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ABSTRACT

This research aims to analyze food waste management using Material Flow Cost Accounting (MFCA), neutralization, and Norm Activation in ABC MSME. The data was gathered through both quantitative and qualitative through observations, founder & executive chef interviews, and customer questionnaire completion. The result found that ABC MSME and consumers did not agree with the features of denial of responsibility, denial of injury, and appeal of higher loyalty, according to analysis utilizing the neutralization theory method. ABC MSME and customers concur on the elements of awareness of consequences, ascription of responsibility, personal norms, according to analysis based on the Norm Activation Theory (NAT) methodology. Because ABC MSME and consumers did not conveyed neutralization techniques and only implemented NAT, they had agreed the intention to reduce waste. In summary, the waste management was generally supported by ABC MSME and consumers.

Keywords: Food Loss and Food Waste (FLW), Material Flow Cost Accounting (MFCA), Neutralization Theory, Norm Activation Theory (NAT), MSME Restaurant

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1. INTRODUCTION

Food Loss (FL) is a food reduction in terms of quantity and quality. Food loss is identified in pre-consumer stages, starting from production and post-harvest storage and continuing until processing. Meanwhile, food waste (FW) comprises the elimination of the food supply chain for human consumption, such as food damaged or expired for any reason. The prevalence of FW is commonly triggered by bad consumer behavior, poor inventory management, and neglect of food and housekeeping services. FLW (Food Loss and Food Waste) is the total between FL and FW. (Kayikci et al., 2020) (Oliveira et al., 2021)

A common industry that produces FLW is restaurants. According to Principato et al., (2018), a number of factors, including the meals offered, the type of products used, and the operating hours of the restaurant, might contribute to the development of waste food. For instance, restaurants that serve lunch and supper and have meaty menus are heavy on meat waste production. Aamir et al. (2018), in addition, reported that losses on FLW because of food spoiling and overproduction.

Pirani & Arafat (2015) studied the primary reasons why restaurant buffet operations result in FLW. The causes are inaccurate client estimates, a rigorous regulation against offering leftovers at the following meal, waste production, and a lack of coordination in a number of functional areas, including ordering, purchasing, and coordination with the operations division.

Environmental concerns are becoming more and more complicated in current accounting practices. Christ & Burritt (2015) also asserted over MFCA-related environmental concerns. Businesses can utilize MFCA (Material Flow Cost Accounting) to bring sustainability ideas to managerial areas such as cost accounting and management accounting. MFCA is the evolution of cost accounting within the sustainable framework, which encompasses waste, raw materials, energy, and water management, in addition to operational concerns. An illustration of a company's eco-efficiency may be seen in the 40–70% of overall environmental expenses that are attributed to wasted raw resources.

FLW can be analyzed using the neutralization theory. The founder of neutralization is Sykes & Matza (1957). Neutralization is the defense in justifying behavior. A study published by Filimonau et al. (2022) examined the effects of market orientation, environmental indifference, and neutralization (denial of injury, denial of responsibility, appeal to higher loyalty) on actions and behavior. The purpose of their research is to comprehend restaurant food waste practices for the hotel and restaurant industries from the standpoint of business actors. The findings of their study show that market orientation influences management's intention to reduce FW but does not influence their attitudes. Meanwhile, environmental apathy influences managers' attitudes to reduce FW but not their intentions. The management is still carrying out denial of injury and appeal to higher loyalties.

FLW can also be analyzed using the norm activation theory (NAT). It is considered to be able to reduce difficulties of people intention to reduce FLW. Iriyadi et al. (2023) used NAT to study the behavior of patrons who had eaten at a "all you can eat" restaurant within the previous month. NAT is a theory used to forecast an individual's behavioral intentions toward pro-social altruistic conduct. (Setiawan et al., 2020) The aim of NAT is to predict a person's behavioral intentions with reference to pro-social altruistic conduct. Consequently, the degree of people's pro-social activity is determined by the strength of their moral convictions. It is especially crucial to apply NAT in the context of pro-environmental conduct. Since it has beneficial effects on other people, pro-environmental activity is categorized as a subset of pro-social behavior.

This research used mixed method through observations to calculate MFCA, conducted interviews with the Founder & Executive Chef and obtained questionnaires from ABC MSME consumers. Not many previous studies had combined the application of neutralization theory and NAT to FLW issues. Therefore, this research will seek the intention factor using neutralization theory and NAT to a sample of institutions, namely ABC MSME. ABC MSME is a restaurant that operates in the field of national and international food, both vegan and non-vegan, in Jakarta.

2. Literature Review

2.1. MFCA (Material Flow Cost Accounting)

MFCA is a part of ISO 14051 which is part of environmental accounting or EMA (Environmental Management Accounting). This standard will increase the accounting utility of the environmental accounting sector. EMA is a term used to denote the physical environment and monetary environment. EMA will incorporate an integration into the management accounting system. According to ISO 14051, MFCA is a tool for measuring flows and goods in the production process, both physically and monetarily. The aim is to inform management to reduce material use and improve financial performance. (ISO, 2011) in (Christ & Burritt, 2015; Christ & Burritt, 2016; Christ & Burritt, 2017)

Christ & Burritt (2015) also emphasized MFCA-related environmental concerns. Businesses can leverage MFCA (Material Flow Cost Accounting) to integrate sustainability principles into managerial aspects such as cost accounting and management accounting. MFCA represents the advancement of cost accounting within the sustainable framework, encompassing waste, raw materials, energy, and water management alongside operational considerations. An example of a company's eco-efficiency can be observed in the 40–70% of overall of total environmental expenses that are attributed to wasted raw resources.

