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Post Catering Waste Management Assistance to Small Scale Catering Business: A Foundation for Waste Management Design

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Abstract

Aim: This study aimed to come up with a post catering waste management assistance to small scale catering business as a foundation for waste management design in Camarines Norte. Specifically, it devised the post catering waste management techniques of the small-scale catering services in Camarines Norte, in terms of relationship between years of operation and waste management practices, number of employees and waste management practices, and relationship between amount of capital and waste management practices.

Methodology: Ten business owners of small-scale catering businesses, in selected municipalities of Camarines Norte, were participants of the study. Non-probability sampling was used due to the target criterion of including only owners of small-scale catering businesses. Convenience sampling was employed to identify the participants.

Results: Findings revealed that there is a relatively positive stand regarding waste management practices among the catering business in Camarines Norte. However, some respondents suggested that to sustain practices in solid waste management, general rules for waste disposal, energy-saving practices, and liquid waste disposal should be maintained because there are still some small catering businesses that do not practice the segregation of waste, reduction of non-recyclable waste and the management of food waste after events.

Conclusion: With this outcome, the researcher came up with post catering waste management assistance to small scale catering business as a foundation for waste management design.

Keywords: Post Catering, Waste Management, Small Scale Catering Business, Waste Management

INTRODUCTION

Several small catering businesses have popped up in the country catering to an increasing demand for diversified and customizable food options, giving customers an exotic culinary experience. Camarines Norte is one of the provinces where small catering services are growing. Some of the factors that have contributed to this growth include the need for more food delivery services, customers who are in need of specialized and customized menus, and more importantly, the need to support local and independent businesses something customers are beginning to realize significantly. During catering, there are resources that would be used in making the service effective, have quality, and meet the needs of customers. After these resources are used, there are wastes that are generated some of which are scattered around such as left-over food and packaging waste among others which might have been caused by overestimation of the quantity of food required for an event or due to faulty storage practices and handling. According to Narasimmalu and Ramasamy (2020), inefficient style and timing of serving, the type of food, and inaccurate prediction of expected customers can be attributed as the biggest contributors to food waste in the catering industry. As pointed out by Wu (2022), most catering businesses find it hard to manage and decrease post-catering waste effectively.

Small catering businesses have less in terms of resources which is often resulted in increased environmental impacts and economic losses due to the lack of adequate infrastructure and expertise that would have provided for the implementation of comprehensive waste management strategies. With these observations, the researcher decided to help the small catering businesses by coming up with proper waste management which can reduce pollution, prevent the spread of diseases, and conserve natural resources. It can also create job opportunities and



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boost the local economy because recycling waste can reduce the need for raw materials, saves energy and reduce greenhouse gas emissions. She finds it necessary to implement a system of waste management that will deal significantly with the post-catering waste of these small catering businesses.

Objectives

This study aimed to come up with a post catering waste management assistance to small scale catering business as a foundation for waste management design in Camarines Norte.

Specifically, it sought to answer the following questions:

1. What is the post catering waste management techniques of the small-scale catering services in Camarines Norte, in terms of:
 - 1.1 relationship between years of operation and waste management practices;
 - 1.2 relationship between number of employees and waste management practices; and
 - 1.3 relationship between amount of capital and waste management practices?
2. How do the respondents describe the challenges faced by the small scale catering business in Camarines Norte, in terms of:
 - 2.1 separating different types of trash;
 - 2.2 minimizing non-recyclable waste; and
 - 2.3 managing food waste?
3. Based from the findings, what waste management for small scale catering business in Camarines Norte can be crafted?

METHODS

Research Design

The convergent parallel mixed-method approach was employed in this study, integrating both qualitative and quantitative techniques to develop a comprehensive understanding of post-catering waste management for small-scale catering businesses in Camarines Norte. This method involves collecting qualitative and quantitative data simultaneously and then merging the findings to generate a well-rounded analysis (George, 2023). The qualitative component, which explores issues, perceptions, and contextual factors, utilized interviews and observations to capture in-depth insights from stakeholders. Meanwhile, the quantitative aspect focused on assessing waste generation rates, evaluating intervention effectiveness, and optimizing resource allocation through surveys and statistical analysis. The use of convergent parallel design ensured triangulation, complementary insights, and enhanced data interpretation, making it particularly suited for this study. By integrating diverse perspectives and empirical measurements, this approach provided a robust exploration of waste management practices and context-specific solutions (Reiley et al., 2017).

