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PRIMARY RESEARCH

Impact of factors related to food process wastage on the environment: An exploratory analysis of selected food companies in Mauritius

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Abstract

The study focuses on the food industry sector in Mauritius to explore the impact of factors related to food process waste on the environment. The selected food companies in Mauritius are studied to identify the prevalent problems and challenges associated with food process wastage. The study targets the stakeholders and communities impacted by the food industry sector. The current state of research on food process wastage in Mauritius is limited, and there needs to be more comprehensive research on the environmental impact of this problem. The proposed study aims to fill this gap by providing a detailed analysis of the factors related to food process wastage and its ecological effects. The study seeks to identify the leading causes of food process waste in Mauritius' selected food companies and evaluate their environmental impact. The study is quantitative, and data is collected from poultry processing "X" and Fish Processing "Y" companies. The survey questionnaire was used to manage the data with 101 respondents; sample groups were managers, customers, and industry experts. The study's outcomes show that food waste has severe environmental consequences and can contribute to climate change, resource depletion, and contamination of waterways. It also emphasizes that the main factors contributing to food waste in the Mauritius food industry are poor inventory management, ineffective production planning, and poor storage and handling practices. The report recommended that food companies employ methods to improve inventory management and production planning, foster efficient storage and handling of customs, and foster a culture of waste reduction and resource conservation. The paper also discusses these companies' waste management policies and their ability to reduce the environmental impact of food processing waste.

I. INTRODUCTION

A. Background

Food waste is a complex issue with significant environmental and economic challenges. The food production and processing industry generates a considerable amount of waste throughout the supply chain, from the cultivation of crops to the processing and packaging of food products. This waste can come from various sources, including the trimming of crops, overproduction, and broken or damaged food products [1]. Food process waste may also be produced due to strict safety rules and consumer desire for visually attractive food products. Food processing waste dramatically affects the environment because it causes landfills, water contamination, and poor air quality. Methane, a potent greenhouse gas that adds to climatic changes, is released when food scraps dissolve in cemeteries. Leachate, a harmful liquid created by decomposing waste, could pollute water supplies nearby and soil, making landfills another source of water and soil pollution.

Moreover, food process waste that is disposed of in the open environment, such as in rivers or oceans, can cause water pollution and harm aquatic life. Food waste entering water bodies can deplete oxygen levels, leading to the death of fish and other aquatic organisms. The accumulation of food waste on beaches and in oceans harms marine ecosystems and can negatively impact the tourism and fishing indus-

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tries [2]. In addition to the environmental impact, food process waste has economic implications, as it represents a loss of resources and potential revenue for food companies. Reducing food process waste can help companies lower waste management and disposal costs and increase profitability by repurposing waste into value-added products.

B. Significance of the Study

The food processing industry is crucial in providing a steady supply of food products to meet consumers' growing demand worldwide. However, the production of food products often results in the generation of a significant amount of waste, which can damage the environment. This waste can come in various forms, such as food scraps, packaging, and production by-products, contributing to environmental degradation if not appropriately managed [3]. The situation is especially pressing in developing countries like Mauritius, where limited resources and weak regulations may lead to increased environmental harm. The food industry in Mauritius is a significant contributor to the country's economy and employs a substantial portion of its workforce. Various factors contribute to this waste, including overproduction, inefficient supply chain management, strict food safety regulations, consumer demand for aesthetics, lack of proper storage facilities, inadequate waste management practices, climate change, and economic factors. The main issues and problems faced by the food industry in Mauritius include high levels of food waste generation, inadequate waste management systems, and a lack of proper regulations to control food waste disposal. These problems impact the environment and hinder the growth and development of the country's food industry.

C. Problem Statement

The generation of food process waste has significant environmental implications, including water and soil pollution and harm to aquatic life. In Mauritius, a developing country with limited resources and weak regulations, the food industry plays a crucial role in the economy. Still, high levels of food waste generation plague it, such as inadequate waste management systems and a lack of proper regulations to control food waste disposal. The increasing production of food and the insufficient management of food process wastage by food companies in Mauritius has led to significant environmental problems. The lack of proper waste management practices has resulted in the pollution of water bodies, soil degradation, and the emission of greenhouse gases. This problem must be addressed urgently to prevent further environmental damage. Therefore, this study aims to assess the extent of food process wastage in selected food companies in Mauritius, identify the factors contributing to food process wastage in these companies, and examine the environmental impacts of food process wastage in the chosen companies. The findings of this study contribute to a better understanding of the impact of factors related to food process wastage on the environment in Mauritius and provide insights into potential solutions to reduce the negative impact of food process waste on the environment.

D. Aim

The study aims to identify the key factors contributing to food process wastage in the selected food companies in Mauritius and assess the impact of these factors on the environment. Additionally, the study explores these companies' current waste management practices and evaluates their effectiveness in controlling the effects of food process waste on the environment.

E. Research Question

What are the key factors contributing to food process wastage in the selected food companies in Mauritius, and how does it affect the environment?

F. Research Gap

A research gap in the present-day topic of food method waste and its impact on the surroundings is the need for in-intensity studies on the effectiveness of waste discount and control techniques in Mauritius's regions and cultural contexts. Regardless of the various strategies proposed to reduce "food" waste, there are restricted statistics on their implementation and effect in different nations, specifically in growing countries along with Mauritius, in which the undertaking of "food" waste is exacerbated with the aid of monetary and environmental constraints. Additionally, there's a need for more excellent interdisciplinary research that explores the social, economic, and cultural elements influencing "food" waste in extraordinary regions and their implications for waste discount and control techniques. More research is required to fill in those gaps and develop context-specific, culturally aware waste discount and control measures that effectively lessen the adverse environmental effects of food waste.

