of waste and waste, green employee behavior and reduction of resource use on environmental strategy in manufacturing companies of Sindh, Pakistan. The study adopted a cross-sectional design. The sample of two hundred and twenty (220) was used. The data were analyzed using structural equation modelling (SEM). The findings showed that top management should prioritize the development of effective strategies to promote the reduction of waste and waste, green employee behavior and reduction of resource use in the future strategies.

Ochiri. Guyo, Odhiambo & Arasa (2015) conducted a study on the effects of waste reduction strategy on firm performance: a survey of publishing firms in Kenya. The objective of the study was to determine whether waste reduction strategy influenced performance of publishing firms in Kenya. The study adopted descriptive research design. The study population consisted of 357 firms from which a sample of 189 firms was taken using stratified random sampling and 138 responses were obtained. The finding showed that indeed returns and wastes were high in publishing industry in addition to establishing that indeed adopting waste reduction would enhance performance of publishing forms. The study recommends that the firms view waste reduction as an investment with returns and not a cost.

Summary of the Review

The product safety is intended to provide a general overview of the chemical substance. A product's safety is a top priority for any seller or manufacturer because any damage caused by the product could lead to legal actions being filed against them. Design and formulation can have an impact on an item's inherent safety. For instance, non-toxic children's crayons are better than a product containing dangerous chemicals. Adopting an efficient product safety management system is essential for ensuring product safety. It is possible to avoid accidents and recalls by implementing an efficient product safety management program. This can reduce insurance costs, improve product quality, and reduce the risk of punitive damages.

Methodology

The area of the study was Ebonyi State on the effect of product safety on the performance of food and beverage firms in Ebonyi State. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. The population of the study was six hundred and twenty three (623) employees. The sample size of two hundred and thirty seven (237) was adopted using Ferund and Williams's formula. Two hundred and one (201) employees returned their questionnaire and accurately filled. That gave 85 percent response rate. The validity of the instrument was tested using content analysis and the result was good. The reliability was tested using the Pearson correlation coefficient (r). It gave a reliability co-efficient of 0.82 which was also good. Data was presented and analyzed by mean score (3.0 and above agreed while below 3.0 disagreed) and standard deviation using Sprint Likert Scale. The hypotheses were analyzed using Z- test statistic tool.

Data Presentation

Table 1: Responses on the effect of regulatory action on the product quality of food and beverage firms in Ebonyi State.

		5 SA	4 A	3 N	2 DA	1 SD	∑FX	- X	SD	Decision
1	The government control has enhanced the service ability of the pharmaceutical products.	370 74 36.8	80 20 10.0	144 48 23.9	66 33 16.4	26 26 12.9	686 201 100%	3.41	1.447	Agree
2	The set of rules in the environment aided the quality assurance of the products.	400 80 39.8	80 20 10.0	117 39 19.4	76 35 17.4	27 27 13.4	700 201 100%	3.45	1.486	Agree
3	The direction of an activity by a set of laws facilitated conformance of the pharmaceutical products.	380 76 37.8	80 20 10.0	135 45 22.4	50 25 12.4	35 35 17.4	680 201 100%	3.38	1.516	Agree
4	The regulating capacity promotes quality management of the firms.	425 85 42.3	124 31 15.4	99 33 16.4	46 23 11.4	29 29 14.4	723 201 100%	3.60	1.480	Agree
5	Current regulatory efforts influenced positive features of the products.	475 95 47.3	148 37 18.4	66 22 10.9	52 26 12.9	21 21 10.4	762 201 100%	3.79	1.416	Agree
	Total Grand mean and standard deviation							**3.526**	**1.469**	

Source: Field Survey, 2024

Table 1, 94 respondents out of 201 representing 46.8 percent agreed that The government control has enhanced the service ability of the pharmaceutical products of mean score 3.41 and standard deviation of 1.447. The set of rules in the environment aided the quality assurance of the products 100 respondents representing 49.8 percent agreed with mean score of 3.45 and standard deviation of 1.486. The direction of an activity by a set of laws facilitated conformance of the pharmaceutical products 96 respondents representing 47.8 percent agreed with mean score of 3.38 and standard deviation of 1.516. The regulating capacity promotes quality management of the firms. 116 respondents representing 57.7 percent agreed with mean score of 3.60 and 1.480. Current regulatory efforts influenced positive features of the products 132 respondents representing 65.7 percent agreed with a mean score of 3.79 and standard deviation 1.416.