Population and Sampling

This study focused on business owners of small-scale catering businesses in selected municipalities of Camarines Norte, as well as the communities where these establishments operate, specifically in Vinzons, Daet, and Labo. Given the study's objective, non-probability sampling was utilized to ensure that only owners of small-scale catering businesses were included. Convenience sampling was employed to select participants based on their availability and willingness to participate.

Camarines Norte consists of twelve municipalities, and according to Department of Trade and Industry (DTI) records, there are forty-nine registered small-scale catering businesses in the province. The study participants were distributed as follows:

- Labo: 5 catering businesses
- Vinzons: 6 catering businesses
- Daet: 38 catering businesses

By selecting businesses from these municipalities, the study aimed to capture a representative understanding of post-catering waste management practices across different localities with varying concentrations of catering enterprises.



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Instruments

This study employed both quantitative and qualitative instruments to gather comprehensive data. Validated questionnaires and interview forms were used to ensure the reliability and accuracy of the information collected. The research instruments were specifically designed to address the unique waste management challenges faced by small-scale catering businesses in Camarines Norte.

The survey and interview instruments consisted of four primary sections:

- Part 1: Business Demographics

This section collected general information about the catering businesses, including:

- Business name and type of catering service offered
- Number of years in operation
- Number of employees
- Owners' perception of their business's economic status
- Business capital or initial investment

- Part 2: Waste Management Practices

This section assessed the frequency and consistency of waste management activities among catering businesses. Questions covered:

- Segregation of solid waste
- Use of designated bins for different types of waste
- Proper disposal of hazardous waste
- Storage and containment of waste
- Measures to minimize waste during catering events
- Implementation of liquid waste management strategies
- Use of energy-saving technologies
- Adherence to waste management regulations

Responses were measured using a frequency scale, indicating how regularly these practices were implemented.

- Part 3: Post-Catering Waste Management Strategies

This section explored whether catering businesses actively sought waste management solutions and interventions. It included topics such as:

- Awareness and implementation of current waste management practices
- Waste sorting and segregation methods
- Recycling and reuse initiatives
- Partnerships and collaborations for waste reduction
- Adoption of waste management technologies and innovations
- Employee and client engagement in waste reduction
- Monitoring, evaluation, and continuous improvement strategies

Respondents rated their likelihood of adopting these strategies on a Likert scale ranging from "extremely likely" to "very unlikely."

- Part 4: In-depth Qualitative Inquiry on Waste Management Initiatives

The final section consisted of interview questions aimed at gaining deeper insights into:

- Strategies used for waste sorting after catering events
- Methods for reducing non-recyclable waste
- Efforts to promote recycling and reuse within the business
- Approaches to controlling food waste
- Training and awareness programs for employees on proper waste handling

By combining structured surveys with open-ended interviews, this instrument provided a well-rounded dataset, enabling a thorough analysis of post-catering waste management practices among small-scale catering businesses.



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Data Collection

The researcher employed both quantitative and qualitative data collection methods to obtain a comprehensive understanding of post-catering waste management practices among small-scale catering businesses.

Quantitative data were collected through online surveys using validated questionnaires. This method allowed for efficient data gathering while ensuring accessibility for respondents. The survey included structured questions designed to assess waste management practices, intervention effectiveness, and resource allocation.

Qualitative data were gathered through face-to-face interviews with selected participants. These interviews provided deeper insights into business owners' perspectives, challenges, and strategies related to post-catering waste management. The researcher recorded and transcribed the responses to ensure accurate analysis of qualitative findings.

Data Analysis

The study employed both descriptive and inferential statistical methods to analyze the quantitative data, while qualitative data were examined using thematic analysis.

- Frequency, Percentage, and Rank were used to categorize and summarize respondents based on their economic profile and business characteristics.
- Weighted Mean was computed to determine the average levels of waste management practices and challenges, providing an overall assessment of key variables.
- Chi-square Test was applied to examine whether there is a statistically significant correlation between the economic profile of businesses and their adoption of green practices.
- Kruskal-Wallis H-Test was used to assess whether significant differences exist in waste management practices among businesses when grouped by profile.