II. LITERATURE REVIEW

A. Food Process Waste

Food processing waste is any "food" discarded, misplaced, or unused at some point in the production, processing, packaging, transportation, and distribution tiers of the food

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supply chain. Consistent with a record by the "Food and Agriculture Agency of the United Nations" (FAO), "food" procedure waste is a primary contributor to the overall trouble of food waste globally, accounting for over 30% of the complete "food" waste globally [4]. Similarly [5] discussed that food process waste, consisting of agricultural waste, "food" processing waste, and publish-purchaser waste, could take much bureaucracy. Agricultural waste is generated at some stage in plant growth, harvesting, and grading. It might consist of damaged or rejected produce, food processing via-products, and waste from animal husbandry. According to [6], food processing waste is generated throughout the manufacturing and packaging "food" products. It can consist of unpackaged or rejected food, spoiled food, and waste generated throughout production methods. Put-up-patron waste is generated using families and commercial establishments, which include eating places and supermarkets and may include "food" that has been uneaten or left over. Typical meal process waste is tremendous trouble that has monetary and environmental implications [1].

B. Waste Reduction and Management Strategies

It aims to reduce the amount of “food” system waste generated and decrease its impact on the surroundings. Those strategies can be labeled into 4 foremost regions: prevention, restoration, recycling, and remedy. Prevention techniques aim to lessen the quantity of waste generated via green supply chain control, higher garage practices, and decreased overproduction [7]. For instance, lowering overproduction through call-for-pushed manufacturing can substantially reduce food waste. Healing strategies focus on redirecting edible food waste to feed people in need, which include "food" banks and different charity organizations [8]. An example is the "truthful food" software in the US. It has effectively recovered surplus food from food enterprises and supplied it to needy people.

One of the demanding situations associated with lowering "food" procedure waste is the shortage of a standardized approach to measuring and reporting food waste [2]. it is challenging to compare the effectiveness of different strategies and check the overall effect of food waste reduction initiatives [1].

C. Environmental Consequences

"Food" processing wastage has been a vast environmental problem with ways-accomplishing results. [9] examined the environmental impact of reducing food loss and waste along the supply chain. The study found that halving "food" loss and waste may want to bring about sizable discounts in greenhouse fuel emissions, water intake, and land use. The authors counseled that decreasing food loss and waste became critical for achieving sustainable improvement dreams and mitigating weather trade. Conversely, [10] focused on postharvest losses' financial and environmental outcomes in growing nations.

D. Sustainable Approaches to Reduce Food Wastage

[11] supplied an overview of sustainable approaches for “food” waste management and nutrient recycling. The authors mentioned the current country of "food" waste management and highlighted the ability to use food waste for energy era. They overview various technologies such as anaerobic digestion, gasification, pyrolysis, and fermentation for food waste management.

E. Food Waste Management in the Food Industry

[12] mentioned food waste control improvements in the food service industry. The authors highlighted the importance of food waste control in the food industry and said service companies face challenges in managing food waste. They reviewed diverse food waste control innovations, which include waste discounts, recycling, and recuperation applications. In step with [12], collaboration among stakeholders within the food service enterprise, consisting of “food” manufacturers, vendors, and customers, is critical to obtain sustainable “food” waste management. The study furnished insights into the cutting-edge kingdom of “food” waste control within the food service industry and highlighted the potential of innovative processes for sustainable “food” waste management.

F. Food Companies' Waste Management Practices

[13] mentioned the waste management practices of "food" groups and their contribution to sustainable manufacturing and intake of food. They highlighted the significance of waste reduction and the implementation of round economic system regulations within the food industry. The author reviewed waste management practices of diverse "food" groups and assessed their effectiveness in decreasing "food" waste and selling sustainable intake. According to [13], food companies are critical in sustainable food production and intake. They looked for the need for "food" agencies to adopt waste control practices that sell resource efficiency, waste reduction, and recycling. The writer also highlighted revolutionary techniques and blockchain technology's capacity to enhance traceability and decrease food waste in the "food" industry. [14] discussed the impact of the COVID-

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19 outbreak on "food" waste control. They highlighted the need for a holistic approach to address the economic, nutritional, and weather effects of "food" waste. The authors reviewed various food waste management techniques, including waste discount and recovery; it emphasized the significance of collaboration between stakeholders, including "food" agencies, policymakers, and consumers, to reap sustainable food waste control at some point in the pandemic. [14] counseled strategies for reducing food waste during the pandemic, consisting of improving "food" delivery chain performance, promoting food donation, and encouraging customers to reduce "food" waste at domestic.

III. RESEARCH METHODOLOGY

The research approach for this study is a mono-method approach within the case study, combining qualitative and quantitative data collection and analysis techniques. This data is collected from industry experts and on food process wastage and environmental impact indicators from managers and customers through survey questionnaires. The methodology that was used in this study is a case study approach. The data was collected from primary sources related to the food companies. Primary data was compiled through two survey questionnaires, one for the company managers and the other for the customers. A self-administered questionnaire was created to meet the objectives and address the questions of the research.

The population for this study is the managers, customers, and industry experts of the two food companies in Mauritius. A purposive sampling method was used to select participants for the study. The participants were chosen based on their involvement in the food process wastage and their ability to provide information about the subject matter.

For this study, the production and quality control departments were selected because of their direct involvement in food processing and their potential impact on food process wastage and environmental outcomes. These departments were identified as critical stakeholders responsible for overseeing and managing the production processes and ensuring quality control measures within the selected food companies.

Two companies, one with poultry processing “X” and one with Fish Processing "Y," are selected for the data collection. The survey questionnaire is shared with the respondents, and after screening 101 individuals, the sample size is divided into three categories: managers, customers, and industry experts. Each category included participants from both selected food companies.

For both companies, the manager category included participants who held managerial positions and were directly involved in the production and quality control departments. Secondly, industry experts with specialized knowledge and experience in food waste management and environmental sustainability were included in the study for Company A. The customer category consisted of the participants selected from their experience with the companies.

This distribution of participants across categories and companies ensured a comprehensive representation of managers, customers, and industry experts. It allowed for a well-rounded exploration of the factors related to food process wastage and its environmental impact within both selected food companies.

