



Food Bank Operation and Perceptions of Recipients on Food Surplus Redistribution in North and South Jakarta

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Abstract: Food waste is one of the highest sources of waste in Indonesia. This condition is contrary to food insecurity in Indonesia, which ranks third highest in Southeast Asia. Food waste generation reduction can be made by seeking management food surplus redistribution. Currently, the redistribution of food surplus began to be carried out to reduce food waste and food insecurity. This study aimed to determine the redistribution process of food surplus in North and South Jakarta from being collected to being sent to the recipient and the perceptions and acceptance attitudes of recipients of food surplus towards the redistribution of food they receive. The method used is using a Likert Scale and interviews. Based on the research results, there are 5 stages in surplus food management: collection and preparation, storage and inspection, delivery and receipt, documentation, and re-checking. Food surplus recipients have a good perception and acceptance of the redistribution of food surplus. However, some recipients still need to gain more knowledge about the expiration date and best-before, which affects the perception and management of food donations received. The recommended efforts include maintaining positive perceptions and attitudes of the recipient and people by developing education about food and waste management from food bank programs with support by the government institution which had same agenda and already cooperated with food bank.

Keywords: Food bank; Food insecurity; Food surplus; Food waste

Introduction

Indonesia is the second highest FLW in the world, namely 300 kg per capita per year (Economist Intelligence Unit, 2016). Meanwhile, a study conducted by BAPPENAS estimates that the amount of FLW production in Indonesia in 2000–2019 ranged from 115–184 kg/capita/year (Bappenas, 2021). These two references show differences in the amount of FLW production in Indonesia, but both show that the amount of FLW is still high. Food waste can be grouped into three distinct sections: avoidable waste, which is food that is edible at some point in time but becomes inedible by the time it reaches disposal (Ishangulyyev et al., 2019). The sectors that generate the most food waste are households (47%), restaurants or food services (37%), and the institutional sector, such as hospitals, hotels, and

schools (11%) (Chen et al., 2020; Wu et al., 2021). The restaurant and food service sectors often produce food that is ultimately thrown away because it does not sell. Food that is still fit for consumption and can be reused but, due to aesthetic criteria or a lack of demand, is rejected or considered unusable by producers and retailers and is eventually thrown away as food surplus (Facchini et al., 2017).

The difference between food surplus and food waste is subtle because excess food can quickly become waste. Food surplus can appear at various stages of the food production process. It can arise for several reasons, such as excess food products that are nearing their expiration date, products with damaged packaging, materials and finished products left outside customer specifications, and food products left over from breakfast, lunch, or dinner services (Teigiserova et al.,

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2020; Resource Efficient Scotland, 2022). Food surplus sources can come from various sources, such as farms, producers, supermarkets, local grocery stores, bakeries, and restaurants. Part of excess food and food loss becomes food waste because it cannot be eaten naturally or is not consumed. Based on data from the Ministry of Environment in 2021, the handling of waste is 28%, and the reduction of waste is 8% of the waste handling target of 70% and reduction of 30% in 2025 (KLHK, 2021). This condition is still far from the target of the Sustainable Development Goals (SDGs) at target 12.3, which aims to reduce food loss at the production stage and along the supply chain, including post-harvest losses, by halving per capita food waste at the distribution and consumption stages by 2030.

The high amount of FLW is inversely proportional to the Indonesia's hunger rate. According to the Global Hunger Index (GHI), Indonesia placed 77th out of 121 countries and the third highest in Southeast Asia in 2021. Indonesia gets an index score of 17.9 points or is included in the moderate level, while the index limit shows low hunger is under 9.9 points (von Grebmer et al., 2022). Hunger and food poverty are often associated with food insecurity. Food insecurity occurs when people lack sufficient access to or adequate quality food to meet their basic needs (Warr, 2014). This condition can be a temporary situation, or it can last a long time. The causes of food insecurity are diverse, including poverty, unemployment, low income, chronic health conditions, or lack of access to health services. However, several initiatives should be considered to address food insecurity while also diverting food waste from landfills. The food sector redistributes food surplus to any food bank or charitable group to accomplish sustainable food waste management (Garcia-Garcia et al., 2015).

Food redistribution, also known as food recovery or rescue, is essential for commercial food businesses to address food waste as part of more extensive food supply difficulties. Collecting surplus edible food and donating it to non-profit organizations that feed food-insecure people redirects food from landfill disposal (Reynolds, 2015; Baglioni et al., 2017; Hamik et al., 2023). Food bank typically distributes food to prevent hunger in food insecure populations. Food bank is used collectively which includes food places, food pantries and other community-based food distribution places (Erhabor & Erhabor, 2016). Food bank activities include receiving, storing, packaging and distributing donated food. The goal of a food bank is to give value to food that can still be consumed and provide education about food management so that it does not generate waste (Dumont et al., 2021). In its redistribution activities, food banks rely heavily on donations and volunteers to maintain the quantity and quality of food (Lee et al., 2019; Rombach

et al., 2018). Food banks have been the first to respond to food insecurity expressed by charitable organizations and most food banks tend to provide food in the form of packaged gifts (Hardcastle & Caraher, 2021; Jin et al., 2022).