For qualitative data, thematic analysis was employed to identify recurring patterns, themes, and insights from interview responses. The transcribed data were coded and categorized to highlight key issues, perceptions, and best practices in post-catering waste management. This qualitative analysis provided a richer understanding of the motivations, challenges, and contextual factors influencing waste management strategies.

Ethical Considerations

The study started by obtaining necessary approval from the research committee of the institution and the school administration to ensure that the questions are valid, and reliable, and does not collect any unnecessary information from the respondents. This was done to secure consent from higher authorities before proceeding with the survey and to ensure endorsement.

RESULTS and DISCUSSION

Table 1.
Strategies and Interventions in Post-Catering Waste Management

	Mean	SD	Verbal Interpretation
Current Practices and Awareness	3.466667	0.281091	Highly Agree
Waste sorting and segregation	3.833333	0.235702	Highly Agree
Collaboration and partnerships	2.633333	0.692998	Agree
Recycling and reuse of waste management	3.166667	0.451335	Agree
Technology and Innovation	3	0.496904	Agree
Employee Engagement and training	2.8	0.421637	Agree
Client education and Engagement	2.866667	0.358323	Agree
Monitoring and Evaluation	2.833333	0.235702	Agree
Continuous improvement	3.6	0.344265	Highly Agree
Composite Mean	3.133333		Agree



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Table 1 presents the responses of the respondents when it comes to the strategies and interventions in post-catering waste management. The table shows that most of the respondents "highly agree" with the strategy of waste sorting and segregation, with a mean of 3.83. Secondly, with a mean of 3.6, the respondents also "highly agree" with the strategy of continuous improvement. Third, with a mean of 3.16, the respondents "agree" with the strategy of recycling and reuse of waste management. These three strategies received the 3 highest scores. On the other hand, the following received the 3 lowest mean scores. With a slightly lower mean of 2.83, the respondents still "agree" with the strategy monitoring and evaluation. While with a mean of 2.8, the respondents also "agree" with the strategy of employee engagement and training. Lastly, with the lowest mean but still on the positive side, with a mean of 2.63, the respondents "agree" with the strategy of collaboration and partnership.

From the analysis of data in Table 1, it can be concluded that catering businesses that participated in the study pay more attention to some strategies than to others in post-catering waste management. Waste sorting and segregation, continuous improvement, and recycling/reuse had more substantial agreement scores and were rated higher, which may imply that respondents were actively implementing these strategies in their organizations. These strategies are core strategic areas necessary for managing waste efficiently, conserving resources and meeting environmental standards. On the other hand, the identified strategies such as monitoring and evaluation, engagement/training, and collaboration/partnership were rated lower in terms of agreement. This could potentially suggest some areas where companies may lack depth or where there appears to be less emphasis on implementation. While monitoring and evaluation are very important in determining the effectiveness of waste management, the low score obtained raises concerns about possible difficulty in developing sound evaluation structures. Likewise, the engagement of employees and training are some of the crucial factors that can help in compliance with the waste management policies and the promotion of Sustainable Development Goals, which require increased attention. This is in line with other indicators such as collaboration and partnership, which although well-rated may need some enhancement to properly harness external support and expertise on waste management programs.

Cook et al. (2022) describe whether and how waste audit functions, focusing on audit procedures, change management, and leadership. Their findings are useful for catering businesses in improving the monitoring and evaluation of waste management systems, the management of food waste, and engaging personnel as well as identifying and exploring opportunities for partnership in the enhancement of waste management. Altogether, these studies offer important suggestions for catering businesses that want to implement efficient strategies for waste management that could be relevant to the consumer's preferences and expectations and that could help in better utilization of the resources and increasing the sustainability of the food service sector.