Table 2: Responses on the Monitoring action has effect on the waste reduction of food and beverage firms in Ebonyi State.

		5 SA	4 A	3 N	2 DA	1 SD	∑FX	- X	SD	Decision
1	The level of supervisions has minimized the risk of project failure in the pharmaceutical forms.	430 86 42.8	168 42 20.9	54 18 9.0	62 31 15.4	24 24 11.9	738 201 100%	3.67	1.453	Agree
2	Monitoring actions have aided and promoted professional management	440 88 43.8	176 44 21.9	57 19 9.5	30 15 7.5	35 35 17.4	738 201 100%	3.67	1.517	Agree
3	To assess progress implementation was as a result of effective monitoring.	510 102 50.7	228 57 28.4	54 18 9.0	12 6 3.0	18 18 9.0	822 201 100%	4.09	1.234	Agree
4	Healthy economic competitiveness in the pharmaceutical firms was due to monitory actions.	480 92 45.8	256 64 31.8	39 13 6.5	36 18 9.0	14 14 7.0	825 201 100%	4.00	1.231	Agree
5	The use of monitoring actions enables policy makers and program managers to assess the effectiveness of pharmaceutical firms.	415 83 41.3	208 52 25.9	39 13 6.5	62 31 15.4	22 22 10.9	746 201 100%	3.71	1.416	Agree
	Total Grand mean and standard deviation							**3.828**	**1.3702**	

Source: Field Survey, 2024

Table 2, 128 respondents out of 201 representing 63.7 percent agreed that the level of supervisions has minimized the risk of project failure in the pharmaceutical forms of mean score 3.67 and standard deviation of 1.453. Monitoring actions have aided and promoted professional management 132 respondents representing 65.7 percent agreed with mean score of 3.67 and standard deviation of 1.517. To assess progress implementation was as a result of effective monitoring 159 respondents representing 79.1 percent agreed with mean score of 4.09 and standard deviation of 1.234. Healthy economic competitiveness in the pharmaceutical firms was due to monitory actions 146 respondents representing 77.6 percent agreed with mean score of 4.00 and 1.231. The use of monitoring actions enables policy makers and program managers to assess the effectiveness of pharmaceutical firms 351 respondents representing 67.2 percent agreed with a mean score of 3.71 and standard deviation 1.416

Test of Hypotheses

Hypothesis One: Regulatory action has effect on the product quality of food and beverage firms in Ebonyi State

Table 3: One-Sample Kolmogorov-Smirnov Test

		The government control has enhanced the service ability of the pharmaceutical products.	The set of rules in the environment aided the quality assurance of the products.	The direction of an activity by a set of laws facilitated conformance of the pharmaceutical products.	The regulating capacity promotes quality management of the firms.	Current regulatory efforts influenced positive features of the products.
N		201	201	201	201	201
Uniform Parameters [a,b]	Minimum	1	1	1	1	1
	Maximum	5	5	5	5	5
Most Extreme Differences	Absolute	.368	.398	.378	.423	.473
	Positive	.129	.134	.174	.144	.104
	Negative	-.368	-.398	-.378	-.423	-.473
Kolmogorov-Smirnov Z		5.220	5.643	5.361	5.995	6.701
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000
a. Test distribution is Uniform.						
b. Calculated from data.						

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e Z_{cal} > Zcritical), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value ranges from 5.220 < 6.701 and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that **Regulatory action had significant positive effect on the product quality of** food and beverage **firms in Ebonyi State.**

Decision

Furthermore, comparing the calculated Z- value ranges from 5.220 < 6.701 against the critical Z- value of 0.000 (2-tailed test at 95 percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that Regulatory action had significant positive effect on the product quality of food and beverage firms in Ebonyi State.

Hypothesis Two: Monitoring action has effect on the waste reduction of food and beverage **firms in Ebonyi State.**

Table 4: One-Sample Kolmogorov-Smirnov Test

		The level of supervisions has minimized the risk of project failure in the pharmaceuti cal forms.	Monitoring actions have aided and promoted professional management	To assess progress implement ation was as a result of effective monitoring .	Healthy economic competitive ness in the pharmaceuti cal firms was due to monitory actions.	The use of monitoring actions enables policy makers and program managers to assess the effectiveness of pharmaceutical firms.
N		201	201	201	201	201
Uniform Parameters[a,b]	Minimu m	1	1	1	1	1
	Maximu m	5	5	5	5	5
Most Extreme Differences	Absolute	.428	.438	.541	.526	.422
	Positive	.119	.174	.090	.070	.109
	Negative	-.428	-.438	-.541	-.526	-.422
Kolmogorov-Smirnov Z		6.066	6.207	7.671	7.459	5.978
Asymp. Sig. (2-tailed)		.000	.000	.000	.000	.000
a. Test distribution is Uniform.						
b. Calculated from data.						

