

case study

A Beautiful Misunderstanding – 7c Kitchen

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Introduction

Food loss and food waste occurs throughout the entire food supply chain and it is seen as a serious worldwide issue. Information about food loss and food waste globally is provided and specific details about the food waste issue in Taiwan is presented.

In order to deal with food waste problems, several solutions have been designed and developed. This case study presents an organization “7C Kitchen” that helps improve the food waste situation by utilizing produce that would normally be discarded by the market because of cosmetic defects. Inglorious fruits and vegetables (ugly F&V) are collected from a local market and prepared into simple meals and ready-to-eat packages for sale to consumers by 7C Kitchen. Detailed information about issues 7C Kitchen encountered when dealing with ugly F&V is provided. Finally, the case will end with some of the dilemmas facing 7C Kitchen. Several questions are provided that identify issues and operational difficulties.

Food Loss and Waste

The Situation Worldwide

According to United Nations statistics, approximately 30% of the food produced in the world every year is spoiled or lost before human consumption. This is equivalent to 1.3 billion tons of food, US\$ 1 trillion in economic costs, US\$ 700 billion in environmental costs, and US\$ 900 billion in social costs (Food and Agriculture Organization of the United Nations, 2018a). Among all food losses and waste, fruits and vegetables, plus roots and tubers have the highest wastage rates, both are 45% per year compared to 35% for fish and seafood, 30% for cereals, and 20% for oil seeds, meat and dairy (Food and Agriculture Organization of the United Nations, 2018b). Over 7% of the world’s greenhouse gas emissions (GHGs) is caused by food losses and waste, which becomes a key challenge in tackling global warming and climate change (Food and Agriculture Organization of the United Nations, 2018c). Therefore, among the 17 sustainable development goals of the UN, Goal 12 is to ensure sustainable consumption and production patterns.

When people think of food waste, they often associate it with kitchen waste. There are, however, tremendous food losses in the pro-

duction, post harvesting (handling and storage), and processing and packaging stages of the food supply chain, as well as in the consuming end, which consists of the distribution stage and the consumer end. Around 40% of losses occur at post-harvest and processing stages in developing countries while over 40% of losses happen at retail and consumer stages in industrialized countries (Food and Agriculture Organization of the United Nations, 2018b). At retail level, large amounts of food are wasted just because its cosmetic appearance doesn’t meet quality standards set for retail sales.

In Taiwan, according to statistics from 2013, the food waste at the “consumer end” is as high as 1.9 million tons, which accounts for 50% of the total loss, and the rest is shared by agricultural production, storage and transportation, and distribution (Lee, 2013). At the consuming end, fishery products, fruits, and vegetables account for most of the discarded food because they did not meet standards. Discarded crop production, which may be infected by spoilage bacteria after harvest or fall below processing standards, accounts for 510,000 tons in fishery products, 420,000 tons in fruits, and 400,000 tons in vegetables (Lee, 2013). At the production end, vegetables, fruits, and fishery products have the top three food losses.

The Situation in Taiwan

“Eat up your rice, or you’ll marry one with a pock face.” This Taiwanese proverb vividly depicts how the older generations cherish scarce resources. However, judging from current results, Taiwanese do not follow the old wisdom very well. Wasting food also means the waste of various factor inputs in the production process, such as land, water, energy, and fertilizer. Because Taiwan’s crops are sugary and high in water content, they are prone to perishability when exposed to hot, humid weather (Guo, 2017). Therefore, the issue of food loss and waste in Taiwan actually begins from the point of production. This systemic disadvantage has made Taiwan one of the countries with high food loss and waste.

In Taiwan, the Homemakers Union Consumers Co-op (2016) mentioned that to ensure the fresh produce market is filled only with high quality products based on appearance and freshness, operators in distribution channels tend to be very selective on the final produce displayed. Due to the short shelf life of fresh produce, a strict screening of defective produce makes fruits, vegetables, and meat become surplus supply very easily. To reduce waste of this surplus food, there are many efforts already underway in Taiwan. For example, the Happy

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Food Bank received three tons of surplus meat from World Universiade and distributed it for use by several social welfare groups. In addition, “foodsharing refrigerators,” open to those in need, have been established to store food that was going to be discarded by supermarkets and bakeries. These refrigerators often give away 50 kg of bread a day (Happy Food Bank, 2018). Other measures, such as the establishment of various kinds of food conservation diners, have also been gradually reducing food waste. Reducing waste at source is ascendant in Taiwan inspired by values like those of Selina Juul, founder of Stop Spild Af Mad, a Danish organization for reducing food waste. “Reducing food waste is not simply reducing the waste in material, but a respect for food, farmers, animals, labor, and resources.”

A press release issued by the Environmental Protection Administration (EPA) of Taiwan Executive Yuan on September 5, 2017 reported that 177 businesses, with a total of 110,000 sales outlets, were surveyed. Those businesses reported 36,000 tons of food, worth about US\$125 million in value, were discarded due to its inglorious appearance or because it past the expiration date. These figures are quite mind-boggling.