A. Data Collection and Analysis

The quantitative data collected through surveys are analyzed to address the research questions. Firstly, the data is cleaned and organized to ensure accuracy and consistency. Descriptive statistics, such as means, medians, standard deviations, and frequencies, are computed to summarize the data and provide an overview of the responses. The collected data and findings are interpreted about research objectives. The trends, patterns, and correlations between the independent variables (food process wastage factors) and the dependent variables (environmental impact) are identified.

IV. RESULTS AND FINDINGS

Food waste, commonly referred to as food process wastage, refers to the discarding or losing edible food at any point in the food manufacturing or supply chain. The negative ecological effect of this waste is becoming a significant concern worldwide. The present study focuses on those factors that create food process waste in selected Mauritius enterprises. According to the overall findings, 62.4% of the 101 people surveyed strongly agree that controlling food waste is essential, whereas 7.9% agree, 4.0% disagree, 2.0% neither support nor oppose, and 23.8% strongly disagree. Many Mauritius people are aware of the adverse effects of waste from food production and are eager to assist firms that use sustainable waste management methods. Only 4.5% of respondents strongly disagree with the statement, showing that a tiny minority of buyers may not favor sustainable waste management practices in their purchasing decisions. Surprisingly, 27.3% of respondents agree, while 22.7% neither agree nor disagree. These opinions indicate that there is still some awareness and concern over sustainable waste-handling practices. Still, customers may not actively focus on or seek out such organizations when purchasing items.

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Overall, the evidence shows a sizable section of the Mauritius Open appreciates sustainable waste management practices and has offered to assist organizations that take them [15]. It underlines the need for businesses to implement and endorse sustainable waste management ideas to meet consumer demands while limiting the environmental impact of agricultural waste.

A. Objective

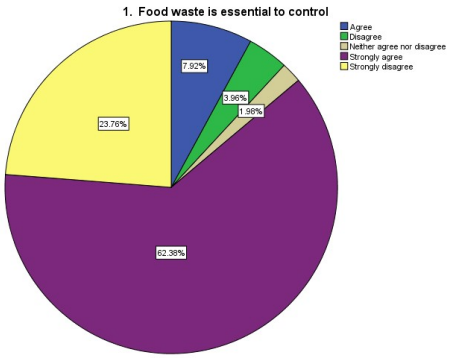
To explore the reasons behind food process wastage, together with exceptional management, manufacturing inefficiencies, or supply chain problems in selected food companies of Mauritius.

The data in Table 1 correlates to objective 1 and is investigated using descriptive analysis, which is the process of summing and explaining the primary traits of a dataset. The frequencies and percentages of different responses to the sentence "Food waste is essential to control" are offered in this case. According to the table, 62.4% of the 101 people surveyed strongly agree that controlling food waste is essential, whereas 7.9% agree, 4.0% disagree, 2.0% neither support nor oppose, and 23.8% strongly disagree. The percentages above reveal the table's valid percent column.

TABLE 1
FOOD WASTE IS ESSENTIAL TO CONTROL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	8	7.9	7.9	7.9
	Disagree	4	4.0	4.0	4.0
	Neither agree nor disagree	2	2.0	2.0	2.0
	Strongly agree	63	62.4	62.4	62.4
	Strongly disagree	24	23.8	23.8	23.8
	Total	101	100.0	100.0	

According to these figures, quite a few respondents (85.2% - the sum of strongly agree and agree percentages) believe that hindering food waste is crucial. However, fewer people (27.8% - the sum of disagree and disagree percentages) conflict with the contention. This data shows that most respondents recognized the necessity of handling food waste in terms of the impact of factors relating to food process waste on the planet. This supports the idea that lowering food waste can positively affect the environment and corresponds with the majority's beliefs.



Regarding a qualitative study of selected food companies in Mauritius, this descriptive analysis provides initial insight into respondents' perceptions of food waste control. It can be applied as a starting point for investigating the viewpoints and follows of selected food businesses in Mauritius regarding food waste management. The overwhelming agreement from many respondents shows that food companies in Mauritius are more likely to prioritize food waste reduction efforts, as most respondents view it as vital. More research may be conducted into the precise tactics and strategies these companies implement and any potential environmental impact.

The descriptive analysis determines the frequencies and percentages of replies to the statement, "I always keep the volume of food waste generated with me when creating a purchase." According to the results in Table 2, 45.5% of respondents claimed they always consider the quantity of food waste brought about while purchasing. This shows that an adequate number of respondents are aware of the adverse effects of food waste and feel it when making buy-

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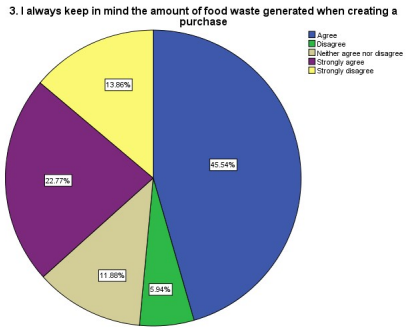
ing decisions. As per graph 2, only 5.9% of those surveyed agreed with the statement, revealing that a small minority overlooks food waste when making buys.

TABLE 2
I ALWAYS CONSIDER THE AMOUNT OF FOOD WASTE GENERATED WHEN CREATING A PURCHASE.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	46	45.5	45.5	45.5
	Disagree	6	5.9	5.9	51.5
	Neither agree nor disagree	12	11.9	11.9	63.4
	Strongly agree	23	22.8	22.8	86.1
	Strongly disagree	14	13.9	13.9	100.0
	Total	101	100.0	100.0	

Analyzing the data as an ensemble, it is feasible to conclude that respondents are aware of and worried about the environmental impact of issues related to food processing trash. Most respondents suspect that they often put off safe-to-eat eating and are conscious of the adverse effects of food waste.