Decision Rule

If the calculated Z-value is greater than the critical Z-value (i.e Z_{cal} > Zcritical), reject the null hypothesis and accept the alternative hypothesis accordingly.

Result

With Kolmogorov-Smirnon Z – value ranges from 5.978 < 7.671 and on Asymp. Significance of 0.000, the responses from the respondents as display in the table is normally distributed. This affirms the assertion of the most of the respondents that monitoring action had significant positive effect on the waste reduction of food and beverage firms in Ebonyi State.

Decision

Furthermore, comparing the calculated Z- value ranges from 5.978 < 7.671 against the critical Z- value of 0.000 (2-tailed test at 95 percent level of confidence) the null hypothesis were rejected. Thus, the alternative hypothesis was accepted which states that Monitoring action had significant positive effect on the waste reduction of food and beverage firms in Ebonyi State.

Discussion of Findings

From the result of Hypothesis one, the calculated Z- value ranges from 5.220 < 6.701 against the critical Z- value of 0.000 which implies that Regulatory action had significant positive effect on the product quality of food and beverage firms in Ebonyi State. In the support of the result, Putu and Ni (2021) conducted a study on the effect of product quality, service quality, and atmosphere stores on customer satisfaction and its impact on repurchase intention. The findings showed that product quality has a positive and significant effect on customer satisfaction, service quality has a positive and significant effect on customer satisfaction, store atmosphere has a positive and significant effect on customer satisfaction, and customer satisfaction has a positive and significant effect on repurchase intention. Ejika Ukpata, Atiga & Fumba (2020) conducted a study on the impact of product quality on customer satisfaction and loyalty. The finding showed that when it comes to customer satisfaction, product quality is a major determinant and that reduction in level of customer loyalty, might be due to variation in the firm's product quality and the customer's level of satisfaction as regard the product quality.

From the result of Hypothesis two, the calculated Z- value ranges from 5.978 < 7.671 against the critical Z- value of 0.000 which implies that Monitoring action had significant positive effect on the waste reduction of food and beverage firms in Ebonyi State. In the support of the result, Kingsley-Omoyibo (2020) conducted a study on the comparative analysis of waste reduction methods for sustainable manufacturing systems using concurrent triangulation model. The study concluded that recycling method of waste disposal proved to be the most appropriate method for sustainable manufacturing waste disposal method to power sustainable manufacturing systems. Dodokhan, Aiza, Annam and Mahar, Q. (2023) conducted a study on the impact of reduction of waste and waste, green employee behavior and reduction of resource use on environmental strategy: manufacturing companies top management's perception. The findings showed that top management should prioritize the development of effective strategies to promote the reduction of waste and waste, green employee behavior and reduction of resource use in the future strategies.

Summary of the Findings

i. Regulatory action had significant positive effect on the product quality of food and beverage firms in Ebonyi State, Z(95, n = 201), 5.220 < 6.701, P. < .05.
ii. Monitoring action had significant positive effect on the waste reduction of food and beverage firms in Ebonyi State Z(95, n = 201), 5.978 < 7.671, P. < .05.

Conclusion

The study concluded that Regulatory action and monitoring action had significant positive effect on the product quality and waste reduction of food and beverage firms in Ebonyi State. Product safety and quality are crucial for consumer protection and satisfaction. When you purchase a product, whether it is a household appliance, a child's toy, or a personal care item, you expect it to function as intended without posing any risk to your health or safety. However, there have been numerous instances where faulty or low-quality products have caused harm to consumers (Adetola, 2023).

Recommendations

Based on the findings the following recommendations were preferred

i. The food and beverage management should ensure that there is effective regulatory policy to guide and make sure they play by the same rules and protect citizens.
ii. There is need for the management to have monitoring team as this will helps to identify any potential issues, track progress, and measure outcomes. Through Monitoring organizations can assess the effectiveness of their strategies, identify areas of improvement, and ensure that they are meeting their goals and objectives.