2.2. Neutralization theory

Neutralization theory pioneered by Sykes & Matza (1957), posits that individuals engage in deviant behavior by rationalizing their actions. According to Djanggih & Qamar (2018), neutralization refers to the process by which individuals justify aberrant conduct through their own cognitive processes. The motivation behind such behavior stems the individual's internal state, which leads the offender to seek for reasons to justify their acts based on their own beliefs as well as external state or the environmental influences around them that may have an impact on their thoughts and behavior. Techniques for neutralization are categorized into five (5) sections.

- Denial of responsibility is an approach of characterizing offenders that suggests individuals are powerless to deal with the social constraints they face.
- Denial of injury involves the belief that a certain planned action will not result in significant harm, particularly to society.
- Denial of victim occurs when perpetrator perceives themselves as the one who will seek revenge, while those who are victims of the perpetrator's actions are considered to be at fault
- Condemnation of the condemners is the act of the offender assuming that those who condemn their actions are hypocrites, jealous individuals or evildoer.
- Appeal to higher loyalties occurs when offenders find torn between the interests of their own group and the social norms that govern them. Offenders are often prioritizing their group's interests over those of the broader community.

Filimonau et al. (2022) employ three specific strategies to deploy neutralizing techniques in analyzing the intention factor of waste food in food services. These strategies include denial of injury, denial of responsibility, and appeal to higher loyalties. This research utilizes the methodologies outlined by Filimonau et al. (2022) to investigate waste food intention in food services.

2.3. Norm Activation Theory (NAT)

Norm Activation Theory (NAT), based on Schwartz (1977), is the theory to predict individual behavioral intentions toward pro-social altruistic conduct. Several researchers, including Iriyadi et al. (2023), Setiawan et al. (2020), De Groot & Steg (2009), and Steg & Vlek (2009)., have also employed the same strategy or procedure. Regarding pro-social altruistic conduct, the pro-social idea itself serves as a model for forecasting an individual's behavioral intentions. Given that actions supporting environmental protection can be categorized as pro-social, NAT becomes highly relevant and adaptable in pro-environmental situations.

According to Schwartz (1977), NAT has developed into a distinctive area of study that centered around the moral imperative to engage in environmentally friendly behavior. Additionally, Setiawan et al. (2020) emphasized that NAT serves as a theoretical framework that has been effective in predicting various pro-social altruistic intents and actions. Through empirical validations, NAT has been included in the literature advocating for pro-environmental behaviors over the past three decades. NAT is often regarded as a manifestation of prosocial conduct due to its positive impact on society.

Personal norms are shaped by an individual's understanding of the consequences that arise from engaging in a certain action and their conviction that they are responsible for any potential negative outcomes. This awareness is a crucial component of NAT analysis. (Iriyadi et al., 2023) The thought about actions benefitting the environment represents a particular kind of pro-social conduct.

Due to the fact that this conduct essentially characterizes how someone would act to benefit even while engaging in this conduct does not directly benefit others. Consumers' personal aspirations and social conventions work together to shape their behavior when it comes to reducing food waste. Personal standards are shaped by assigning blame (Ascription of Responsibility/AR) and being aware of the consequences (Awareness of Consequences/AC). This third personal norm serves as a pivotal element directly utilized to elucidate the research's findings.

2.4. Research Framework

This research aims to analyze food waste management using MFCA (Material Flow Cost Accounting), neutralization, and norm activation theory.