This information leads to an exploratory study of selected food enterprises in Mauritius by stressing the necessity of handling food waste and its environmental impact. Companies may establish strategies to reduce waste and promote sustainability by analyzing consumer attitudes and behaviors toward food process waste. This analysis can provide essential details for Mauritius' selected food companies to create efficient approaches and contribute to lessening their environmental footprint.

B. Objective

To identify consumer perceptions of food procedure wastage and its impact on the environment.

According to Table 3, 29.7% of respondents agree with the fact they frequently put off food that is safe to eat. Yet, 25.7% of people disagree with this assertion. Likewise, 31.7% approve, 31.7% oppose, and 12.9% fully concur. This study implies that an essential portion of the population puts off consuming a safe meal.

TABLE 3
I FREQUENTLY PUT OFF FOOD THAT IS NONETHELESS SAFE TO EAT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	30	29.7	29.7	29.7
	Disagree	26	25.7	25.7	55.4
	Neither agree nor disagree	32	31.7	31.7	87.1
	Strongly agree	13	12.9	12.9	100.0
	Total	101	100.0	100.0	

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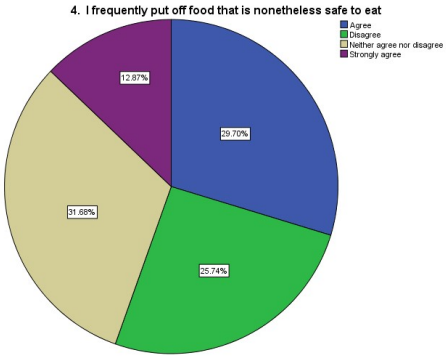


According to the table, 59.4% of respondents are conscious of the adverse effects of food waste. In addition, 7.9% disagree, 2.0% are against, 24.8% strongly agree, and 5.9% strongly oppose. Owing to the study, most respondents are aware of the adverse ecological effects of food waste. According to Table 3, as it relates to objective 3, another 11.9% of respondents either agree or disagree, meaning they are either aware of the impact of food waste or didn't give it much thought. Furthermore, 22.8% of the poll participants strongly agreed with the claim, showing that quite a few respondents actively consider food waste in their choice of goods.

Meanwhile, 13.9% strongly disagreed, proving that another set of people neglect trashing food. Regarding the detrimental effects of parts related to food waste creation, the data shows that more than half of respondents consider food waste generation while purchasing. This means those are more likely to make mindful decisions, such as not overbuying or buying products with little to no packaging.

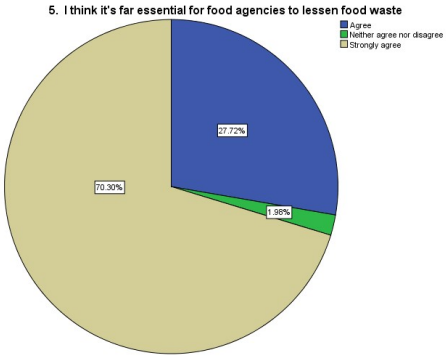
C. Objective

To explore the environmental influences of food process wastage in food companies.

The data support the study by offering insights into consumer attitudes and behaviors concerning food waste related to an exploratory examination of selected food companies in Mauritius. Such information can help enterprises predict the market potential for eliminating food waste and implementing sustainable practices. It can assist in the identification of feasible target audiences as well as in the creation of strategies to promote sustainable goods and practices in the food service industry.

TABLE 4
I THINK IT'S FAR ESSENTIAL FOR FOOD AGENCIES TO LESSEN FOOD WASTE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	28	27.7	27.7	27.7
	Neither agree nor disagree	2	2.0	2.0	29.7
	Strongly agree	71	70.3	70.3	100.0
	Total	101	100.0	100.0	



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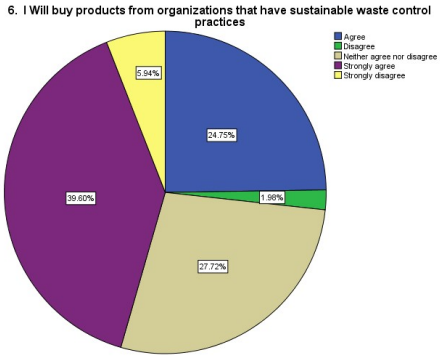
According to Table 4, as it relates to objective 2, 28 (27.7%) of the 101 individuals who were gazed at agreed, 2 (2.0%) neither agreed nor disagreed, and 71 (70.3%) strongly agreed that food groups must reduce food waste. It indicates that most respondents feel food agencies should make efforts to decrease food waste.

TABLE 5
I WILL BUY PRODUCTS FROM ORGANIZATIONS THAT HAVE SUSTAINABLE WASTE CONTROL PRACTICES.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	25	24.8	24.8	24.8
	Disagree	2	2.0	2.0	26.7
	Neither agree nor disagree	28	27.7	27.7	54.5
	Strongly agree	40	39.6	39.6	94.1
	Strongly disagree	6	5.9	5.9	100.0
	Total	101	100.0	100.0	



D. Objective

To understand customers' preferences and willingness to buy food products produced sustainably and with minimum wastage.

According to Table 6, 25 (24.8%) concurred, 2 (2.0%) disagreed, 28 (27.7%) neither agreed nor disagreed, 40 (39.6%) firmly concurred, and 6 (5.9%) strongly disagreed that they would buy objects from businesses that practice sustainable waste reduction.

TABLE 6
I BELIEVE FOOD ORGANIZATIONS MUST HAVE WASTE CONTROL RULES IN THE AREA

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	32	31.7	31.7	31.7
	Neither agree nor disagree	4	4.0	4.0	35.6
	Strongly agree	59	58.4	58.4	94.1
	Strongly disagree	6	5.9	5.9	100.0
	Total	101	100.0	100.0	

This shows that many respondents are eager to support firms that use ethical waste disposal practices. Overall, the results from Tables 5 and 6 relate to objective 4. They reveal that respondents firmly think that food agencies should lower food waste and that buyers are willing to support companies that employ sustainable waste control methods. This shows that those polled are aware of and nervous about the harmful effects of issues related to food-related waste.