Post Catering Waste Management Techniques of the Small-Scale Catering Services

Table 1.1
Relationship between Years of Operation and Waste Management Practices

	Pearson Chi Score	P Value	Verbal Interpretation
Taking care of solid waste	1	1	No significant relationship
Liquid waste management	2.5	0.287	No significant relationship
Ways to save energy	2.619	0.27	No significant relationship
General rules for managing waste	1.111	0.574	No significant relationship
Current Practices and Awareness	1.111	0.574	No significant relationship



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Waste sorting and segregation	1	1	No significant relationship
Collaboration and partnerships	7.6	0.107	No significant relationship
Recycling and reuse of waste management	4.025	0.403	No significant relationship
Technology and Innovation	4	0.406	No significant relationship
Employee Engagement and training	3.958	0.412	No significant relationship
Client education and Engagement	2.5	0.645	No significant relationship
Monitoring and Evaluation	1.111	0.574	No significant relationship
Continuous improvement	1.111	0.574	No significant relationship

This association between the years of operation and the waste management techniques of the respondents is presented in Table 1.1, which gives an overview of the data. According to the data presented in the table, there is no significant correlation between the number of years of operation and any of the factors for waste management techniques like taking care of solid waste, liquid waste management, ways to save energy, general rules for managing waste, current practices and awareness, waste sorting and segregation, collaboration and partnerships, recycling and reuse of waste management, technology and innovation, employee engagement and training, client education and engagement, monitoring and evaluation, and continuous improvement.

From the data analyzed in Table 1.1, it is observed that the years of operation of catering businesses do not have a direct correlation with the number of waste management practices they practice. Such a lack of a relationship suggests that the amount of time a business takes to implement waste management may not depend on how long it has been in operation. Several factors could contribute to this observation: younger organizations are more likely to be committed to sustainability from the ground up as a way to create a competitive advantage, whereas mature organizations are less likely to be able to retool their existing practices to meet changing environmental constraints. Also, the rise and fall of market demands, social regulations, and business needs can affect waste management apart from the duration of operation.

In the same vein, sustainable preparation behavior among the kitchen staff is discussed by the study conducted by Lu and Ko (2023) in the food service context specifically regarding food wastage. Therefore it is agreeable with the conclusion that proactive measures and industry-specific practices are prerequisites for sustainable waste management, which the conclusion drawn in this study supports the need for behavioral change and implementation of operational practices irrespective of business age.

Table 1.2
Relationship between Number of Employees and Waste Management Practices

	Pearson Chi Score	P Value	Verbal Interpretation
Taking care of solid waste	1	1	No significant relationship
Liquid waste management	1.667	.435	No significant relationship
Ways to save energy	3.651	.161	No significant relationship
General rules for managing waste	.741	.690	No significant relationship



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Current Practices and Awareness	.741	.690	No significant relationship
Waste sorting and segregation	1	1	No significant relationship
Collaboration and partnerships	4.833	.305	No significant relationship
Recycling and reuse of waste management	2.250	.690	No significant relationship
Technology and Innovation	7.500	.112	No significant relationship
Employee Engagement and training	4.722	.317	No significant relationship
Client education and Engagement	3.125	.537	No significant relationship
Monitoring and Evaluation	.741	.690	No significant relationship
Continuous improvement	.741	.690	No significant relationship

Table 1.2 presents the relationship between the number of employees and the waste management practices of the respondents. The table shows that the number of employees and all of the variables of waste management practices have no significant relationship with each other.

The results presented in Table 1.2 reveal that the total number of employees in the catering businesses does not influence the use of different waste management practices. This implies that the size of the workforce does not influence the extent to which these businesses adopt and integrate waste management into their operations. Several factors could contribute to this observation, while small businesses will likely seek to implement sound waste management strategies to minimize wastage and costs, larger businesses may encounter difficulties in effectively coordinating and managing waste management activities due to larger teams. Moreover, other factors like organizational culture, leadership commitment, and the external environment especially from regulatory authorities play a role in waste management adoption and success apart from employee numbers.

In a similar manner, Hoang and Fogarassy (2020) assess the sustainability of waste management systems and propose measures including waste to energy and materials recycling to reduce the effects on the natural environment. Their study supports the belief that businesses can improve waste management by putting new strategies in place no matter how many employees a company may have which corresponds with the observation made in Table 1.2 that the improvement in such practices depends on other organizational and environmental factors.