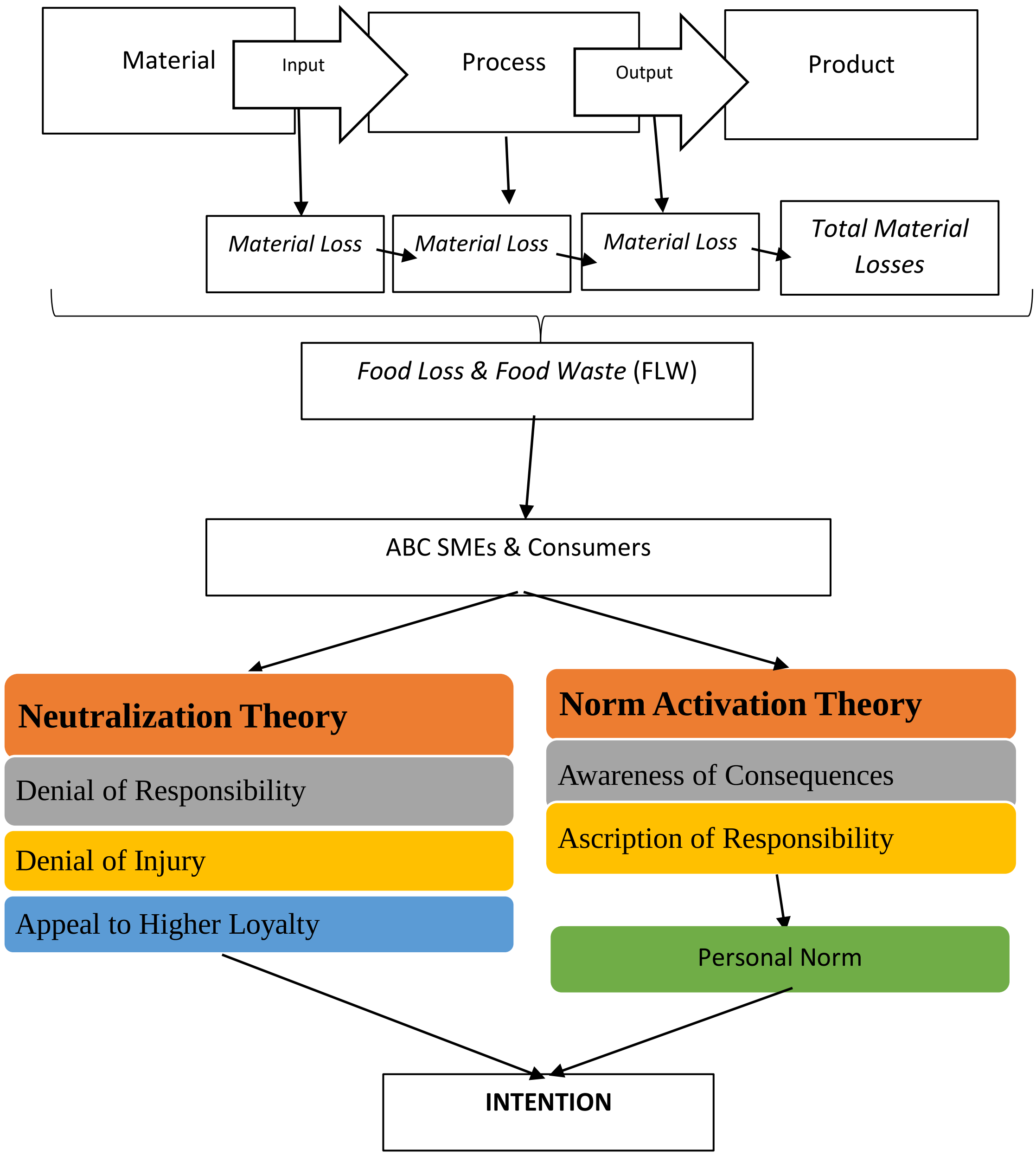

Figure 1. Research Framework

Source: Filimonau et al. (2022), Iriyadi et al. (2023)

3. RESEARCH METHODS

The research utilized a combination method. According to Creswell & Creswell (2018), a combination method is collecting both qualitative (open) and quantitative (closed) data to answer research questions. This includes methods of data collection, analysis and interpretation of qualitative and quantitative data. Both forms of data are combined in design analysis by combining data, explaining data, building from one database to another, or combining data into a larger frame of reference.

The combination method model used in this research was a sequential explanatory design model. In the sequential method, researchers develop research results from one method to another method. In the explanatory sequential method, quantitative data collection and analysis will be carried out in the first stage, and then qualitative data collection and analysis in the second stage, with the aim of strengthening the quantitative results from the first stage.

This research input ABC MSME observations to calculate MFCA. This research conducted interviews with the Founder & Executive Chef using the in-depth interview method. Data had also obtained through questionnaires from ABC MSME consumers. The questionnaire will use close-ended questions using a 1-5 Likert scale.

4. ORGANIZATION PROFILE

ABC MSME is a restaurant located in Jakarta. This restaurant was founded in 2022. ABC MSME provides national and international dishes, along with vegan and non-vegan options. The total number of employees are 18 people, including the executive chef. The organizational structure is divided into several parts, namely, frontliners, office, and kitchen. In the organizational structure, frontliners are tasked with serving guests by greeting consumers when they enter the entrance door of ABC MSME, ordering food from the kitchen, serving dishes, and clearing away restaurant guests' eating and drinking utensils.

Apart from the frontliners section, there is another section, namely the office section. The office section is only occupied by 1 person, namely Admin. Admin is the person who is responsible as inventory controller and functions to review the menu that is ready to be served (randomly). Admin is also responsible for purchasing all food ingredients, arranging production flow in the kitchen, and checking other costs and paying operational costs such as electricity costs and water costs. Apart from that, there is a kitchen section. In the kitchen, there are Executive Chef, chefs, assistant chefs, helpers, and even stewards (people in charge of cleaning kitchen equipment). ABC MSME operational hours are from 11.00 AM – 10.00 PM, except on weekends. Usually there are consumer events such as family gatherings/corporate gatherings, so the restaurant closes at 11.00 PM during weekends.

