

Food Supply and Food Bank Analysis

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Abstract

This research explores the strengths and weaknesses of food banks around the globe and analyzes which characteristics can be adopted by nations without a well-developed food bank system. This paper details effective food bank characteristics and how they might be applied in South Korea. In addition, there is an idea for a new app that might connect individuals with food banks and other inexpensive food sources.

1. Introduction

South Korea is a country located in East Asia that has a total population of 51,58 million people.

The country's total area is only 100,210 km². Due to its extraordinarily large population and limited land area, the country has a dense population.

Essentially, the food supply system is the procedure that brings food from farms and stores to family tables and plates. Production, processing, consumption, distribution, and disposal are all part of the processes. The precise areas on which I will concentrate are those in the food supply system in which surplus or leftover food is either wasted or donated. Specifically, I will investigate the system in Korea and the factors and enhancements that the existing Korean system may use to further improve the food system as a whole. The food bank system is where surplus food is donated to low-income residents for charity

and non-profit causes. The organization must possess these two characteristics in order to be labeled a food bank.

This research paper will explore and highlight the disparities between food banks and food systems in the West and Korea. In turn, the distinctions between the two systems will be contrasted and potential innovations or solutions to problems within the Korean system will be proposed. Several more significant variables will be considered, including the problems of general food waste in Korea, the consequences of COVID and its economic impact in Korea, and previous food banks in other countries.

2. Korean Food System

2.1 Factors of the Korean Food System

The Korean food system utilizes and manages leftovers differently than the traditional Western

one. Numerous cities and towns in the West have a tendency to give away excess food and construct food banks where surplus food is stored for those in need. The Korean food bank system is poorly constructed, unreliable, and relatively infrequent, especially in major urban areas. In contrast to the West, there is no basis upon which these organizations may be developed, and the majority are supported by international organizations, the national government, or municipal governments. This is in contrast to the West, where several local and autonomous groups work in much smaller areas, resulting in a higher success rate. Due to the lack of large farming and agricultural areas, many natural foods in Korea are considerably more expensive, and thus, businesses do not seek to distribute them.

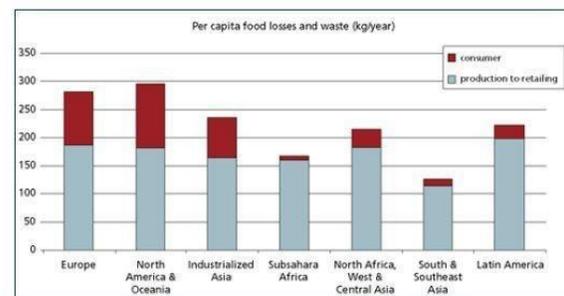
2.2 Before and After the COVID

Prior to the unexpected impact of COVID-19 on domestic and international governments and economies, South Korea had a regularly expanding economy, a solid working class, and a decreasing underprivileged population. This resulted in the government ignoring the poverty and economic struggles of those with extreme financial disadvantages. This, in turn, diminishes public knowledge of these concerns and the number of food banks in the country as a whole. The implications and consequences of the COVID-19 pandemic amplified the already limited food supply, particularly in tiny nations such as South Korea. The waste management in

Korea, notably for its food waste, further pushes the problem. Individual families are required by the Korean waste management system to deposit their collected food waste into a dispenser, which then gets rid of the food entirely. According to the World Economic Forum, Korea is one of the world's leaders in food waste, disposing of approximately 130 kg of food per capita.

In addition, the majority of food waste cannot be repurposed in any manner that involves food banks since its disposal demands that all of the waste be compacted together. Instead, the waste is converted into fertilizer or a liquid for reuse or disposal. However, even this concept has potential because of the limitation on the amount of fertilizer that can be used, leaving a portion of food waste to be wasted. Approximately 40% of the 130 kg of food waste generated by each family gets lost. Due to the nature of Korean cuisine (comprising a plurality of side dishes), despite the government's best efforts to reduce food waste, there is still an excessive amount of wasted food.

