

How Can We Control Food Waste? Insight from Campus Foodservice Managers

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Introduction

In the United States, more than 50 million tons of food waste generated from foodservice operations and restaurants go to landfills every year (ReFED, 2018). The astounding amount of food waste not only generates tremendous environmental ramifications, but also causes societal and economic issues, such as increased food costs, food shortage, and world hunger. To address food waste problems, many foodservice operations implement initiatives to reduce food waste (National Restaurant Association, n.d.). Major food supply and management companies, such as Aramark and Sysco, have committed to divert food waste from landfills as a sustainability goal and have addressed food waste reduction as part of corporate social responsibility (U.S. Department of Agriculture, n.d.).

The definition of food waste and the methods of quantifying food waste, however, have not been universally accepted by researchers and policy makers (Thyberg & Tonjes, 2016). The Food and Agriculture Organization (FAO) defines that food waste is “food appropriate for human consumption being discarded, whether or not after it is kept beyond its expiry date or left to spoil” (FAO, 2013). The U.S. Department of Agriculture (USDA) states that food waste is any discarded food at any point in the supply chain to human consumption (ReFED, 2016). Recent food waste research has focused on the notion of food that is edible at the time of disposal or is spoiled due to operational inefficiency or irresponsible behavior (Filimonau & Coteau, 2019). Specifically, 40% percent of food waste is generated from restaurants and foodservice operations (ReFED, 2016).

In foodservice operations, the term of food waste generally refers to wasted food from storage, preparation, serving, and plate waste (uneaten food left by consumers) (Engström & Carlsson-Kanyama, 2004). Similarly, the Food Waste Reduction Alliance specifies that food waste from restaurants can be categorized in two parts: pre-consumer food waste refers to kitchen waste, such as scraps caused by food processing and preparation, and post-consumer food waste, which is produced by consumers (Food Waste Reduction Alliance, n.d.). In order to battle food waste challenges, many foodservice operations have taken action to measure and track the amount of food waste, design better food production planning to control overproduction,

and change portion sizes or service styles to prevent unnecessary food waste (ReFED, 2016; Sakaguchi, Pak, & Potts, 2018).

Background of this Study

Most on-campus dining facilities serving a buffet style operation, which features a variety of food items at a flat-rate price and promotes an all-you-can-eat policy (Costello, Birisci, & McGarvey, 2016). Considering the number of students, faculty, and staff consuming on-campus many times per day, on-campus foodservice operations account for one of the largest sources of food waste (Burton, Serrano, Cox, Budowle, & Nusbaum, 2016). This case study was conducted in a southeastern university with a large student population (about 40,000 students). There were three main dining halls with buffet style dining and several small food courts on campus. Each dining hall hosted about 18,000 meals a week. Approximately 9,000 meal plan holders dined at the on-campus dining facilities every semester.

The dining facilities were managed by a national, leading foodservice company. Some policies regarding food waste reduction have been implemented for several years, such as a “trayless” policy; customers do not have a tray to carry all dishes at one time. “Cook-to-Order” stations were introduced to ensure that food items were cooked on-demand, customized to diners’ requests, and maintained the freshness of dishes. Recently, the dining facilities have implemented a new food tracking system, LeanPath, to document the amount of food production and consumption on-site. This study interviewed the on-campus foodservice managers who directed both front-line and kitchen employees. In addition, the dining facilities handled all food items provided in the cafeterias and the catering orders.

Interviews with Foodservice Managers: Current challenges and practices

While interviewing four foodservice managers from the dining facilities, the managers indicated several practices regarding food planning, controlling, and production. The managers also mentioned that several challenges of reducing the amount of food waste and how new technology, a food waste tracking system, has helped them better manage food production in the facilities. The details are stated as the following.

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Menu planning

The managers called the menu planning a “menu mapping” session. During the session, managers looked at the recipes that were generated from the corporate computer system, discussed the menu options for each dining facility, and changed the food items to fit local customers’ preferences. For instance, the managers knew that a falafel station was not a popular food option in the southeastern area from where most customers came. Therefore, they changed the falafel station as the original option in the system to a shrimp-and-grits station. In addition, the managers looked at the historical data to see how customers’ demand has changed over time and how weather and on-campus events impact customer traffic to the dining halls. The menu mix, what food items are offered during the same time, indeed influences the total amount of food consumption. A manager referred to the menu mix issue as “an accessibility factor”:

“So, we’ve done a lot of math on acceptability...lets’ say roast beef running against a chicken tender as another item on the menu, chicken tender beats it [roast beef]. Roast beef against, you know, an acai bowl, or something healthier? Roast beef will win. So, we do our homework on understating the accessibility factor as a way of limiting waste.”

Evaluating the accessibility of food items helps the managers forecast customers’ demand, which in turn, determines the production amount for each menu item. Additionally, the managers looked at what they would offer for the day and the next day to maximize the usage of food items. For instance, a manager who was in charge of both a dining hall service and catering service mentioned how she estimated the amount of food items:

“We look at what we have for the next afternoon, or the next day, or events, and if it comes down to lots of vegetables...we will get the right amount [of vegetables] ready.”

“And then if it’s something that we have left, says chickens and bacon, we know we have sandwiches for the next day, there may be like a grilled chicken sandwich, or a turkey club sandwich, so these [food items] can be utilized for that [sandwiches].”

Controlling food production and monitoring the process

The managers utilized several procedures to control food waste during the production process. The first, perhaps the most important procedure, is using production sheets. The purposes of production sheets are to plan, order, and control the quantity of food based upon the recipes. The managers utilize production sheets to communicate with kitchen staff: how much food ingredients they should buy, receive, store, cook, and serve at the facilities:

“Your production sheets tell you everything you need to order... you’ve got to make sure it’s matching up to what you’re buying....And if the production sheet says that you only used 600 [pieces of chicken] and you brought in 800, then you would decrease it. Your waste is controlled

by your production sheets.”