5. Result and Discussion

5.1. Material Flow Cost Accounting (MFCA)

Table 1 Calculation of MFCA

			Quantity Centre		
	Unit (kg)	In Rp	Storage (Q1)	Preparation (Q2)	Service (Q3)
Initial input					
Material Cost	81.00	3,450,000	3,450,000	-	-
Energy Cost		313,143	93,943	125,257	93,943
System Cost		5,140,000	1,028,000	2,415,800	1,696,200
Waste Disposal Cost		134,800	33,700	67,400	33,700
Total		**9,037,943**	**4,605,643**	**2,608,457**	**1,823,843**
Product					
Material Cost	72.80	3,100,741	-	-	3,100,741
Energy Cost		281,442	84,433	112,577	84,433
System Cost		4,619,654	923,931	2,171,238	1,524,486
Total		**8,001,837**	**1,008,363**	**2,283,814**	**4,709,659**
Non Product Output					
Material Cost	8.20	349,259	17,463	227,019	104,778
Energy Cost		31,701	9,510	12,680	9,510
System Cost		520,346	104,069	244,562	171,714
Waste Disposal Cost		134,800	33,700	67,400	33,700
Total		**1,036,106**	**164,742**	**551,661**	**319,702**

The initial total input on MFCA was 81kg or IDR 9,037,943, while the product output was 72.8kg or the equivalent of IDR8,001,837. For non-product output it was 8.20 kg or the equivalent of IDR 1,036,106.

5.2. Neutralization Theory Analysis

According to Djanggih & Qamar (2018), the neutralization principle explains deviant behavior that can be carried out by individuals because of their own thoughts. The perpetrator looks for justifications based on his thoughts as well as external factors or the surrounding environment that can influence individual's thoughts and actions. The above situation leads to the perpetrator rationalizing the deviant act. This section will be divided into denial of responsibility, denial of injury, and appeal of higher loyalties.

5.2.1. Denial of Responsibility

According to Sykes & Matza (1957), denial of responsibility is the state in which those who cause problems blame other people or things for the consequence. In this section, this theme explains about the responsibility and role of FLW in it. Based on the results of interviews with the restaurant, it appears that the owner appointed the chef as the responsible party for controlling or managing waste food. The findings of this study are also in line with Filimonau, Fidan, et al. (2019) which stated that the food preparation and food preparation department is the largest contributor to food waste (with an estimate of 45-65%). In other words, the chef as a team member in the food preparation section should be the main person responsible for handling food waste. To overcome carelessness or chef errors in the kitchen, the restaurant owner monitors the expenditure and use of raw materials with the assistance of the Admin.

The response to the denial of responsibility from ABC MSME consumers consists of 3 parts, namely the responsibility of ABC MSME consumers, the government and ABC MSME from the consumer's perspective. The results of the questionnaire showed that consumer responsibility towards FLW had the highest score reaching 4.85, which indicates that consumers were fully aware and responsible for not throwing away food. The second highest party responsible for reducing waste was the ABC restaurant/MSME itself with a score of 4.55. According to consumers, ABC MSME had played a role in the way MSME’s deal with food waste, namely by wrapping leftover. According to consumers, the government was also responsible for reducing food waste but with a lower achievement with a score of 4.35. Waste management facilities by the government were still limited to monthly fees or transportation by garbage men and more efforts were had not been made, for example, in terms of facilitating waste segregation into several categories. The overall results of the questionnaire showed that all parties played a role in reducing food waste.

Table 2. Questionnaire Denial of Responsibility

No	Description	4.53
1	It is my responsibility to reduce food waste	4.85
2	It is the government's responsibility to reduce food waste	4.35
3	It is the restaurant's responsibility to reduce food waste	4.55

Information: Score 5 = strongly agree, score 4 = agree, score 3 = undecided, score 2 = disagree, score 5 = strongly disagree

The overall results of the questionnaire showed that all parties played a role in reducing food waste in ABC MSME. The research's conclusions, which indicate that consumers believed FLW was their fault, are consistent with those of Filimonau et al. (2022). The results then indicate that consumers believe the government and ABC MSME were also involved in FLW, which is consistent with Mesiranta et al., (2022) emphasis on the involvement of stakeholders in FLW. Every stakeholder collaborates to manage FLW.

5.2.2. Denial of Injury

Denial of injury is the situation when people say their actions do not directly hurt someone else. According to the denial of injury analysis, FLW had a major detrimental effect on the environment, the underprivileged, and agriculture. The premises focused on the belief that FLW had substantial detrimental effects on the environment. The first question on the interview displays the stance of ABC MSME on its responsibility to mitigate FLW impact. The answer from ABC MSME was that

FLW had a negative impact on the environment because nowadays the world is experiencing global warming. Global warming pressures everyone, including MSMEs, have to increase significantly zero waste efforts.

The next question concerns on whether FLW exert the impact on poor people. The response from MSMEs was that FLW had caused an impact on poor people. For example, food would be better off being consumed than wasted. If the food inventory does not run out, it is best to donate the remaining food to other parties who greater in need.

Even though they have good purchasing power, ABC MSME stated that restaurants will still be careful in how they use food so that it does not go to waste. ABC MSME will only dispose of the food/food ingredients that are stale and cannot be used. The findings of this research are in line with (Filimonau et al., 2019) Disposal is the last step and will only be carried out when no other prevention-oriented measures are available. This step was taken to reduce FLW. There are several stages to reducing FLW, for example giving to staff/donations, reducing prices, and managing food portions.

The consumer is the next party to be described. Denial of injury for consumers consists of 3 parts, namely regarding consumers' views about FLW on the environment, poor communities and the agricultural sector. The questionnaire score results on the first question about the amount of food wasted was not significant was 2.75. Meanwhile, the statement that food waste did not directly impact the lower middle-class community was given to score 2.45. The last question in the agricultural aspect resulted in the answer that agriculture will continue to produce food even if food waste in ABC MSME reaches a score of 2.5. Consumers indeed did not support denial of injury.