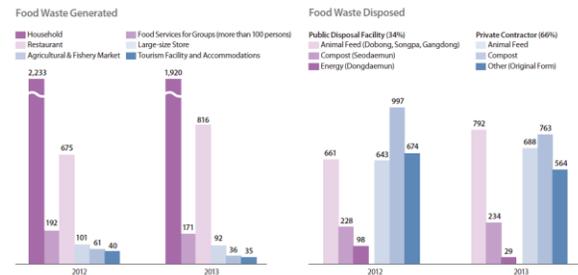
Graph 1. Per Capita Food loss



Source: World Economic Forum

After the COVID-19 outbreak, the food industry in Korea was severely affected. Due to the scarcity of agricultural land in Korea, the majority of Korea's farm produce is imported. As a result, the COVID-19 restrictions on international trades have had a devastating impact on its population, food chain, and food banks. As a result of COVID's economic challenges, more individuals entered a situation of financial insecurity. The unexpected increase in export prices and decline in overall shipments did nothing to alleviate this issue. However, the increase in the number of people living in poverty has had little effect on food bank awareness or the behavior or formation of organizations. The overall decrease in food waste results in less food waste, which means that the majority of the remaining waste is used as fertilizer and there are no leftovers that may be donated to food banks. Food becomes significantly more costly as a result of COVID, causing stores to buy less, limiting food waste, and preventing any from being donated to food banks. Food banks in Korea have not been significantly impacted by the ramifications of COVID. For households to reduce their food waste, their eating habits must be altered. The chair of the Korea Zero Waste Movement Network, Kim Mi-Hwa, stated, "There is a limit to how much food waste fertilizer may be used. This necessitates a transformation in our dietary behaviors, such as adopting a one-plate culinary culture similar to that of Western nations or, at the very least, limiting the number of banchan(side-dishes) we serve.

Graph 2. Food Waste Disposal Korea



Source: Seoul Station

2.3 Food Bank and Food Supply System in Korea

- a) According to the food strategy of the Korean government, "surging global grain prices and delays in logistics services caused by COVID-19 have underlined the necessity of food security. In addition, appeals have been made for sustainable production and consumption, as well as for more social equity in nutrition and diet. The Republic of Korea has formed its National Food Plan in order to join worldwide efforts to accomplish the United Nations Sustainable Development Goals (SDGs) and to address food concerns including stable food supply, sustainable production and consumption, and access to a healthy diet.
- b) Wheat and beans are also produced in South Korea in minor quantities, in addition to rice, which plays a significant role in Korean cuisine. This makes the nation as a whole much more reliant on foreign commerce, and as indicated previously, COVID-19 is driving

up grain prices and making international trade much more challenging. The present pandemic has demonstrated that Korea cannot rely on the ever-changing nature of foreign commerce to provide a significant portion of its needs. In 2019, Korea's self-sufficiency rate was only 48.5%, including 92.1% for rice, 26.7% for beans, 3.3% for maize, and just 0.5% for wheat. Reduced agricultural land availability exacerbates self-sufficiency difficulties. From 2009 to 2029, there has been a 25% decline in overall cropland owing to the growth of cities and metropolitan regions. The average age of South Korean farmers is 66, which contributes to the declining workforce. In addition, the lack of interest in domestic agricultural products hinders efforts to achieve self-sufficiency.

Other reasons that may be causing the problem:

- 1) Only the sell-by dates are displayed on food packaging, and these dates are typically substantially shorter than the use-by dates, causing more food waste.
 - 2) The Korean custom of serving many side dishes further contributes to food waste.
 - 3) Increasing numbers of single-family households also contribute to the issue.
- c) Food banks in Korea can be split into three specific major food banks.

- 1) The Salvation Army
- 2) Seodaemun-gu Wholehearted Food Market
- 3) The Central Food Bank of Korea

The fact that there are just three major food banks in a country with a population of 51.78 million people is inefficient and does nothing to make a difference in the issues of hunger and poverty.

2.4 Problem and Research Question

By analyzing the elements that influence the change in the Korean food supply, it is possible to infer that there is a problem with a lack of understanding as well as issues with waste disposal and the food supply chain. In light of the aforementioned concerns, it would be crucial to look into the following research question:

Simply put, there are too many people going hungry but there is also too much food being wasted.

For this research, the literary reviews given below will list and discuss many case studies in various nations.