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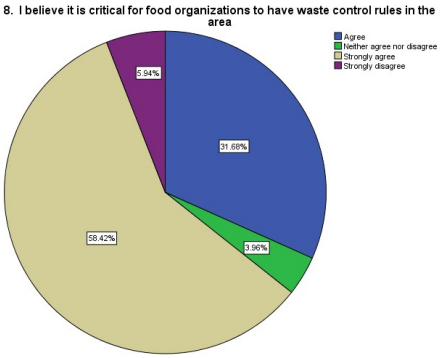


This data's descriptive analysis offers foundations for further study and analysis of chosen eateries in Mauritius. Exploratory analysis can be performed to assess how well these firms align with the expectations and concerns of the consumers by examining their practices and comparing them to the respondents' preferences and beliefs. This research can help guide future activities, and legislation focused on reducing food waste and promoting sustainable food industry practices.

V. OTHER OBSERVATIONS AND FINDINGS

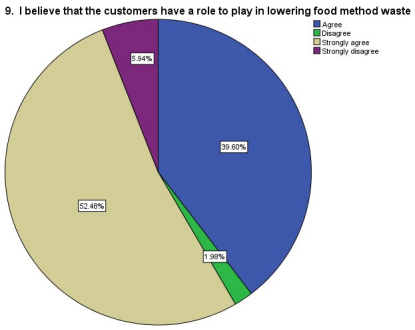
According to the analysis in Table 7, most participants (58.4%) strongly contend that disposal rules must be in place for food organizations. Also, 31.7% agree with this assertion. Only several (5.9%) strongly disagree. Overall, this research suggests respondents understand the need for waste management strategies in food companies. According to this research in the second table, an impressive majority of respondents (52.5%) are enthusiastic that customers can help eliminate food waste.

Furthermore, 39.6% of the participants agree with the claim. Only 2% of those asked disagree, while 5.9% strongly disagree. Contrary to the findings, most respondents recognized customers' importance in dipping food waste.

Descriptive data analysis makes examining parts connected to food process wastes on the environment simpler. It allows knowledge of respondents' mindsets and opinions about disposal rules in food organizations, as well as the role of customers in decreasing food waste. With a majority strongly agreeing or agreeing with both claims, it implies that such factors are vital contributors to reducing food waste and its adverse environmental effects.

TABLE 7
I BELIEVE THAT THE CUSTOMERS HAVE A ROLE TO PLAY IN LOWERING FOOD METHOD WASTE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	40	39.6	39.6	39.6
	Disagree	2	2.0	2.0	41.6
	Strongly agree	53	52.5	52.5	94.1
	Strongly disagree	6	5.9	5.9	100.0
	Total	101	100.0	100.0	



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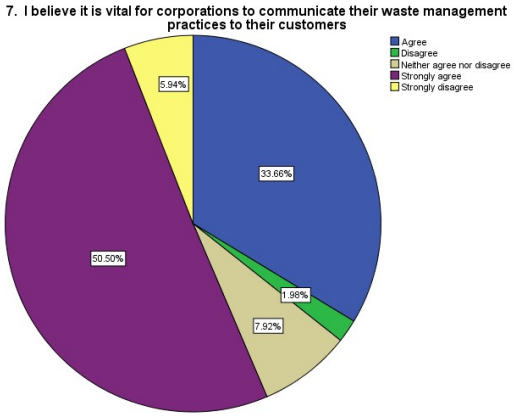
This investigation extends an exploratory analysis of selected food companies in Mauritius, offering insights into individuals' views and opinions about curbing waste and the role of customers. This data can be used to bring further research and examination into the following food firms in Mauritius, along with their attempts at decreasing food waste and its adverse effects on the environment.

According to Table 8, over half of the respondents (50.5%) strongly agree that firms must clarify their waste management practices to their customers. Likewise, 33.7% approve, 2% don't settle, and 5.9% strongly disagree with the claim. This data shows a strong desire for firms to be honest about their waste management methods.

TABLE 8
I BELIEVE IT IS VITAL FOR CORPORATIONS TO COMMUNICATE THEIR WASTE MANAGEMENT PRACTICES TO THEIR CUSTOMERS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	34	33.7	33.7	33.7
	Disagree	2	2.0	2.0	35.6
	Neither agree nor disagree	8	7.9	7.9	43.6
	Strongly agree	51	50.5	50.5	94.1
	Strongly disagree	6	5.9	5.9	100.0
	Total	101	100.0	100.0	



The data can be seen in Table 9 regarding the rate and proportion of replies for each category. Descriptive analysis is used to break down or clarify data. It can be noticed from the table that 39.6% of respondents say that food firms should boost their waste management practices. 11.9% of respondents neither concur nor disagree, 42.6% of those questioned strongly agree, whereas only 5.9% vehemently opposed.

TABLE 9
I BELIEVE FOOD CORPORATIONS OUGHT TO IMPROVE THEIR WASTE CONTROL PRACTICES

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	40	39.6	39.6	39.6
	Neither agree nor disagree	12	11.9	11.9	51.5
	Strongly agree	43	42.6	42.6	94.1
	Strongly disagree	6	5.9	5.9	100.0
	Total	101	100.0	100.0	

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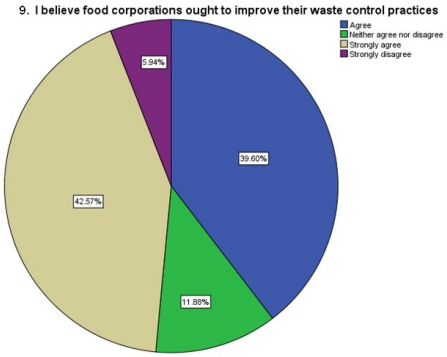

In Table 10, a substantial proportion (60.4%) concurs that more excellent customer waste control training is needed. Furthermore, 23.8% agree, 5.9% neither agree nor disagree, and 9.9% strongly disagree with this assertion. Respondents believe that customers require more knowledge of waste management methods than the statistics.