Food can be distributed directly or to front line social welfare agencies (Middleton et al., 2018). Food banks have more presence in developed countries and have been around for a long time. Food bank recipients are stigmatized and embarrassed when they receive food donations (Purdam & Garratt, 2016; Rombach et al., 2018). However, in Indonesia, waste management at the grassroots level through foodbanks or communities has only been formed in the last few years. Research on redistributing food surplus is also still scant in Indonesia, so it must be explored more. Based on the background that has been presented, this research aims to identify the food surplus redistribution process through food bank and the impact of perception and acceptance of food bank recipients.

Method

This research took place in 2023, which is located in East and North Jakarta. Data was collected for about 2 months in April–May 2023. Sampling data was collected using a purposive sampling method. The respondent population was taken from two food banks sampled in this study: Food bank of Indonesia and Food Cycle Indonesia. A questionnaire was developed in order to gather the information with total population as a sample is 100 people. The Leme show formula was applied to determine the sample size in this research because the population size is unclear and fluctuates.

$$n = \frac{z^2 p (1 - p)}{d^2} \quad (1)$$

n = Amount of sample

z = Standard Value = 1.96

p = Maximum estimation = 50% = 0.5

d = *alpha* (0.10) or *sampling error* = 10%

Observations and interviews were conducted with food bank and recipients on food surplus management activities regarding their knowledge and coordination of distribution activities. Perception and acceptance of food bank recipients' analysis was conducted by adding the perceived value of each statement and assessed using a Likert Scale. The accumulative results will be divided based on criteria, particularly good or not good criteria (Table 1).

Table 1. Perception and Acceptance Attitude Criteria

Total Value	Criteria
250-325	Not Good
>325	Good

Result and Discussion

Food Surplus Management through Food Bank

Food bank standard operating procedures adopted by all countries vary depending on factors such as the organization's location, size, resources, and local laws and regulations governing food safety and distribution. Generally, food banks have standard operating procedures for workers or volunteers, buildings and facilities, cleanliness, equipment and processes, and controls. Based on the observations, food surplus management consists of five stages: food collection and preparation, storage, delivery, receipt, documentation, and re-checking.

Collection and Preparation

This stage starts with the donor contacting food bank when they want to donate food via telephone or the WhatsApp application. Foodbank and donors coordinate to find out the donation details, such as the amount and type of food donated when it was handed over or sent to the foodbank, method of delivery, reason donated, expiration time, and condition of packaging if repacking is required. Foodbank prepared to receive food donations after knowing the donation details and having them recorded. Food bank can also collect food at drop-off points provided at food and beverage retailers (Goodman-Smith et al., 2020).

Things that need to be considered during the preparation stage for receiving food from donors are the availability of storage space, storage period, target recipients and time, and the number of managers or volunteers needed when repacking. Foodbank conducts food safety-related training for volunteers prior to repackaging. Donors send food to be donated to food bank by sending it directly food bank, picking up the food through a logistics service or a food bank car.

Storage

Food surplus that arrives at food bank is sorted, and samples are taken to check food safety and quality conditions. Food is weighed first by calculating the net weight if the donor does not write down the net weight in the receipt note to food bank before safety checks with organoleptic tests and seeing the visual condition of the food. Food bank usually receives canned or packaged foods, bread, fruit, and vegetables. Food sorting aims to determine the storage period based on the food category. Ideally, perishable food only stops or transits at the foodbank and is immediately distributed on the same

day or the next. The food group stores food after it has been sorted and tested. Non-perishable foods, such as bread and canned foods, are stored on prepared shelves, avoid direct contact with the floor, and are exposed to sunlight. All foods are recorded and updated regularly to facilitate checking. If food must be repackaged, foodbank will repack it by taking into account the size of the package, the type of food, the size of the food, and the availability of the package.

In storing sorted food, food bank also usually differentiates food according to the program or type of distribution activity. If the food donated has a barcode on the packaging, it must be crossed so it is not misused. Food that is spoiled when it arrives at food bank is separated specifically to be reprocessed into animal feed, and the packaging is burned.

Delivering and Receiving

Perishable foods, such as vegetables and fruits, are usually donated the same day or the next morning to prevent food degradation. Food delivery to recipients or customers is carried out using foodbank cars or volunteers. Volunteers take food at food bank warehouses or the volunteer's private home and donate it according to the target customer or area. Prior to delivery, food bank coordinates with donors and recipients. Food moved to the car must not contact the floor and must be lifted using tools such as a trolley or pallet jack to ensure food safety. The food to be donated is recorded as evidence and archived for the donor. Prior to donation, donors can submit donated food to certain types of recipients.