Table 1.3
Relationship between Amount of Capital and Waste Management Practices

	Pearson Chi Score	P Value	Verbal Interpretation
Taking care of solid waste	1	1	No significant relationship
Liquid waste management	5.312	.150	No significant relationship
Ways to save energy	3.254	.354	No significant relationship
General rules for managing waste	2.593	.459	No significant relationship



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Current Practices and Awareness	10.000	.019	Significant Relationship
Waste sorting and segregation	1	1	No significant relationship
Collaboration and partnerships	5.833	.442	No significant relationship
Recycling and reuse of waste management	5.833	.442	No significant relationship
Technology and Innovation	8.750	.188	No significant relationship
Employee Engagement and training	5.000	.544	No significant relationship
Client education and Engagement	6.875	.333	No significant relationship
Monitoring and Evaluation	1.667	.644	No significant relationship
Continuous improvement	2.593	.459	No significant relationship

Table 1.3 presents the relationship between the amount of capital or investment and the waste management practices of the respondents. The table shows that the amount of capital or investment has a significant relationship with the strategy of current practice and awareness. Aside from that, the amount of capital or investments and all of the remaining variables of waste management practices have no significant relationship with each other.

From the result presented in Table 1.3, it is clear that capital or investment in catering businesses has a direct correlation with the current practice and awareness of waste management strategies but has no correlation with other factors like waste sorting, recycling, and other practices. This implies that higher levels of capital may enhance the awareness and implementation of the currently available waste management strategies because of probable better training and implementation resources, there could be other factors like operating priorities, regulations, or organizational culture that might exert a stronger influence over the efficiency of a comprehensive waste management strategies. This means that other factors might have an impact on how well businesses with low capital investment can plan and manage their waste more effectively, reducing the extent to which capital alone can affect these practices.

Fernando (2024) examines waste management, expanding the notion of resources beyond finances to include other internal and external contextual factors that influence sustainable work practices. The study reaffirms that though capital investment can enhance awareness and compliance with practices in waste management, its impact can be inconsistent in various domains of waste management based on factors such as infrastructure accessibility and institutional support. In the same regard, Schiavi et al. (2021) give information about sustainable innovation and leadership. Their research focuses on the societal cultural shift and organizational change through financial commitment, stating that though capital uplifts sustainable solutions, it is the organizational culture and leadership engagement that call for initiatives. They are consistent with the results presented in Table 8 as they demonstrate that capital investment is closely connected with some aspects of waste management practices but is dependent on various organizational and regulatory factors integrated into a single approach based on financial capital.



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Challenges Faced by the Small Scale Catering Business in Camarines Norte

Table 2.1

Challenges faced in separating different types of trash after catering events

Theme: Challenges in Segregating Wastes After Catering Events
Sub-Themes: <ul style="list-style-type: none"> • Contamination • Partnership with local government unit • Limited Time and Resources • Location

Table 2.1 presents the responses of the interviewees when asked about the challenges they face when segregating different types of trash after the catering event. Several sub-themes have occurred with their responses. These include contamination, partnership with local government agencies or LGU, limited time and resources, and location. Specifically, the respondents stated that:

P3: "Food residue on paper plates or paper cups that can contaminate entire batches of recycling making them unusable."

P1: "We have a private garbage collector, but they are not connected to LGU or any government agencies."

P3: "One of the challenges is the staff may have limited time and resources to sort waste properly during and after events."

P9: "One of the challenging parts of managing food waste after a catering event is when we do not have enough trash bins"

P4: "The location of the catering designated area for waste segregation is one of the factors to be considered as a challenge for segregation must not be seen by guests."

Table 2 reveals certain problems in implementing the segregation of different types of trash by catering businesses after various events. The qualitative responses show a number of emergent themes that add to the challenges of waste management. Contamination becomes a prominent problem with food particles on disposable items contaminating the recyclables and thus hampering the recycling process. Another major issue is the poor coordination between private garbage collectors and local government agencies in charge of waste management. Another challenge is the inadequate time and resources for waste sorting during and after the event. Furthermore, the location of waste segregation areas is highlighted as important; these areas should be easily reachable for the staff while they need not be conspicuous to the guests. In light of these findings, it is evident that waste management issues in catering environments are complex and require well-planned approaches as well as infrastructure enhancements and cooperation with the local municipality for the improvement of waste segregation practices.

Sobti (2024) talks about waste management practices in the hotel industry pointing out that it is high time to adopt sustainable practices to limit the amounts of waste that are dumped into the nearest landfill. The research is based on the hotel industry; however, the findings could be useful in managing the difficulties associated with sorting various types of garbage after catering events. Through proper waste management strategies, business organizations can improve their sustainability scores and reduce their effects on the environment.