References

Adetola, S. (2023). Understanding product safety and quality standards for consumers. Retrieved from httpsproduct-safety-and-quality-standards-for-consumers/.

Adrian S. (2023). Product safety review. Retrieved from https://brc.org.uk/news/buying/product-safety-review/

Afraz MF, Bhatti SH, Ferraris A, and Couturier J (2021). The impact of supply chain innovation on competitive advantage in the construction industry: Evidence from a moderated multi-mediation model. *Technol Forecast Soc Change, 162*, 120370.

Bas, S., & Tegan, G. (2022). What is a conceptual framework? Retrieved from https://www.scribbr.com/methodology/conceptual-framework

Bernhard, H., Brown, S. B. Brown & Dieter, N. (2016). Action monitoring. Retrieved from https://link.springer.com/chapter/10.1007/978-3-319-09244-7_9

Carla T., David K. & Vikki, V. (2023). Performance management: definition, purpose, steps & benefits. Retrieved from.com/terms/p/performance-management.asp

Dodokhan, A. K. M., Aiza, A. Q., Annam I. and Mahar, Q. (2023). Impact of Reduction of Waste and Waste, Green Employee Behavior and Reduction of Resource Use on Environmental Strategy: Manufacturing Companies top management's Perception. *Journal of Social Sciences Review, 3*(2), 27-39.

Edeh, I.L., Nnamani E., & Mbah P.C., (2023). Skilled manpower and organizational performance in Manufacturing Firms in South East Nigeria. *Advance Journal of Arts, Humanities and Social Sciences, 6*(1), 1-28

Edeh, I.L., Nnamani E., & Mbah P.C., (2023). Total Quality Management Practices and Performance of Pharmaceutical Firms in Enugu State. *European Journal of Marketing and Management Sciences, 6*(1), 20-38

Ejika S., Ukpata, I. S., Atiga M. M. & Fumba J. (2020). Impact of product quality on customer satisfaction and loyalty. *Management Journal, 17*(2), 1-12.

Eniola, A.A., & Entebang, H. (2015). SMEs firms performance in Nigeria competitive advantage and its impact, *International Journal of Research Studies in Management, 3*(2), 75-86.

Erin, E. (2021). Product safety and liability components in focus. Retrieved from https://incompliancemag.com/article/product-safety-and-liability-components-in-focus/

Florian, B. and Tim, F. (2020). Product safety and harm-mitigation incentives when mitigation lowers consumption benefits. *The Journal of Law, Economics, and Organization, 37*(1), 198–237.

Hall, J., Rogers, P. & Moore, A. (2022). What is monitoring? Retrieved from https://wrg/methods-approaches/themes/monitoring.

Hennik (2024). Why product safety is crucial to the manufacturing industry. Retrieved from https://www.themanufacturer.com/press-releases/why-product-safety-is-crucial-to-the-manufacturing-industry/

Indeed Editorial (2023). Understanding product quality: what it is and why it matters. https://www.indeed.com/career-advice/career-development/product-quality#

INTRAC (2017). Monitoring. Retrieved from https://www.intrac.org/wpcms/wp-conitoring.pdf.

Islam ASMT (2019) End of the day, who is benefited by Lean Manufacturing? A dilemma of communication and pricing in buyer-supplier relationship. *Manuf Lett, 21*, 17–19.

Ismail, R. (2016). The impact of product quality and price on customer satisfaction with the mediator of customer value. *Journal of Marketing and Consumer Research, 30*, 1-10.

John, S. (2018). Product safety. Retrieved from https://simplicable.com/design/product-safety.

Kano, N., Seraku, N., Takahashi, F., and Tsjui, S. (1984). Attractive quality and must-be quality. *Hinshitsu, 14*(2), 147-56.

Keraka, C. N. (2020). Safety management system and employee performance in textile manufacturing companies in selected counties in Kenya (Doctoral dissertation, JKUAT-COHRED).

Kingsley-Omoyibo, Q. A. (2020). Comparative analysis of waste reduction methods for sustainable manufacturing systems using concurrent triangulation model. *Nigerian Journal of Technology (NIJOTECH), 39*(3), 844 – 852.

Kotler, P., Armstrong, G., Brown, L., and Adam, S. (2016) Marketing, 7th Ed. *Pearson Education Australia/Prentice Hall.