3. Case studies

3.1 Different Countries Food Bank Examples

i) Brazil & Italy

- The FSC (food supply chain) is often made more efficient by reducing its overall length. As previously demonstrated in Brazil and Italy, when the FSC for small farming enterprises was shortened, product quality, traceability, and food waste decreased. Due to

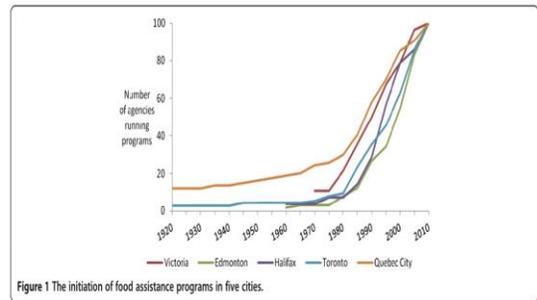
the simplicity of the SFSC, these strategies have only been demonstrated to work in SFSCs or short food supply chains. Reducing transit distance and eliminating intermediaries contribute to an increase in product quality, traceability, and a decrease in food wastage. The study "Critical Success Factors in Short Food Supply Chains: Case Studies with Milk and Dairy Producers from Italy and Brazil" by Miguel Afonso Sellitto, Luis Antonio Machado Vial, and Cláudia Viviane Viegas confirms and proves that the aforementioned statements are accurate and effective in the short term. However, the long-term impacts and implications of these actions have not yet been documented. This study shows and justifies that the food supply chain, and consequently the food bank, can be improved, and suggests improvement strategies that have been proven to work.

ii) Canada

- In Canada, the absence of government programs and policy initiatives forces low-income individuals to rely on food banks for relief. These food banks are the only immediate solution to the issue of citizens requiring food assistance. There is also an overwhelming number of evidence suggesting the government and business groups' reaction to the situation is insufficient. The research examines the issues that restrict the Food Bank system in five Canadian cities. To assess the efficiency of food banks, they examined

program characteristics, service volume, and signs of strain in the food banks' ability to consistently meet assistance standards.

Graph 3. Canada's Food Assistance Across Five Cities



Source: BMC Public Health

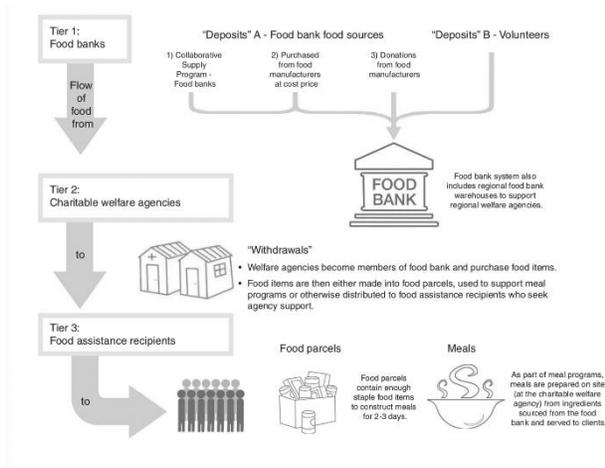
number of agencies in Canada and the country's long history of food banks, the study revealed that the majority of food banks were unable to effectively aid people in need. These food banks rely excessively on private donations and volunteers, which quickly depletes their resources and renders them incapable of assisting people.

iii) Australia

- Australia has seen significant growth in the number of food banks across the country, which are growing increasingly prevalent and striving to become a third-tier measure to aid the poor. The research investigates the operations and expansions of food banks around the nation and assesses their efficacy since the explosion of food banks throughout

the nation. The research uses the internet and the Foodbank Australia and Foodbank South Australia as its sources and information in order to demonstrate the history, data, development, and operation of food banks.

Diagram 1. Diagram of the Different Tiers Within Australia



Source: Emerald Insight British Food Journal

The study demonstrates that despite a large number of food banks and the public's awareness of them, the unproductive nature of food banks makes them ineffective in helping people. Their presence and prevalence are pointless and contribute little to the solution of food insecurity. For food banks to be more effective and assist low-income individuals, different techniques, stakeholders, and increased efficacy are necessary. The paper addresses the issue of food banks being touted as the leading answer to the problem of food shortages, despite the

fact that in their current condition, food banks cannot be the primary option for resolving the problem.

iv) United States

Beginning in the 1970s, the United States has devised a successful approach for food banks by every metric, including the monetary worth of the food saved and the number of recipients. Despite having high success rates and a reputation for achievement, food banks in the United States are frequently plagued by several problems. Common problems with American food banks include a shortage of donors and insufficient food security.