Table 3. Questionnaire Denial of Injury

No	**Description**	2.57
1	The amount of food waste does not have a significant impact on the environment	2.75
2	Food waste in restaurants does not have a direct impact on poor people	2.45
3	Our farms will continue to produce enough food for everyone even if restaurant food is wasted	2.5

Consumers tended to think that the environment, poor communities and agriculture did not have a direct impact on FLW. Consumers tended not to agree to pay attention to the impact of FLW. These findings are in line with Dhir et al. (2020). Food waste has a very relevant impact on sustainability and the environment. This also includes issues of climate change, monetary losses, and food security.

5.2.3. Appeal to Higher Loyalties

This theme will discuss customer satisfaction and its relationship to food waste, consumer preferences, and making food waste a non-problematic way to achieve profits. The analysis regarding the appeal of higher loyalty to ABC MSME showcase the path on how ABC MSME view the interests of business actors.

The first part is about customer satisfaction. Customer satisfaction is important. According to the restaurant, restaurant consumers will purchase the offered product because the choice of food served is highly fresh. If there is an excess food, ABC MSME will provide plastic containers for consumers to deliver the food home, preventing leftover food, so that the food is not thrown away. The next discussion regarding the restaurant's favourite dishes whether ABC MSME will continue to serve food as long as consumers are happy. Here is the answer of ABC MSME during the discussion with the management.

Discussions about favorite restaurant dishes were answered with no. As long as consumers are happy, ABC MSME will continue to pay attention to food so that it is not thrown away in vain. The restaurant really pays attention to the details of the food. ABC MSME will always pay attention and ensure that food is not thrown away. The next question concerns the relationship between the problem of throwing away food as long as the restaurant performs well and makes a profit.

MSMEs responded by stating that they understood the importance of restaurant performance. However, ABC MSME disagreed if the goal is to turn a profit even at the expense of food waste. Food waste, in the eyes of ABC MSME, is a major issue. Therefore, the restaurant thought that if it can control FLW by not squandering it in vain, restaurant performance and revenues would be increased.

These results are consistent with the findings of Hanson & Mitchell (2017) in Principato et al. (2018). Reducing food waste may save money in addition to having a good effect on the environment. Reduction of waste can provide a positive return on investment. A $1 decrease in food waste will yield a return on investment of $14. Restaurant profits will increase with a greater return on investment.

The consumer will explain the appeal to higher loyalties. This aspect consists of 2 parts of the statement. The first part is how consumers view consumers' ability to pay. Afterwards, the second part is a statement about consumers' enjoyment of food dishes. For the first statement, the questionnaire results relate to consumers' ability to pay and because of this ability, consumers can throw away food for nothing, reaching 1.85. Furthermore, statements about consumers' favorite dishes and being free to throw away food reached an agreement level of 1.35. From the overall appeal to higher loyalty statement, consumers do not agree that the ability to pay for a meal and the enjoyment of a meal at a restaurant makes consumers throw away food.

Table 4. Questionnaire Appeal to Higher Loyalties

No	**Description**	1.60
1	As long as I pay, I can do whatever I want with the food even if it is waste	1.85
2	As long as I am happy with a restaurant meal, it is okay if the food goes to waste	1.35

The result of the ability to pay and favorite dishes from the consumer's perspective is that they did not agree if food was wasted even though they can afford to pay, and the dish is the favorite one. This finding is in line with research from Stefan et al. (2013). Consumers did not want to throw food to waste because they have a good moral attitude. Consumers only ate food in proportion to their needs.

5.3. Norm Activation Theory (NAT) Analysis

Norm Activation Theory (NAT), based on Schwartz (1977), is the theory to predict individual behavioral intentions toward pro-social altruistic conduct. Several researchers, including Iriyadi et al. (2023), Setiawan et al. (2020), De Groot & Steg (2009), and Steg & Vlek (2009)., had also employed the same strategy or procedure. In terms of pro-social altruistic conduct, the pro-social idea itself served as a model for forecasting an individual's behavioral intentions. Since actions that support the environment protection might be categorized as pro-social actions. In a pro-environment situation, NAT implementation becomes highly relevant and adaptable.

5.3.1. Awareness of Consequences

As described by De Groot & Steg (2009), awareness of consequences (AC) is a the theory that explains whether people are aware of the negative effects of not taking action in a way that is pro-social or pro-environmental. The first analysis will be an appraisal of ABC MSME's awareness of the consequences. We will discuss solutions for minimizing FLW in this area that can be advantageous to everyone. The response from ABC MSME is that reducing FLW is beneficial for everyone. This can give them happiness. By reducing FLW, they can become better individuals because they prioritize pro-environmental actions.

The next question is the response to eliminating FLW to create a better environment. To create a better environment, ABC MSME commits to eliminate FLW. The restaurant team prepares food containers so that consumers will only take the food they can afford to finish. As the result, that food will not be wasted.

The next question is the impact of the relationship between FLW and quality of life and health. ABC MSME stated that they are very pro-environment to overcome FLW issue. ABC MSME strongly agree with the relationship between FLW reduction and quality of life improvement. FLW also contributes to the health side. The fewer the number of FLW, the less the environment will be polluted from FLW. If the living environment is good, both the quality of life and health will be better.