Maja, B., Dorotea, K. and Josip, B. (2021). Consumer satisfaction with packaging materials: Kano Model Analysis Approach. *Tehnički vjesnik, 28*(4), 1203-1210

Mbah, P.C & Ajagu, H. E. (2020). Work-life balance and Performance of manufacturing firms in south East, Nigeria. *Advance Journal of management, Accounting and Finance 5*(5)

Melissa, H. and Rachel, S. (2023). Waste reduction. Retrieved from https://bio/Bookshelves/Ecology/Environmental_Scienc.

Michael I. O. and Stepan N. K. (2019). An Introduction to Nuclear Waste Immobilisation (Third Edition). Introduction to Immobilisation. Retrieved from https://www.sciencedireanetary-sciences/waste-minimisation.

Michael K. (2024). Product safety. Retrieved from https://www.referenccom/encyclopedia/Per-Pro/Product-Safety.html

Nick, K. and Brown, J.R. (2023). Commodity vs. product: what's the difference? Retrieved from https://www.investopedia.com/ask/answers/021615/whats-difference-between-commodity-and-product.asp#:

Nikookar E, Varsei M, and Wieland A (2021) Gaining from disorder: Making the case for antifragility in purchasing and supply chain management. *Journal of Purch Supply Manag 27*, 100699.

Nnadi, C. F., Akawnonu, N. G., & Okafor, O. P. (2018). An empirical analysis of quality control techniques and product quality in manufacturing firms in South East Nigeria. *International Journal of Academic Research in Economics and Management Sciences, 7*(3), 166–184.

Ochiri , G., Guyo W., Odhiambo, R. & Arasa, R. (2015). Effects of waste reduction strategy on firm performance: a survey of publishing firms in Kenya. *International Journal of Economics, Commerce and Management, 3*(5), 1-14.

Perfektni, Z. (2023). Product quality - definition, importance, parameters & example. https://www.mbaskool.com/business-concepts/marketing-and-strategy-terms/3231-product-quality.html

Putu, A. S. and Ni, M. R. (2021). The effect of product quality, service quality, and atmosphere stores on customer satisfaction and its impact on repurchase intention. *American Journal of Humanities and Social Sciences Research (AJHSSR), 5*(4), 1-8.

Rizal, O., Suhadak. K., & Kholid, M. M. (2017). Analysis of the influence of external and internal environment factors on business performance, A study on micro small and medium enterprises of food and beverage, R.O.AS, 6 (66) 47 – 56.

Safeopedia (2018). What does safety mean? Retrieved from https://www.safinition/1104/safety-occupational-health-and-safety.

SGS Digicomply (2022). What are the 5 main components of good manufacturing practice in food safety. Retrieved from https://www.digicomply.com/blog/what-are-the-5-main-components-of-good-manufacturing-practice-in-food-safety.

Sharlyn, L. (2017). 5 key components of any successful performance management process. Retrieved from https://www.hder.com/2017/employee-engagement/5-components-performance-management/

Tetu, M. M., Paul, M. J. & Jesse, M. K. (2023). Workplace safety and employee productivity of manufacturing firms in Kenya, *Cogent Business & Management, 10*(2), 2215569.

The Economic Times (2024). What is 'product. Retrieved from https://economictimes.indiatimes.com/definition/product.

Ugwu, F. I., Orga C. C. and Okonkwo, A. O. (2023). Inventory Management Strategy and Performance of Brewery Companies In South East, Nigeria. *Advance Journal of Management, Accounting and Finance. 8*(4), 1 – 38.

Ugwu, F.I., Eneh, E.O. and Orga, J.I. (2023). Effect of Corporate Culture on the Profitability of Food Beverages and Tobacco Manufacturing Firms In South East Nigeria. *Advance Journal of Management, Accounting and Finance. 8*(4), 39 – 70.

United States Environmental Protection Agency (2012). Waste reduction:."Waste-Hazardous Waste-Waste Minimisation. Waste minimisation involves redesigning products and processes and/or changing societal patterns of consumption and production.

Wang, Y., Jiang, B. and Pan, W. (2018). What is performance? Retrieved frohttps://www.igi-global.com/dictionary/towards-an-understanding-of-performance-reliability-and-security/22335.

Wikipedia (2024). Safety. Retrieved from https://en.wikipedia.org/wiki/Safety.

Woll, C. (2023). Defining regulation. Retrieved from https://www.brinica.com/topic/regulation.