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**BEST PRACTICES OF FOOD BANK MODEL FOR
SUSTAINABLE DEVELOPMENT GOALS ACHIEVEMENT IN
MALAYSIA**



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MASTER OF SCIENCE (SUPPLY CHAIN MANAGEMENT)

UNIVERSITI UTARA MALAYSIA

APRIL 2023

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DEVELOPMENT GOALS ACHIEVEMENT IN MALAYSIA**

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**Thesis submitted to
College of Business
Universiti Utara Malaysia,
In Partial Fulfilment of the Requirement for the Master of Science (Supply Chain
Management)
APRIL 2023**



Kolej Perniagaan
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Tajuk Tesis / Disertasi
(Title of the Thesis / Dissertation) : Best Practices of Food Bank Model for Sustainable Development Goals
Achievement in Malaysia

Program Pengajian
(Programme of Study) : Master of Science (Supply Chain Management)

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ABSTRACT

Food waste is a social issue as it exacerbates food security and hunger, particularly in places where food is scarce or resources are limited. Food banks play an essential role in achieving several Sustainable Development Goals (SDGs) by addressing food waste and providing food assistance to people in need. The purpose of this study is to understand deeply the operation of the food banks and the best practices of food bank model to achieve sustainable development goals in Malaysia. In this study, an exploration between several cases of food banks operation was conducted. Data was collected through several interviews and document analysis and the data was analysed to understand the operation and model of the food bank organizations. Thematic analysis was also used to identify patterns and themes in the data by using ATLAS.ti as a medium for managing and coding the data resulted from the interview. The findings of the food bank models were discussed in terms of its customer segment, key partner, key activities, key resources, value proposition, customer relationship, channel, cost structure, and revenue stream. A general model for food bank operation was proposed for newly established food banks to follow. For food bank employees, politicians, funders, and other stakeholders interested in reaching the SDG targets for eradicating hunger and promoting sustainable food production and consumption, the study's findings have significant ramifications. The study lays the groundwork for further investigation and emphasises the necessity of ongoing cooperation and innovation in the realm of food banks. Overall, this study advances knowledge of the food bank model and its potential influence on meeting SDG targets.

Keywords: Sustainable Development Goals (SDGs), Food Bank Model, Food Bank, Food Waste, food security, zero waste

ABSTRAK

Pembaziran makanan adalah masalah sosial yang memberi sumbangan terhadap sekuriti makanan dan kelaparan dari segi yang negatif, terutamanya di tempat di mana sumber makanan adalah terhad. Bank makanan memainkan peranan yang sangat penting terhadap mencapai Matlamat Pembangunan Lestari dengan cara menangani pembaziran makanan dan menyediakan bantuan makanan golongan yang memerlukan. Tujuan kajian ini dijalankan adalah untuk memahami dengan lebih mendalam tentang operasi di bank makanan dan juga model terbaik yang digunakan oleh pihak bank makanan untuk tujuan pencapaian Matlamat Pembangunan Lestari di Malaysia. Dalam kajian ini, beberapa kes operasi bank makanan di Malaysia telah diselidik dan dibandingkan. Data juga diperolehi daripada hasil menjalankan beberapa sesi temubual dengan pihak bank makanan. Data berikut kemudian dianalisa untuk lagi memahami operasi dan model bank makanan. Kajian ini juga menggunakan kaedah tematik analisi untuk mengenal pasti corak dan tema berdasarkan data yang diperolehi dan juga menggunakan ATLAS.ti sebagai medium untuk memudahkan pengurusan kod dan tema. Model bank makanan telah dibincangkan dari segi segmen pelanggan, rakan kunci, aktiviti asas, sumber bank makanan, tawaran nilai, hubungan pelanggan, saluran, struktur kos dan aliran pendapatan. Hasil daripada perbincangan ini adalah model am bagi bank makanan telah dibincangkan dan dicadangkan. Hasil kajian ini telah memberikan implikasi yang signifikan terutama kepada pihak pekerja bank makanan, ahli politik, pembiaya dan pihak berkepentingan lain yang berminat untuk mencapai matlamat Pembangunan Lestari dari segi pembasmian kelaparan dan juga mempromosikan pengeluaran dan penggunaan makanan lestari. Kajian ini jug atelah membuka peluang jalan kepada penyelidik untuk terus membuat penyelidikan lanjut dan menekankan keperluan kerjasama dan inovasi yang berterusan dalam bidang bank makanan. Keseluruhannya, kajian ini melebarkan pengetahuan tentang model bank makanan dan pengaruh potensinya terhadap mencapai Matlamat Pembangunan Lestari.

Kata kunci: Matlamat Pembangunan Lestari, Model Bank Makanan, Bank Makanan, Pembaziran Makanan, Sekuriti Makanan, Sisa Sifar



DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; and any editorial work, paid or unpaid, carried out by a third party is acknowledged.



ACKNOWLEDGEMENT

This research paper is title Best Practice of Food Bank Model for Sustainable Development Goals Achievement in Malaysia and it is best prepared for School of Technology Management Logistic (STML), Universiti Utara Malaysia (UUM). This project is compulsory for final year students to fulfil the requirement of Master of Science (Supply Chain Management).

I would like to express my heartfelt gratitude to my supervisor, Assoc. Prof. Ts. Dr Mohd. Rizal Razalli, for his unwavering support, guidance, and mentorship throughout the entire process of this project paper. His expertise, patience, and dedication have been invaluable, and I am incredibly fortunate to have had the opportunity to work under his supervision.