These findings are consistent with Bronfman et al. (2015). When someone engages in pro-environmental conduct, it is assumed that they are conscious about the effects of their actions have on the environment. Iriyadi et al. (2023) highlighted that individuals may be altered by awareness of consequences, awareness of the repercussions plays a significant role in the development of personal norms, which is the sense of moral duty to actively contribute to the reduction of food waste.

Consumers will answer awareness of consequences in 3 statements. The first is the consumer's view of reducing food waste with the aim of improving the quality of human life, reaching 4.15. The next is how consumers can reduce food waste to move towards a better environment worth 4.4. The last one regarding the direct environmental impact on health due to food waste is 3.9. Consumers agree with the entire awareness of consequences section. Consumers are well aware about the consequences of food waste effectively.

Table 5. Questionnaire Awareness of Consequences

No	Description	4.15
1	I will reduce food waste because it improves everyone's quality of life	4.15
2	I will reduce food waste because it creates a better environment	4.4
3	I feel directly the environmental impact on health due to food waste	3.9

The findings of this research are in line with Park & Ha (2014). Consumers posses knowledge about the potential consequences of being pro-environmental. An example of a pro-environmental action is recycling. In recycling, consumers have positive consequences for the environment. Consequently, consumers become good and strong in being pro-environment. This research is also in line with Mesiranta et al., (2022). On the health side, each individual will be better off if they reduce food waste effectively.

5.3.2 Ascription of Responsibility

Ascription of Responsibility (AR) is a feeling of responsibility for negative consequences if individuals do not act pro-socially or pro-environmentally. De Groot & Steg (2009) are of the views that these personal values influence the development of beliefs related to the environment. In the first question, ABC MSME will look at each person who is responsible for reducing FLW. ABC MSME states that everyone is responsible for reducing FLW. This action is an awareness of ABC MSME in reducing FLW. As a result, all living beings can live happily together with other creatures.

The second statement is what if MSMEs will reduce FLW even if other people do not do it. ABC MSME will continue to reduce FLW, even if people do not do it. They will ignore those who disagree with reducing FLW. They want to do good things in this pro-environment part. They know the consequences of reducing FLW will benefit all humans.

The next question, in the third section, is direct responsibility for the negative impacts of FLW. ABC MSME are responsible for the negative impact of FLW. Chef is the key to a restaurant. They will create food and select ingredients. In the food processing process, waste will be disposed of from the time the food is processed until the food is ready to be served. This cooking process is what makes the FLW process. For these activities, ABC MSME are responsible for the negative impacts of FLW.

The next statement is about the relationship between environmental pollution due to FLW. Environmental pollution is one of the consequences of FLW. ABC MSME are directly responsible for environmental pollution due to FLW. This is because ABC MSME is a restaurant that produces FLW. Therefore, environmental pollution is a responsibility that must be accepted by ABC MSME. This finding is in line with Iriyadi et al. (2023). People prefer to establish personal norms when they are conscious of the negative effects of food waste and feel accountable for those effects as well. Individual accountability for reducing food waste will contribute to a further decline in FLW.

The next party to be discussed is consumers. The answer to the ascription of responsibility from ABC MSME consumers consists of 3 parts, namely the responsibility of ABC MSME consumers to reduce food waste, willingness to reduce food waste, and responsibility for environmental pollution due to food waste. The first part is the consumer's responsibility to reduce food waste to 4.45. The second part is the consumer's willingness to reduce food waste even if other people do not do the same, worth 4.45. The last one regarding consumer responsibility for environmental pollution due to food waste is 4.05. Overall, consumers are responsible for reducing FLW.

Table 6. Questionnaire Ascription of Responsibility

No	**Description**	4.32
1	Everyone has a responsibility to reduce food waste	4.45
2	I am willing to reduce food waste even if others do not do the same	4.45
3	I feel partly responsible for environmental pollution due to my leftover food	4.05

The findings of this study are in line with Wang et al. (2022), who found that assigning blame encourages people to take initiative to cut down on food waste. A stronger sense of personal accountability to minimize food waste after dining out might lead to increased desire to do behaviors that align with moral obligations. When people understand that the food, they squander affects other people and society negatively and really think that this is the case, they develop personal rules to preserve food. They also take responsibility for the results of their activities. According to Iriyadi et al. (2023), giving diners the power to finish the food they order at restaurants can be a crucial first step in reducing food waste.

5.3.3. PERSONAL NORM

The definition of a personal norm is an ethical commitment to engage in a particular action. (Schwartz, 1977). First, ABC MSME were questioned on how they felt about wasting out food. Analysis of personal norms for ABC MSME is that ABC MSME felt very guilty and uncomfortable if they throw away food. Hence, they are preparing food carefully, including when washing food on plates. The belief system comes first because there is shame in throwing away food.

ABC MSME believe they will become good individuals if they reduce FLW. Apart from that, feelings of joy and pride make ABC MSME remain consistent in not throwing waste carelessly. The next question concerns FLW during food processing. ABC MSME are also very disturbed by the large number of FLW, especially in terms of food processing. They will always be careful in processing and portioning food ingredients. Apart from that, they also adhere that wasting food can affect global warming, no one will want to eat it because the food is spoiled/stale, and there are losses incurred because food ingredients are difficult to find and expensive.