Table 1: Seven Most Influential Food Banks in the United States

Name	# of beneficiaries	Saved Food amount (lb/ton)	Monetary Value (if applicable)	Score
Feeding the Gulf Coast	Food-insecure people mainly in Florida, Alabama, and Mississippi	700,000 meals to over 20,000 children annually	2020 Revenue: \$71,352,244 2020 Expense: \$55,004,662	100
Ozarks Food Harvest	Food-insecure people in Southwest Missouri	23 million meals annually	2020 Revenue: \$44,190,892 2020 Expense: \$41,343,251	100
Table to Table	Food-insecure people living in New Jersey	Over 227 million meals; 74,000 tons since inception	2020 Revenue: \$51,836,647 2020 Expense: \$51,670,328	98.23
Island Harvest	Food-insecure people in Long Island	130 million pounds; 108 million meals since inception	2020 Revenue: \$34,105,479 2020 Expense: \$29,220,679	98.23
East Texas Food Bank	Food-insecure people in East Texas	24,918,000 meals in 2020	2020 Revenue: \$40,555,370 2020 Expense: \$38,166,456	97.34
San Antonio Food Bank	Food-insecure people in Southwest Texas	91 million pounds in 2020	2020 Revenue: \$144,335,254 2020 Expense: \$132,676,200	97.07

v) China

- In contrast to the sophisticated food bank system in the United States, the food bank system in China is still primitive. Food banks are an essential instrument for bridging the income gap and ensuring the effective and sustainable use of resources. Additionally, food banks serve as an "invisible hand" to the community by efficiently utilizing resources

- and assisting the community. The paper identifies security and the reduction of inequality as strengths of the American food bank system. Important obstacles that the Chinese may encounter while constructing their own food banks include the need for clarification of government regulations, a change in government policies, the promotion

of community concerns, and the enforcement of donation-related incentives.

vi) Romania

- Dumitru, Iorga, and Mustatea discovered in a 2020 study on food waste conducted in Romania that investing in new technologies, awareness campaigns, and sustainable principles can lead to a reduction in food waste at various stages of the food chain. In Romania, local and national organizations were established and trained in best practices for food distribution and recycling of food waste. Bio and Co., a food waste organization, reduced 290 tons of food waste and redistributed 2,000 kilograms of food. In addition, the implementation of sustainable principles by large retailers has contributed to the sustainability of food chains.

4. Proposal

Multiple commonalities exist between nations that have successfully implemented a new food bank system or improved their existing food bank system after reviewing the case studies. First and foremost, countries without a food bank system or with a system that is inadequate must alter public perception in order to establish or enhance a food bank system. Countries with a weak food bank system must first shift their perspective on food banks and food challenges. A further possible option would be a smartphone application that connects individuals with restaurants. A mobile

application would be an innovative and efficient solution because of technical improvements and practically universal access to phones and the internet.

5. Conclusion

This paper discusses the numerous issues surrounding Korea's food supply system and food bank system. First, the manner of food disposal in Korea continues to be a big issue. All foods are kept together and discarded in intelligent bins that recycle the food, not for food banks but as fertilizer. This issue can be resolved by modifying Korea's disposal methods for reusing food for food banks or by altering where the repurposed food is consumed. The second issue is a lack of public awareness, and consequently, there are few small or private food banks in Korea. Individual campaigns or government campaigns can help raise awareness of these issues to solve the problem.

Another concern is that traditional Korean meals require several side dishes. This issue can be resolved by promoting single-dish meals. Fourth, the surge of single-household families exacerbates the problem by increasing the number of dishes per person. Poor self-sufficiency in the Korean agriculture and food market is the final issue. Korea may enhance its supply chain and food bank system by addressing the issues of an aging agricultural workforce and a lack of self-reliance on major crops.

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