The Case: 7C Kitchen—A Surplus Food Diner

Background to 7C Kitchen

7C Kitchen in Central Taiwan is committed to reducing the amount of surplus food being wasted. 7C Kitchen was founded in April 2016 near the Xiangshang Market in Taichung with a commitment to reduce the waste of nutritious food that suffered from cosmetic defects. The founder, Chi-Xi (pronounced like “7C” in Mandarin Chinese) Young purchased ugly F&V from vendors every morning and made them into curry meals and ready-cooked packages for sale in her store. At dinner time, members of the community were invited to share in any surplus curry from lunch hours and pay at their discretion. As a step toward a short-term goal of becoming a food transfer shop, any remaining ugly F&V were passed on to Zenan Homeless Social Welfare Foundation, the only private (non-religious) organization nationwide that serves the homeless people. Every day, after vendors closed their businesses at 2pm, volunteers approached them to collect any unsold ugly F&V. The neighborhood was then invited to come to “save the earth with their belly”, and share in the food through free pricing (pay what you want); meal bartering with ingredients, food, or labor; and work for meals, etc.

7C Kitchen started out selling curry cuisine. It was really a misunderstanding that turned it into a surplus food diner. It all began with 7C’s reluctance to throw unsold curry away after all that hard work in the kitchen. Chi-Xi posted a message on her Facebook page and called for people to come take care of the curry by “surplus sharing; free pricing” and “do a good thing for the earth with your belly.” To her surprise, the message went viral and was shared over 300 times in one night. People mistakenly thought that Taiwan finally had its first surplus food diner. Chi-Xi did not rush to clarify the misunderstanding; instead, she

“pushed the boat along the current” and devoted herself to creating a true surplus food diner.

Collecting Ingredients from Markets in the Neighborhoods

First, Chi-Xi Yang went to the market to observe how the food vendors screened their produce, which ones were eliminated and how much they discarded. After the market closed business for the day, Chi-Xi analyzed the discarded surplus and even rummaged the garbage. For 2 or 3 days, she checked the market and learned there were many reasons for the wastage. For example, there are usually no cooling facilities in traditional markets, so fresh produce often turned into wastage in one day. Also, to reduce cost and maintain the fresh appearance of their produce, vendors tended to stock in quantity. Once their stock lost its luster, was slightly old, or even suffered from minor bruises, it would be discarded without a second thought. This phenomenon was particularly prevalent with organic farm produce because its customer base demands higher quality. Accordingly, Chi-Xi first approached a vendor who handled organic F&V and received an enthusiastic response. The vendor, Ms. Lin, was very happy the request was made because the only alternative to 7C Kitchen was for the unsold produce to be wasted in the garbage dump.

After collecting market surplus, volunteers weigh, photograph, and upload them to a Web site so that viewers can see what kinds of seasonal F&V are most often discarded. The information provided online can sometimes mitigate stereotyping of ugly F&V that causes loss and waste. In this way, 7C Kitchen provides people options on how to be food wise in their next shopping. In addition to recording and uploading information, the volunteers also make this surplus produce available free of charge for people in need.

7C Kitchen’s Operations

7C Kitchen positions itself a community diner. The main source of surplus ingredients is the village’s traditional market. The business pays special attention to the needs of particular population segments. Most residents in the community usually cook for their family; thus, the diner focuses on the elderly and families that do not cook. 7C Kitchen reserves some seats for the elderly and encourages those who are mobile to get out of the house and join their neighbors, instead of being housebound. 7C Kitchen salvaged around 60 kg of ugly F&V from Xiangshang Market every day in 2017. The diner is nearly full every night. The meal is served at 18:30 sharp. Customers do their own dishes and pay at their discretion. There is a reference chart for suggested donations at the pay box: (US\$)0.03-1.64 is to support the rent; 1.65-2.63 is to support our operation; 2.64-3.94 is to pay for the kitchen staff salary; 3.95-5.58 is for the service staff salary; 6.57 and above is to encourage us.

As the concept of “Sharing Surplus Food” spread, vendors expressed their support for finding a use for unsalable F&V. The village

director and villagers' participation made it one of the features of community gentrification. Many guests take the initiative to bring food to share and many food service operators, farms, supermarkets also donate fresh ingredients, cooked food, snacks, etc. 7C Kitchen shares these generous donations with diners and even allows them to pack and take home any leftovers. Payment for these leftovers takes several forms. One is "cash donation"; however, because the pay box is not transparent, the diners pay what they want with their privacy respected. Another is to "work for food"; e.g., help clean the raw ingredients, dishwashing, cleaning, etc. The other is "meal bartering with food": bring one dish to exchange for a meal. However, the surplus food operation alone is not enough to support the business. 7C Kitchen also prepares lunch kits for office workers, US\$32.83 for fifteen meals. It also uses regular commercial ingredients to prepare five different curry food packages for sale, e.g., Thai Green Curry Chicken, South Indian Banana Curry, Lebanese Cold Curry, etc.