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Table 2.2

Challenges encountered in minimizing non-recyclable waste during post-catering activities

Theme: Challenges in Minimizing Non-recyclable Waste
Sub-Themes: <ul style="list-style-type: none"> • Improper Disposals • Packaging • Practice

Table 2.2 presents the responses of the interviewees when asked about the challenges they encounter in minimizing non-recyclable waste during and after the catering event. Several sub-themes have occurred with their responses. These include improper disposal, packaging, and practice. Specifically, the respondents stated that:

P7: "Customer is not aware of the proper disposal of trash."

P8: "It's hard to separate the biodegradable and non-biodegradable waste in trash bins like food scraps, tissue paper, and liquid waste, which can lead to improper disposal."

P3: "Instead of sealed plastic we choose to buy a can."

P4: "We try to avoid using plastics that can be used once only."

P2: "Engage staff or a food handler in reducing food waste. Practice good stock control."

The challenges faced by catering businesses for the reduction of non-recyclable waste in the course of events and after the event can be found in Table 2.2. Based on the responses collected, the following themes emerged as factors that influence waste reduction strategies. Lack of proper waste disposal mechanisms becomes a major issue whereby customers do not know the right methods to use when disposing of different wastes thus causing contamination and wrong segregation. Another important aspect is the usage of packaging materials for products, people discussed the problem of the use of single-use plastics and the possibility of distinguishing between biodegradable and non-biodegradable packaging materials. Among catering operations identified are staff involvement and food waste as important areas that could be improved with a view to avoiding the generation of waste. It emphasizes the importance of the increased focus on the issue and the need for further customer engagement in recycling, utilization of more environmentally friendly packaging materials and products, and adoption of better waste management practices to reduce non-recyclable waste in catering operations.

Nemat et al. (2019) take a look at how the design of food packaging affects the amount of recycling that takes place among consumers. Although the study may not be directly applicable to understanding the problems encountered in the effort to ensure that non-recyclable waste levels are reduced during post-catering activities, the study highlights the consequences of packaging design on recycling. The research focuses on the issue of proper waste disposal and segregation of food packaging waste as proving to be effective and efficient in increasing the chances of the recycling of such wastes and the quality of the recycled products. Through exploring the relationship between the design of the packaging and consumer behaviors in recycling and waste disposal, the concepts provide catering



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businesses with ways of reducing non-recyclable wastes and enhancing sustainable management of wastes and recycling during post-catering activities.

Table 2.3

Challenges experienced in managing food waste after a catering event.

Theme: Challenges in Managing Food Waste
Sub-Themes:
<ul style="list-style-type: none"> • Portions

Table 2.3 presents the responses of the interviewees when asked about the challenges they encounter in managing food waste after the catering event. A sub-theme has occurred with their responses, which is portions. Specifically, the respondents stated that:

P2: "The challenges we've experienced in managing food waste after catering events are over-portioned food or too much in prepping of food."

P3: "Predicting the exact amount of food needed can be difficult, leading to significant leftovers."

P6: "In catering always going to throw away larger than average quantities of leftovers from food preparation."

P10: "The biggest challenge for me is what happened next after post-catering. We all know that in catering there's a lot of leftovers that we need to manage."

Table 2.3 shows how catering businesses struggle to deal with food waste after events. The qualitative responses depict typical problems that include overserving during food preparation, challenges in estimating the portions required, and the certainty of leftovers in catering establishments. These challenges mean that there is a likelihood of food waste after the event thus the need to have proper food waste management measures in place. Participants' responses suggest that there is a need to enhance portion estimation, practice better food stock management, and consider possibilities of food donation or composting in order to reduce wastage of food and increase sustainability in serving food in organizations. Solving these issues can not only minimize food waste but also enhance productivity and environmentally friendly activities within catering organizations.