When checking the environmental impact of components associated with food process waste, these results indicate that enhanced waste management practices and customer training should be implemented in Mauritius.

TABLE 10
I BELIEVE MORE TRAINING FOR CUSTOMERS ON WASTE CONTROL PRACTICES IS NECESSARY

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	24	23.8	23.8	23.8
	Neither agree nor disagree	6	5.9	5.9	5.9
	Strongly agree	61	60.4	60.4	60.4
	Strongly disagree	10	9.9	9.9	9.9
	Total	101	100.0	100.0	

The high percentages that agreed or strongly agreed with the statements in both tables propose a vital concern for the surroundings and recognition of the need to reduce food waste during food manufacturing. This data adds to a preliminary study of selected food enterprises in Mauritius by highlighting the need to investigate waste management and consumer education programs developed by such companies. The findings show that there may be potential for improvement in ways to reduce waste in the Mauritius food service sector.

According to these results in Graph 10, most respondents (84.2% - agree and strongly agree mixed) believe that food businesses should improve their waste management practices. This indicates that respondents have worries about the adverse ecological effects of factors related to food-related waste. By emphasizing the importance of waste reduction behaviors in the food category, our findings support a qualitative study of selected food companies in Mauritius. Food firms may minimize their environmental impact and contribute to a more sustainable future by focusing on re-

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ducing waste. According to the conclusions, respondents value and prioritize waste control practices in the food industry. They realize the vitality of food waste control and feel that food enterprises should have waste control policies in place. Furthermore, there is an opinion that customers need more excellent waste control training. This data sheds light on clients' tastes and willingness to purchase food products that are produced sustainably and with minimal waste. In line with the findings, prospects are less likely to like and support food goods provided by enterprises with superb waste management exercises [16]. They may also be more likely to consume from companies that value sustainability and actively try to reduce food waste.

VI. CASE ANALYSIS ONE

An exploratory analysis was conducted on chosen food enterprises in Mauritius to clarify the adverse ecological effects of factors connected to the manufacturing of food waste. According to experts, food process waste is the wasteful utilization and disposal of resources through the manufacture, processing, and distribution of food items. According to experts, typical triggers of food process waste in the food industry include incorrect raw material storage and utilization, overproduction, poor forecasting and planning, unsuitable machinery and equipment, and a lack of effective waste management systems. They also said that certain products, such as salt, cannot be recycled, increasing waste.

According to various experts, the main ecological effects or impacts of food process waste inside the food sector include carbon emissions, water and soil pollution, and natural resource depletion. Food trash disposal in landfills releases greenhouse gases, while poor food processing waste disposal can contaminate soil and water bodies. For the specific variables correlated to food process waste that have a severe environmental impact in the context of the Mauritius food industry, the experts emphasized carbon emissions as a serious problem. Food firms in Mauritius have a more significant environmental impact due to inefficient manufacturing practices, transportation, and waste management systems.

To support what they found, they outlined the independent variables as parts of food process waste, including storage and handling customs, production efficiency, planning and estimation accuracy, machinery and equipment effectiveness, and waste management systems. The environmental impact, consisting of carbon emissions, land and water pollution, and resource depletion, was the determining factor. The experts determined the effect of these parts on the environment by investigating the link between the independent and dependent variables [2]. According to the research, companies with poor storage and handling customs, inefficient production processes, and inadequate waste management systems had a more profound environmental effect due to increased carbon dioxide emissions and waste pollution.

Finally, X Enterprises' answers provided insight into the definition and frequent elements contributing to food process wastage in the food sector. The investigation also pointed out the adverse environmental impacts of such waste, particularly greenhouse gases, in the context of food companies in Mauritius. The conclusions were supported by data proving the relationship between food process wastes and damage to the environment.

A. Food Wastage as Priority Practice

The influence of the substances connected to food process trash on the environment in selected food businesses in Mauritius was investigated in research performed by experts from X Enterprises. The study seeks to determine the relationship between multiple waste components from food production and their subsequent environmental impact. The factors connected to food process wastes were the independent variables in the current investigation [17]. These factors could include untrue food waste treatment, ineffective waste management behaviors, a lack of recycling or composting systems, and confined waste collaboration with different companies. These factors have been chosen to evaluate how they affect the dependent variable, the environmental impact.

The determining factor, the environmental impact, represents the adverse ecological effects of food-related waste. This could include waste disposal pollution, emission of greenhouse gases from the breakdown of food, and natural resource depletion due to inefficient raw material use. The X Enterprises specialists envisioned understanding these groups' existing strategies and behaviors to manage and handle food process waste to collect data for the study. They also investigated collaborations with other companies that could minimize the environmental effect. Unfortunately, the experts did not identify any particular case studies or examples of food organizations in Mauritius that have effectively reduced food waste while achieving positive ecological advantages. This information should have been included in the response provided.

Finally, the study performed by specialists from X Enterprises aimed to investigate the environmental effects of elements related to food process waste in selected food indus-

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tries in Mauritius [18]. The different parts of food process wastes were represented as independent variables. However, the environmental impact was described as a dependent factor. However, real-world instances/case studies regarding effective waste reduction and beneficial ecological impacts in the Mauritius food industry were offered.

B. Barriers Identified

Experts recognized a need for incentives for food businesses as a significant barrier to addressing and minimizing food process trash and how it affects the environment in Mauritius based on information acquired from X Enterprises. The researcher has seen a variety of obstacles and barriers that food firms run into in this area. The first significant hurdle demonstrated is that government laws or regulations that stimulate and encourage the food industry to minimize waste and increase sustainability should be present. Companies may not feel driven to take action if no tangible benefits or effects are associated with their waste management exercises.