“In our production process, we spend an awful lot of time talking about the flow of a station. What’s around it, and then how do we execute it, so we don’t have tons of waste.”

Monitoring the food production and consumption during the day was another important tactic to prevent food waste. The managers mentioned that they watched the dining hall traffic to adjust the production quantity. Sometimes their prediction went wrong—some food items ran out fast but others went slow or were not consumed by customers. Thus, the kitchen staff was informed to “cook less but more often”—a batch of food first, then decide the time to cook the second or third batch later based upon the demand. The managers also watched what was leftover when people returned their plates to the dish station. For example, the managers noticed that the food portion size was too big for people to finish, thus she suggested the kitchen staff make smaller plates:

“I’ve seen a lot of people walking into the dish return with a lot of half bagel sandwiches, So, I think, maybe we should cut the bagel sandwich in half. Take a half of a sandwich. You can have as many half sandwich as you want, but at least you start off at a half, or a smaller plate.”

Using technology to reduce food waste

The managers and their staff used the LeanPath system to record the amount of food production and consumption. The kitchen employees recorded the food items during the food production process to measure the food waste caused by trimming and preparation. Also, the employees measure the food waste amount after the serving time—the post-consumer phase, to record what food items were left, document the weight for each item, and take a picture of the leftovers. All the information is in the LeanPath system and a manual waste log. In this way, the kitchen managers knew the exact amount of food waste generated every day. The managers also discussed with the staff the causes of causing food waste from food preparation and consumption. Since each employee had to log in the system in order to complete the documentation, they were held accountable for tracking and reporting the amount of food waste. The managers mentioned that they saw kitchen employees’ behavior change; they were more aware of how much food waste was generated every day in the dining facility. By documenting the waste log and photographs of uneaten food, the kitchen employees started talking about how to reduce food waste from trimming, recipe modification, and portion control. One manager mentioned that it is important to get employees involved and encourage them in the process of reducing food waste:

“Getting everyone (the employees) involved...When you see how much you’ve reduced and you look at our costs change every year. Every year we are doing much better than the prior year...we watch our wastes like a hawk. We plan it, we proportion it properly. All these things add up

Figure 1

Production sheets

HOURLY BATCH DROP SHEET

SERVINGS PER BATCH AMOUNT

LOCATION: _____
ASSOCIATE: _____

to a financial result, they (the employees) also line up to a better customer experience.”

Challenges

Although implementing the LeanPath system has helped the managers and the kitchen employees control and monitor food waste in the dining facility, there were some inevitable challenges. First, the managers mentioned that employee training was critical. Since the dining facility recently launched the tracking system, some employees’ resistance and frustration of using LeanPath were expected. The managers needed to train the employees on the process of documenting food production and to educate them how to use the waste log and the photography function. In addition, there were full-time and part-time employees working at the campus dining facilities. Due to the employees’ turnover during the semesters and summer time, the managers had to consistently train new employees about the process. In addition to coaching the employees about the tracking system, the managers also mentioned that teaching the kitchen staff to follow a recipe and efficient food trimming procedure, control food portion, and understand how to repurpose leftovers was critical. For the front-line employees, controlling plate portion when serving customers, keeping food items at the appropriate temperature, and monitoring the consumption pace all needed to be addressed during employee training.

The second challenges was from catering. The catering manager stated that sometimes it was difficult to control food serving time and food temperature while providing off-premise catering. The employees may not know if the off-premise site has a cooler space, refrigerator, or warmer, which can potentially cause food spoilage. Because of food safety concerns, the employees had to throw the food

items away. Additionally, catering clients sometimes overestimated the quantity of food for their events, which in result, generated a large amount of food waste after the events. The catering manager mentioned that discussing menu options and the food quantity with clients was essential in the planning and ordering phases. Understanding event attendees’ demographic profile, such as gender, age, and the types of group (e.g., football players, teachers, or business meetings), as well as serving styles, can help the catering manager suggest appropriate menu items and plate portions. However, the dilemma existed because event planners did not always take the suggestions from the catering manager. Instead, they preferred to have extra food rather than worry about not having enough for attendees at the event.

Finally, the managers all agreed that the most difficult part of controlling food waste was plate waste caused by customers. In the buffet-style dining facility, although the front-line employees would control the portion while serving food, some customers still took more than they could eat:

“We can’t control their eyes when they eat with their eyes and not with their stomach. And they just pile it up, and get so much and it’s coming to dish return. That part we can’t control!”

Since customers pay one price for an all-you-can-eat buffet, the managers mentioned that they cannot ask customers to take less food, which may “run the risk of not making your customers happy.” Customers may want to try different items on the buffet line and eventually take too much food. However, the managers indicated that they have been trying to educate customers by informing them of the appropriate portion size, ingredients of dishes, and asking consumers to come back to get more if they like the food. One manager said:

Figure 2

Food waste tracking system



"Sometimes I see students just get an apple, they'll bite it and then throw it away... maybe they need to be aware of what they are wasting. I think we should start educating them, like, the reason why we don't have the trays at the dining hall, why we control portion, so they can be more conscious when they are dining."

Conclusion

The campus foodservice managers provided insight regarding the practices in food waste reduction, such as a better menu planning, food production control, and using a tracking system to measure food waste amount. Since these practices were still very new to the facilities, the managers and the employees were learning the process together. However, the awareness of food waste has been raised among the foodservice employees. Ultimately, the company's policies, managerial issues, employees' attitudes regarding food waste reduction have to be considered in the organization.