The next question concerns obligations in reducing FLW such as in food choices. ABC MSME agree and are obliged to reduce FLW, for example in the case of food selection. When choosing food, they ensure that the food ingredients used are fresh. Besides that, the restaurant also tries to maintain consistent efforts in reducing food waste.

The next question concerns the obligation to reduce food waste. ABC MSME stated that restaurants will continue to strive to reduce FLW. This finding is in line with Iriyadi et al. (2023). Personal norms are formed by a person's awareness of the consequences resulting from carrying out certain behavior and considering themselves responsible for the negative consequences that may occur. Wasting food and breaking norms may make consumers feel embarrassed or guilty, which would be considered as self-sanction. They will be more likely to reduce food waste by championing positive emotions.

The personal norm theme of ABC MSME consumers is divided into 3 parts, namely feelings of guilt in throwing away food, a good personality for not throwing away food, and moral responsibility for finishing the dish after it has been ordered. The first part is how consumer guilt feels when throwing away food because some people cannot get food is 4.7. The second part, how consumers become better individuals because they do not waste food or litter is 4.45. The final part is the moral responsibility to finish the dish once ordered is 4.55. Overall, consumers agree with the personal norm statement.

Table 7. Questionnaire Personal Norms

No	**Description**	4.57
1	I feel guilty when I throw away food because some people could not get food	4.7
2	I feel like I am a better person because I do not throw away food or litter	4.45
3	When I buy food, I morally have to finish it	4.55

Consumers agree with the personal norm statement because consumers feel guilty about throwing away food, being a good person by not throwing away food, and having a moral responsibility to finish the dish after it has been ordered. The results of this investigation concede with Wang et al. (2022) When people become aware of the detrimental effects their food has on society and other people, they develop a personal norm of food conservation. As a result, they act accordingly and accept responsibility for the results. Emotionally unpleasant experiences like regret, humiliation, and guilt are avoided by adhering to personal rules. In their discussion of personal norms in the context of culture, education, and a nurturing environment, Sirieix et al. (2017) urged respondents to avoid wasting food. According to Iriyadi et al. (2023), consumers' aim to limit food waste might be indirectly influenced by their personal norms. Personal norms not only have the power to influence consumer intentions, but they also play a significant mediating function. Responsibility perceptions can tangentially influence customers' intentions to reduce food waste through the formation of personal norms.

5.4 Intention to Reduce Waste

After the analysis of the theory about neutralization techniques and norm activation theory, the intensity factors of ABC MSME and consumers to mitigate food waste implement intention to reduce waste. In this theme, what will be discussed is the intention of ABC MSME and consumers to reduce FLW. The parties who will present intentions to reduce FLW are ABC MSME (internal) and consumers (external). There are several intentions of ABC MSME to reduce FLW. The first thing that will be discussed is the FLW pattern on weekdays and weekends.

The answer from ABC MSME regarding the first question is that the FLW pattern on weekends is higher than on weekdays. These statement results are in line with FLW's bigger weekend transactions. The results of the MFCA calculations showed that the weekend value was 14.05 kg, which was higher than the weekday, which was only 7.10 kg. Next, intention to reduce waste will discuss the intention of ABC MSME to reduce FLW.

MSME's intention to reduce FLW means that ABC MSME will be more thorough in reducing FLW. The restaurant will remain consistent in reducing FLW every day. They will continue to learn and do better to reduce FLW in restaurants. The next question concerns the willingness to save food from food waste. ABC MSME will not store food from food waste. They decided to throw it away. This is because they prioritize cleanliness factors. The restaurant will always provide healthy and fresh food.

The next question concerns plans for disposing of food. The restaurant will continue to maintain healthy and fresh food. They are very careful in managing food ingredients. The restaurant doesn't want to waste food. Because of this attitude, the restaurant does not plan to waste any food. So the restaurant gets better. The findings of this study are in line with Mesiranta et al., (2022). Awareness of reducing the impact of FLW can become a culture and make the environment better.

Next, the party that will be explained is the consumer. The first answer to intention to reduce waste from ABC MSME consumers is how consumers intend to reduce FLW on the dishes they have ordered. The second part is the consumer's plan to dispose the food waste. The first item regarding consumer intention to reduce FLW in their dishes is 4.1. The next statement is about the ability to finish all the food that has been ordered. Furthermore, the consumer's ability to eat all the dishes ordered is 4.65. The last one is regarding the willingness to finish all the dishes that have been ordered, worth 4.6. Overall, consumers agree to reduce FLW.

Table 8. Questionnaire Intention to Reduce Waste

No	Description	4.45
1	I aim to reduce food waste	4.1
2	I will order food that I can afford to eat	4.65
3	I will eat all the food I ordered	4.6

The findings of this research are in line with Iriyadi et al. (2023). Consumer behavioral intentions were significantly influenced by personal norms. The need to consume all of the food that was ordered and to try not to throw away any leftovers is a manifestation of this behavior. The goals of consumers to decrease food waste are operationally reflected in these actions. Actually, consumers' own norms—which are shaped by their feeling of moral obligation—form the basis of this purpose. Consumer goals to decrease food waste are also influenced by their personal norms.