Another critical obstacle is the need for more knowledge and awareness of food firm owners and managers of the environmental impact of food process loss. Many people need more expertise and knowledge to identify and implement effective waste-reduction methods. Likewise, the cost of deploying novel technology or acquiring waste management systems can be a disincentive. Furthermore, companies discovered that there needs to be more unity and interaction among key stakeholders in the food industry [19]. Cooperation between food business suppliers and waste management authorities is critical to creating efficient waste reduction and recycling systems. However, improvement in this area needs a collaborative approach.

A lack of need mortices also hampers food firms. Smaller firms might need more financial capacity to invest in modern technology to enhance their waste management areas. They need to handle food processing trash with effectively cost-effective and readily available solutions. Overall, the critical limitations identified by experts and through the Enterprises' informal discussions are a need for more incentives, poor laws, limited awareness, high cost, a lack of teamwork, and limited access to current technology. Understanding these barriers is critical in creating focused strategies and actions that can assist Mauritius' agricultural sectors in resolving these challenges and minimizing the impact they have on the environment.

C. Food Industry Initiatives

Experts from Firms mentioned they needed to be more conscious of any regulations, policies, or initiatives in Mauritius that explicitly require food companies to reduce food process inefficiency and mitigate its environmental effects. They replied that they needed to gain knowledge on this topic. However, it is essential to note that rules and food policies were implemented in Mauritius to reduce wasted food and its environmental implications. These measures are put forward to improve agricultural industry sustainability and prevent the adverse ecological impacts of food processing waste.

The Food Act 1994, for illustration, tries to restrict the sale, importation, and preparation of food in Mauritius. This law incorporates provisions that can indirectly impact food companies' use of practices to reduce food process waste. The act, for instance, mandates that food operators maintain sanitation standards and check the quality and safety of their products [18]. Food firms can comply with those requirements and help to lower food waste by establishing effective systems and minimizing waste.

Mauritius' State Food and Nutrition Security Plan is another critical undertaking. It fosters sustainable crops and innovative food production systems to address food security and nutrition obstacles, including food waste. The strategy focuses on reducing postharvest losses through proper storage and processing methods, indirectly encouraging food companies to decrease waste. Furthermore, the Waste Management Regulations 2001 could impact cutting food waste. These regulations complete the waste management processes in Mauritius, including debris minimization, sorting, recycling, and disposal strategies. By adopting these standards, the food industry may establish sustainable waste management that helps to reduce food process waste.

It should be acknowledged that the impact of these regulations and policies will rely on how they are put in place and maintained. Literature examples demonstrate the value of such measures. The imposition of food waste boundaries in South Africa resulted in a drop in waste generated by the food industry. Similarly, the Waste Framework Regulation of the European Union has resulted in several initiatives to decrease food waste in member countries, resulting in significant waste savings [20]. In conclusion, while the enterprises' practitioners reported a need for more understanding of Mauritius laws, policies, or initiatives that push the food business to reduce food process waste and mitigate its environmental effects, numerous initiatives are in place.

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D. Consumer Viewpoints

Purchase habits and awareness are vital in influencing food companies' attempts to reduce wasteful consumption and its environmental impact. Information bought by X Enterprises bolsters this notion, as experts stressed the need for customer interaction in developing environmentally friendly farming practices. Several initiatives and wits are aimed at changing consumer beliefs about food waste. Such programs seek to boost consumer awareness, educate their ears, and encourage responsible consumption. One notable example is the Waste and Supplies Action Program of the United Kingdom's "Love Food Hate Waste" campaign [21]. This ad underlines the significance of decreased food waste and gives consumers practical solutions for reducing waste in their residences.

The literature also emphasizes the essential importance of consumer behavior and awareness. Several research studies have determined that consumer attitudes, knowledge, and practices significantly impact food waste levels. A survey by [22], revealed that consumer behaviors such as meal planning were significant factors in minimizing food waste. The same as [23], stressed the significance of consumer understanding and mindsets towards food waste avoidance.

VII. CASE ANALYSIS TWO

Y Limited's data on the impact of food manufacturing waste on Mauritius's environment pointed out many critical issues. At the outset, it came to light that the main environmental consequences of the manufacturing of food waste within food industries include landfill station saturation, the breakdown of organic waste in landfills, which contributes to greenhouse gas emissions, and the waste of energy and resources used in food manufacturing and assembly. Regarding particular issues related to food process loss in Mauritius, study results revealed that composting and recycling do not need to be more significant. Instead, all organic and inorganic waste is disposed of in landfills. When composting and recycling are not prioritized, invaluable minerals and nutrients in food waste become wasted, contributing to environmental injury and greenhouse gas emissions.

Regarding the current management and burial of food process waste in Mauritius, data shows that existing procedures and regulations are in place to reduce its environmental impact. Creating waste segregation and recycling schemes within food industries is one such process. Such initiatives strive to separate organic rubbish from other types of waste, allowing organic materials to be decomposed and recycled. Additionally, several Mauritius food industries employ anaerobic digestion systems, which may transform organic waste into biogas, cutting waste and greenhouse gas emissions. Y Limited's responses demonstrate several significant substances regarding food process waste and their effect on the environment in Mauritius. Evolving market trends with a growing appetite for pre-processed food items, according to Y Limited, are one of the major factors leading to the growth of food waste. Although those foods require trimming, cleaning, and preparation before eating, this trend raises process waste.

Current behaviors and techniques used by food businesses in Mauritius to manage and handle food process waste mainly involve burning all organic and inorganic garbage in landfills. Composting and recycling, which could help lessen the environmental impact of food debris, should be given more attention. Some companies, nonetheless, have ISO 14001 certificates, displaying their dedication to constantly reviewing and enhancing waste management practices to minimize losses and waste generation. In terms of technological achievements and innovations, remarks highlight that several lean manufacturing methods get closer to identifying and enhancing waste management, among them value stream mapping and industrial yield analysis [24]. Furthermore, some companies use the digestion of organic wastes to convert the remainder into value-added products and decomposition to produce organic fertilizers.