Hariharan (2024) gave an idea about practical issues of food waste management, focusing on the catering industry. Although the reference specifically targets service quality in conventional catering businesses, the findings concerning food quality, taste, menu range, and presentation could apply to the right portion issue in catering business operations. Gan-Qian et al. (2022) tackle the issues of preventing food waste in the catering supply chain including keenness to understand the tacit knowledge enshrined in the cookery and catering system. From the study, the main issues emerging in the management of food waste in catering businesses include the existence of multiple knowledge icebergs in catering culture, the tacit nature of knowledge in cookery, and the problems in formalizing catering practices. In response to these issues, the article outlines three solutions: standardizing fundamental cookery practices, developing Web 2.0 systems, and incorporating big data in developing a system for the whole nation. These solutions are meant to optimize the conditions of catering services, minimize the amount of food waste, and increase the level of food culture in the country.



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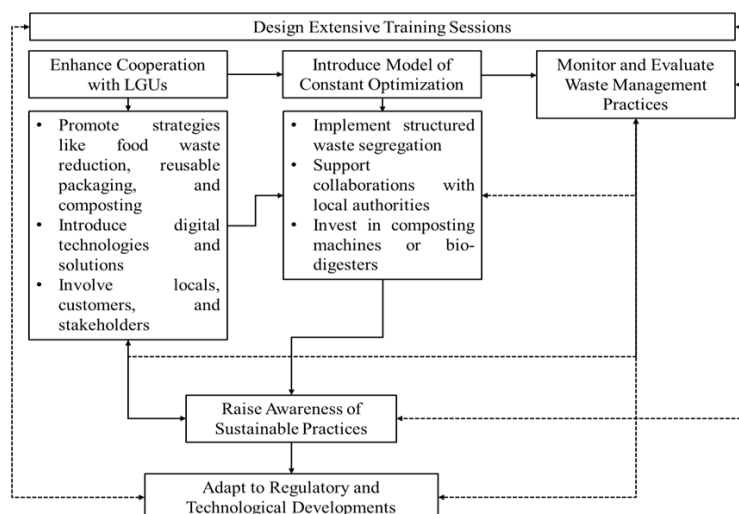


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Proposed Waste Management Design



Proposed Post Catering Waste Management Assistance to Small Scale Catering Business

This proposed post catering waste management assistance to small scale catering business emphasizes the segregation of wastes, methods of disposal, and energy-saving measures focusing on the actual application and legal requirements.

To use this, ask LGU's cooperation enhance cooperation with LGUs in order to increase the efficiency of waste collection mechanisms and increase the level of compliance with waste disposal regulations. Effective communication and other collaborative measures and projects can help in waste management.

By implementing these recommendations, small food stores in Camarines Norte should be able to provide an effective waste management system that is environmentally sustainable and meets legal standards, as it will benefit the community. This design approach combines identified key themes with quantitative analysis to develop customized plans that address opportunities and challenges in the local environment.

Conclusions

The levels of compliance in solid waste care, energy conservation and general rules for waste management were relatively high among all the organizations. Companies with greater capital investment had more systematic and preventive methods for managing waste as opposed to those with relatively low capital investment. Small-scale catering businesses in Camarines Norte show satisfactory measures of waste management, which can be enhanced through systematic approaches and collaboration. Some areas of concern mentioned are problems faced in waste segregation, reduction of non-recyclable wastes, and the management of food wastes after the events. Challenges raise the importance of developing specific approaches and appropriate assistance programs to improve waste management practices and the overall sustainability of the local catering businesses.

Recommendations

The researcher recommends the following: A comprehensive evaluation of the economic characteristics and waste management of selected catering companies should be done. Design extensive training sessions with an emphasis on the segregation of wastes, methods of disposal, and energy-saving measures. Enhance cooperation with LGUs in order to increase the efficiency of waste collection mechanisms and increase the level of compliance with waste disposal regulations. Promote strategies like food waste reduction, reusable packaging, and composting. Encourage and reward the companies that have performed well in their waste management practices, in order to create awareness about sustainability in the sector. Learn more about the application of digital technologies and



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solutions (e. g. waste management applications, IoT sensors) for measuring the amount of waste produced, assessing the levels of recycling, and assessing the outcomes of waste management initiatives for environmental concerns and promoting behavioral change towards environmental conservation. The post-catering management design should include raising awareness of sustainable practices among customers, suppliers and communities to encourage active participation and support them constantly adapting to regulatory and technological developments to ensure operational efficiency and environmental responsibility. Similar researches may be undertaken in other regions to determine the comparability of results.

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