The usage of ugly F&V is well accepted among people between 20 and 40 years of age. People over 40, however, tend to be skeptical. "Why take the discarded ingredients?" Chi-Xi always explains patiently: "We cook with the freshest ingredients. They are discarded simply because they are unsold and ugly." Sometimes she would return with questions like: "Would parents discard their children simply because they are ugly?"

Future Plan

7C Kitchen plans to publish a "Seasonal Off-Grade Produce Report". Young said that 30% of F&V are wasted at the place of production, which means nearly one-third of land productivity in Taiwan has been wasted. This is a two-year project (2018-19). 7C Kitchen plans to prepare ready-to-eat food packages based on seasonal ugly F&V and pre-sell them online. They will order the ugly F&V from the farmers at cost instead of asking them to provide free of charge. It is Chi-Xi's vision to develop her concept into "one market, one diner," which means a similar operation in every village to use up local surplus.

Dilemmas Facing 7C Kitchen

According to the information shared on 7C Kitchen's Web site, the business of utilizing ugly F&V grew significantly from 2016 to 2017. The

volume of ugly F&V salvaged by 7C Kitchen increased from 2,000 kg in 2016 to 16,800 kg in 2017. The "Sharing Surplus Food" dinners increased by 8,000 participants and meal delivery to group in need also grew dramatically. The business results for 7C Kitchen is shown in Table 1.

Although the business philosophy of 7C Kitchen is: "There is no such thing as surplus food," it also faces several difficulties. Would people buying the meal made from ugly F&V normally not purchase? Even if people can accept this kind of food, how much are they willing to pay for it to support this ideal of reducing food waste? Since key ingredients are donated by vendors, some people think 7C Kitchen's operating cost must be very low. People tend to forget, however, that it takes massive manpower to process these ugly F&V and the business pays cooks and service staff salaries as well as rent. The operating expense of 7C Kitchen in 2017 is around US\$ 93,000. Salaries for cooks, service staff, and drivers who transport ugly F&V account for 82% of all costs. The cost structure of 7C Kitchen in 2017 is shown in Table 2. Just like what is said on the reference prices on the pay box: (US\$)0.03-1.64 is to support the rent; 1.65-2.63 is to support our operation; 2.64-3.94 is to pay for the kitchen staff salary; 3.95-5.58 is for the service staff salary; 6.57 and above is to encourage us. How much would you pay to support the ideals of 7C Kitchen?

7C Kitchen uses free pricing and the dinner is served buffet style. 7 to 10 dishes are served every night. The idea of free pricing is to encourage more people to attend the buffet and broaden the appeal of the concept of surplus food usage. Free pricing and buffet service do, however, generate some problems for the business. Although the cost of surplus food is near zero, the salary of cooks and staff accounts for 82% of all costs. It is hard for 7C Kitchen to estimate the growth of future revenue under free pricing. More customers may not necessarily lead to more revenue, but more customers will need more cooks and staff. Will 7C Kitchen need to change its pricing policy?

When the buffet is served, a customer who comes late might have less choice due to limited quantities for each dish. With a main course and some sides, 7C Kitchen might avoid the problems of uneven quantity of food every customer gets, however, it would need to hire more

Table 1

Business Results for 7C Kitchen by Year

Year	2016	2017
Ugly F&V salvaged	Around 2,000 kg	Around 16,800 kg
Number of participants in "Sharing Surplus Food" dinner	3,000	11,000
Meal delivery to group in need	Serving 880 meals (Around 11 times)	Around 3,000 kg of ugly F&V and fresh produce

Source: 7C Kitchen (2018)

Table 2
Cost Structure in 2017

Operating Expense	%
Cooks' salary	43
Service staff salary	32
Drivers' salary	7
Rent	9
Administrative expense	9
Total operating expense	100

Source: FlyingV (2017)

staff to prepare set meals. So, another question is "should 7C Kitchen switch from buffet style to a set menu dished out by servers?"

Should 7C Kitchen open during lunch time to attract more customers? Currently, the manpower and equipment are unable to support increased business hours. If 7C Kitchen wants to serve lunch, the diner needs to buy more equipment to transport and store the ugly F&V. Also, more manpower is needed to deal with the ugly F&V. How to market the diner and spread the ideal of reducing food waste to more people? Those are dilemmas 7C Kitchen faces.

Discussion Questions

- Please define the following terms: food supply chain; stakeholder; food loss vs. food waste; surplus diner
- What stages of the supply chain's food loss and food waste does 7C Kitchen address?
- In the food supply chain, who are the stakeholders of 7C Kitchen?
- In the food supply chain, what are the effects of food loss and waste on the 7C Kitchen stakeholders?
- What is your level of acceptance toward ugly F&V?
- If you were the operator of 7C Kitchen, what would be your pricing policy?
- How would you market the diner?

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