Y Limited presents no particular descriptions of successful case studies or examples of food firms in Mauritius that have effectively reduced food process waste and positively impacted the environment. However, they demonstrate FoodWise, a nonprofit organization that aggressively combats food waste by providing methods to store and redistribute food products. The main challenges or barriers that food production companies in Mauritius face when it concerns addressing and minimizing food process consumption and its environmental impact include rising demand for pre-processed food items, a lack of attention to composting and recycling, and a lack of knowledge about and implementation of waste management exercises. The replies do not mention the need for specific regulations, policies, or programs in Mauritius to encourage food firms to lessen food process waste and mitigate its environmental effects.

Overall, responses provide insights into how food producers in Mauritius now organize and deal with food process waste and a few proposals and practices being implemented to reduce its environmental impact. They also emphasize the value of advancements in technology and innovations and the difficulties encountered in addressing and reducing food process inefficiency. However, specific examples and

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information on regulations or efforts should be given to us. Overall, the data from Y Limited shows that, while food process pollution has significant ecological implications in the context of the Mauritius food industry, efforts are being undertaken to mitigate the adverse impacts. However, greater emphasis on composting and recycling practices continues to be needed to maximize the potential of food waste as a valuable resource without mitigating its environmental ramifications.

VIII. CONCLUSION

Reduced food process inefficiency requires effective oversight of the supply chain. Inadequate estimation, logistical inefficiencies, and insufficient supply chain coordination can all lead to natural waste. X Enterprise and Y LTD. (poultry processing) may need help accurately anticipating client demand, which may result in over- or underordering raw materials. Inefficient logistics and poor coordination of suppliers and batterers can also cause waste from food. Weak supply chain management can lead to unnecessary food travel, impacting product quality and freshness. This increases food spoilage and, as a result, contributes to waste. Likewise, the energy used in transportation and the associated chemicals hurt the environment [25]. According to the results of a study on the impact of wasted food in Mauritius, food waste has severe environmental consequences. It can contribute to climate change, resource depletion, and contamination of waterways. It also emphasizes that the main factors contributing to food waste in the Mauritius food industry are poor inventory management, ineffective production planning, and poor storage and handling practices. To resolve this matter in the future, the report recommended that food companies employ methods to improve inventory management and production planning, foster efficient storage and handling of customs, and foster a culture of waste reduction and resource conservation. It encourages innovative technologies and behaviors to reduce food process debris, such as implementing moved inventory tracking systems, better storage and preservation methods, and building partnerships with food banks and entities to redistribute surplus food [26]. Furthermore, the study underlines the value of customer behavior and awareness in influencing food firms' efforts to reduce food process waste. Consumer awareness efforts should be launched to educate the public about the adverse environmental effects of waste from food and foster responsible consumption methods.

A. Recommendations

Experts agreed that the government should take steps to reduce the environmental impact of pollution associated with the food process based on information by X Enterprises [27]. Concerning this knowledge and expertise, this study provides a few suggestions for Mauritius' agriculture sector to manage the environmental impact effectively:

- Implement waste reduction methods: Mauritius' food and beverage sector must prioritize waste reduction measures through their operations. This can involve better inventory management, choosing sustainable packaging materials, and refining manufacturing processes to reduce food waste [28]. This advice is helpful for Mauritius since it helps decrease wasteful food losses, minimize waste disposal costs, and lower the ecological impact of food process waste.
- Facilitate sustainable sourcing: Encouraging food suppliers to source products locally and sustainably might reduce their carbon footprint dramatically. Companies can lower transportation-related emissions and promote more circular economies by supporting local farmers and implementing agricultural practices [29]. This advice is pertinent to Mauritius because it keeps the regional economy, improves food security, and cuts the environmental impact of importing items from faraway places.
- Strengthen packaging and labeling practices: Food companies must employ eco-friendly packaging materials and clear labeling that informs consumers on proper packaging and usage. This allows customers to make more intelligent selections, lessening the likelihood of food spoilage and waste [30]. This information improves Mauritius because it educates consumers, reduces food spoilage, and minimizes the total environmental impact caused by untrue packaging and marking.
- Increase collaboration with Non-Profit Organizations (NGOs) and research institutions: Collaborating with greater NGOs and research institutions might offer food businesses access to expertise and resources for lowering the adverse environmental effects of food process waste. Working together can aid in developing novel solutions, exchanging innovative practices, and raising awareness of environmentally friendly practices [10]. This guidance benefits Mauritius by supporting research and development and contributing to a more sustainable food economy.
- Employee awareness and engagement: Food compa-

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nies should invest in employee development courses and develop an environmentally friendly environment. Employees can be inspired to actively participate in reducing the environmental impact of food processing waste with education on proper waste management, energy conservation, and sustainable practices. This advice benefits Mauritius by developing a sense of responsibility among employees, urging creativity, and cultivating a workforce committed to sustainability.

By applying these recommendations, food firms in Mauritius can effectively decrease the environmental impact associated with issues involving food process waste [31]. These attempts not only assist the companies by saving money and improving their public image, but they also help the island country attain broader sustainability goals. The report gives the following measures for food businesses in Mauritius to control the environmental impact of food process waste products effectively:

- Reduce overstocking and tainting by implementing excellent inventory management systems.
- Develop production planning applications that consider demand estimates to minimize excess food results.
- To reduce food dying and contamination, improve handling and storage practices.
- Invest in advancements and technologies to improve the efficiency of putting away, preserving, and transporting [32].
- Create partnerships with food banks and nonprofits to donate excess food to avoid waste.
- Educate and train workers on waste reduction measures and the advantages of resource conservation [33].
- Create a waste-reduction and sustainable-practices culture during the organization.
- Communicate and share expertise with other food organizations and industry stakeholders to identify innovative ideas and standards of practice.
- Track and monitor food waste indications to gauge progress and identify areas for development [34].
- Participate actively in government initiatives, laws, and policies to minimize food waste and mitigate its environmental repercussions.

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