Documentation and Re-Checking

From the time the food is received until it is redistributed, food bank will document and check the food to confirm the amount, type, and condition of the donated food. Food bank is also required to report distribution activities to donors.

Perception and Acceptance of Food Surplus Redistribution by Recipients

The results found that as many as 90% of respondents stated that their perception of the redistribution of food surplus was good (Table 2). As many as 10% stated that the redistribution still needed improvement. According to respondents, the redistribution of food surplus has been good. The recipients' positive impact surpassed the negative impact. People feel safe when consuming food because of its safety and quality. The recipients feel that the type of food donation is what is needed and can help reduce food costs (De Menna et al., 2018). Food surplus redistribution positively impacts recipient satisfaction with the safety of the food received, reducing spending

to buy basic needs and the possibility of spending money on other goods and services (Vittuari et al., 2017). The recipients also feel that this activity can help reduce food waste generation.

Table 2. Recipients' Perceptions of Food Surplus Redistribution

Statement	Score	Criteria
Feel helped from an economic point of view with the distribution of food surplus.	337	Good
Due to the existence of excess food distribution, I want to play a role in reducing food waste.	339	Good
I hope the distribution of excess food on me is sustainable.	336	Good
The amount of food given is in accordance with what is needed.	350	Good
The type of food given according to what is needed.	352	Good
The quality of the food provided is good.	339	Good
The food provided has nutrition and nutrition that is good for health.	334	Good
No negative stigma when receiving food surplus.	251	Not Good
Know the difference between expiration dates and best-before dates.	343	Good
Feel safe when eating the food.	362	Good

Respondents who gave an unfavorable perception felt that there was a negative stigma and ignorance regarding the difference between expiration and whether it had been used well before. Knowledge about the difference between expiry dates and best-before dates is caused by the lack of education and awareness given to the public. Recipients receiving donations also receive unfavorable views from others because they feel discriminated against for accepting donations. This stigma is contrary to the stigma received by foodbank recipients in developed countries, where recipients feel guilty and are frequently blamed for food insecurity. They are also accused of being lazy, uneducated, or careless about their health (Pineau et al., 2021; Rizvi et al., 2021).

According to the research results, 89% of respondents had no objections to food surplus redistribution. As many as 11% reported having it (Table 3). The recipients of the donations have positively accepted the redistribution of food surplus. The recipient is pleased with the donation and grateful for it. Furthermore, recipients manage food efficiently by buying food in the appropriate portion. Recipients often want to volunteer, assist in redistributing leftover food, and attend counseling on healthy eating and reducing food waste. It demonstrates that distributing food surplus can boost food and waste management

awareness. Respondents with a less welcoming attitude are more likely to be stigmatized by their surroundings and the habit of not re-cooking meals. The visual condition of food no longer good and appealing causes consumers to refrain from reprocessing existing food and buying new food. It causes food to go to waste. People who do not receive food donation, perceive discrimination and causes negative stigma towards the recipients. However, the recipients felt more positive impact than the negative.

Table 3. Recipients' Acceptance Attitude of Food Surplus Redistribution

Statement	Score	Criteria
I shop for food as needed.	357	Good
I re-cook the leftover food before eating.	306	Not Good
I take food according to the portion I want to eat.	351	Good
I feel happy and grateful for the distribution of surplus food.	354	Good
There is no shame in accepting food aid.	338	Good
I don't get a bad stigma as a recipient of food assistance.	333	Good
I feel happy and grateful for the distribution of surplus food.	348	Good
I am motivated to volunteer in the surplus food community.	351	Good
I take part in counselling or education regarding efforts to manage food waste.	335	Good

The public has yet to learn the difference between the expired date and the best so conducting education can increase awareness about food waste and food insecurity (Mutisya et al., 2016; Grant & Rossi, 2022). Food banks can educate recipients and people about food and waste management, expired dates, and the best-before, supported by government institution which already had the same agenda and cooperated with them. In addition, people who feel discriminated against because they do not receive surplus food donations, will understand and accept the purpose of redistributing surplus food. Acceptance attitude will facilitate redistribution efforts without obstacles in the social aspect.

Conclusion

From rescue to distribution, food surplus management consists of stages: collection and preparation, storage and inspection, delivery and receipt, documentation, and re-checking. However, some recipients still feel a negative stigma surrounding them due of social jealousy. The recipients also need to understand the difference between expiration dates and best-before dates, thus affecting the management of recipients when receiving food donations. To overcome

this, food banks can conduct education on food waste and wise food management through programs owned by them and with support from the government.

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Author Contributions

Khairunisa conceptualized research idea, methodology and data analysis. Sri Setiawati and Saptarining Wulan give critical feedback and substantial review.

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Conflicts of Interest

The authors declare no conflicts of interest.

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