6. CONCLUSION AND RECOMMENDATION

Calculations from MFCA in analyzing FLW had been carried out to achieve eco-efficiency. Sunday's FLW was the highest total FLW reaching 8.2kg. Using Neutralization & Norm Activation theories, this study has shed light on the analysis of food waste management in ABC MSME. There are several important findings highlighted in this study. The analysis of neutralization showcases that ABC MSME and consumers are entirely rejecting neutralization techniques (denial of responsibility, denial of injury, and appeal to higher loyalties). This finding implies that they are fully conscious of its commitment to support food waste management.

The analysis of norm activation also records prominent findings. Both ABC MSME and its consumers agree with the norm activation techniques: personal norms, awareness of consequences, ascription of responsibility, and intention to reduce waste. Personal norms, in particular, are formed through the awareness of consequences (AC) and ascription of responsibility (AR) regarding the negative effects and the consequence of food waste. These personal norms are the trigger that ultimately enables ABC MSME & consumers to mitigate FLW by supporting food waste management. In general, both ABC MSME and consumers are supporting to prevent leftover (food) waste.

This research was limited to only 1 business entity, MSME ABC. The basis for calculating the MFCA was only done in 4 days. Future research should use a larger sample so that the data is more representative. Furthermore, MFCA calculations should be carried out over a longer duration. The total number of consumer respondents should also be larger so that we can see in more detail how consumers manage food waste.

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APPENDICES

APPENDIX 1. LIST OF INTERVIEW QUESTION

No.	Description	Question
1	Denial of responsibility	1. Who is responsible for reducing FLW? 2. What is the role of consumers, the government and your restaurant in reducing FLW?
2	Denial of injury	1. Does FLW not have a significant negative impact on the environment? 2. Does FLW impact poor people? 3. Will the agricultural sector continue to produce food for everyone even if restaurant food is wasted?
3	Appeal to higher loyalties	1. What about customer satisfaction? Do you agree that customers throw food to waste? please explain your reasons? 2. As long as consumers are happy with the restaurant's dishes, is it okay if the food is wasted? Please explain? 3. Is wasting food not a big deal as long as the restaurant is performing well and making a profit? Please explain.
4	Personal norm	1. Do you feel guilty when you throw away food because some people cannot get food? 2. Do you feel like you would be a better person if you reduced FLW and did not litter? 3. Are you bothered by the large number of FLW, especially for food processing? 4. Are you obliged to reduce FLW, for example, in food choices? 5. Do you feel obligated to reduce food waste, regardless of what other people think?
5	Awareness of consequences	1. Would reducing FLW be beneficial for everyone? 2. Would you reduce FLW because it could create a better environment? 3. Does FLW have a direct impact on improving your quality of life and health?
6	Ascription of responsibility	1. Is everyone responsible for reducing FLW? 2. Will you still reduce FLW even if other people do not reduce FLW? 3. Are you directly responsible for the negative impacts of FLW?

No.	Description	Question
		4. Are you partly responsible for environmental pollution caused by FLW?
7	Intention to reduce food waste	1. What is the FLW pattern on weekdays and weekends? Is there more weekend FLW than weekday FLW? Please explain. 2. How do you intend to reduce FLW? What would you do? 3. Are you willing to save food from food waste? 4. Do you plan to throw away some food?

APPENDIX 2. QUESTIONNAIRE

DENIAL OF RESPONSIBILITY						
No	**Description**	**Strongly Agree (5)**	**Agree (4)**	**Undecided (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	It is my responsibility to reduce food waste					
2	It is the government's responsibility to reduce food waste					
3	It is the restaurant's responsibility to reduce food waste					
DENIAL OF INJURY						
No	**Description**	**Strongly Agree (5)**	**Agree (4)**	**Undecided (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	The amount of food waste does not have a significant impact on the environment					
2	Food waste in restaurants does not have a direct impact on poor people					
3	Our farms will continue to produce enough food for everyone even if restaurant food is wasted					
APPEAL TO HIGHER LOYALTIES						
No	**Description**	**Strongly Agree (5)**	**Agree (4)**	**Undecided (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	As long as I pay, I can do whatever I want with the food, even if it is waste					
2	As long as I am happy with a restaurant meal, it is okay if the food goes to waste					
PERSONAL NORM						
No	**Description**	**Strongly Agree (5)**	**Agree (4)**	**Undecided (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	I feel guilty when I throw away food because some people could not get food					
2	I feel like I am a better person because I do not throw away food or litter					
3	When I buy food, I morally have to finish it					
AWARENESS OF CONSEQUENCES						
No	**Description**	**Strongly Agree (5)**	**Agree (4)**	**Undecided (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	I will reduce food waste because it improves everyone's quality of life					
2	I will reduce food waste because it creates a better environment					

3	I feel directly the environmental impact on health due to food waste					
ASCRIPTION OF RESPONSIBILITY						
No	**Description**	**Strongly Agree (5)**	**Agree (4)**	**Undecided (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	Everyone has a responsibility to reduce food waste					
2	I am willing to reduce food waste even if others do not do the same					
3	I feel partly responsible for environmental pollution due to my leftover food					
INTENTION TO REDUCE FOOD WASTE						
No	**Description**	**Strongly Agree (5)**	**Agree (4)**	**Undecided (3)**	**Disagree (2)**	**Strongly Disagree (1)**
1	I aim to reduce food waste					
2	I will order food that I can afford to eat					
3	I will eat all the food I ordered					