I extend my deepest appreciation to my parents, for their constant encouragement, belief in my abilities, and their sacrifices that made my pursuit of higher education possible. Their unwavering support has been the cornerstone of my academic journey, and I am profoundly grateful for their love and encouragement.

To my friends, who have been with me through thick and thin, I am thankful for your support, camaraderie, and the countless moments of inspiration you've provided. Your friendship has brought joy and balance to my life during this challenging period of my studies.

This accomplishment would not have been possible without the support and encouragement of all these individuals, and for that, I am truly grateful.

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LIST OF ABBREVIATIONS

SDG	Sustainable Development Goals
TLFP	The Lost Food Project
FAF	Food Aid Foundation
YFBM	Yayasan Food Bank Malaysia
NGO	Non-Profit Organization
CSR	Corporate Social Responsibility



CHAPTER 1

INTRODUCTION

1.1 Background

Food waste has been significantly increasing throughout the years as it has been projected that food waste will increase by a third by the year 2030 which equivalent to 72 tons each second of food waste tossed (Gillard, 2022). Food waste is referred to the food losses during the end of the supply chain cycle which the reasons behind the food waste are because of losses from mold, pests, inadequate climate control, losses from cooking and intentional food waste. In other words, food waste can also be referred to food that is suitable to consume but intentionally discarded at the phase of retail or consumption (Stancu et al., 2016).

However, there is another term that can relate to the context of food wastage which is “food loss”. Although that food loss is used interchangeably with the term food waste but in fact, it has a whole different meaning where it refers to the wastage of food during the supply chain stages which are food that are wasted during the production, post-harvest, processing and distribution stage (Abiad & Meho, 2018). Food lost can occur from poor infrastructure and equipment where the produce lack of adequate storage, transportation and processing facilities that can lead to spoilage and food damage due to poor handling. The factors of climate and environment can also be the reasons to food loss. Circumstances such as natural disasters, extreme weather condition and pests and diseases can damage the crops and lead to significant losses. Cases such as lack of market access where farmers are not able to sell all of their fresh produces can cause food loss. Food loss can also be caused by the lack of supply chain efficiency which can happen when there is a delay in the transportation process, overproduction and miscommunication. These are good examples of food loss as perfectly good foods are either thrown out, left to be spoiled or damaged during all stages of supply chain before it reaches the consumers (Ishangulyyev et al., 2019).

Food waste and loss can have a significant impact especially in the long run and the impacts mostly are leaning to the negative side. Food waste and losses widely contribute to environmental impacts, social impacts, economic impact and ethical impact. In terms of environment, wastage of food is associated with the emission of greenhouses gasses and accounts for about 8% of all emission of greenhouse gas globally (Kaplan, 2022) accumulating about 3.3 billion tonnes of CO₂ into the atmosphere (Paritosh et al., 2017). Food waste emits several gases such as methane and carbon dioxide (CO₂) when decomposed (Buzby, 2022). In the long run, these gasses contribute significantly towards the climate change because when the gas is released into the atmosphere, methane gas traps heat and causes the Earth's temperature to rise (Harvey & Huang, 1995).

Food waste is a social issue as it exacerbates food security and hunger particularly in places where food is scarce or resources are limited. The food originally was produced or harvested to feed the current Earth population and wastage of food can lead to food availability inequality for future population. Economically, food waste also reflects the amount of money that goes into producing the foods which are wasted. It can also lead to higher food prices, economic inefficiencies, and lost opportunities for economic growth. As for the ethical impact, food waste raises ethical concern as valuable resources are wasted while millions of people around the world go hungry (Filho et al., 2020).

There are tons of ways to solving food waste that can be performed. As an individual consumer, food waste can be reduced by planning meals and shopping wisely, storing food properly, composting, donating excess food and using leftovers (Landre, 2021). In the organizational level, the establishment of food banks has widely contributed to the reduction of food waste. Food bank is a non-profit organization where they collect foods and basic necessities mainly through donation and distributes it to the less fortunate (González-Torre & Coque, 2015). In a way to deepen the contribution towards reducing food waste, some food

banks collect unsold perishable foods such as vegetables and meats from suppliers and distribute it to the hungry.

Apart from that, The Sustainable Development Goals (SDGs) are a set of 17 global goals established by the United Nations in 2015 as a part of the 2030 Agenda for Sustainable Development. These goals were designed to address the most pressing economic, social, and environmental challenges facing our world today. The SDGs aim to end poverty, protect the planet, and ensure prosperity for all. The 17 goals cover a range of issues, including poverty, hunger, health, education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life on land, peace, justice and strong institutions, and partnerships for the goals. Each goal has specific targets and indicators to measure progress toward achieving them. The SDGs are intended to be universal, meaning that they apply to all countries and are not limited to developing nations. They also aim to ensure that no one is left behind in the quest for sustainable development (United Nations, 2015).

Food banks play an essential role in achieving several Sustainable Development Goals (SDGs) outlined by the United Nations. Food bank operation contributes to the SDGs in terms of:

- Zero Hunger (SDG 2) by helping to reduce food waste by recovering surplus food and distributing it to people in need. This contributes to SDG 2, which aims to end hunger, achieve food security and improve nutrition by 2030.
- Responsible Consumption and Production (SDG 12) by reducing food waste and promoting more sustainable food practices, food banks support SDG 12, which aims to ensure sustainable consumption and production patterns.

- Reduced Inequalities (SDG 10) by addressing food insecurity, which is often linked to poverty and inequality. By providing food assistance to people in need, food banks help to reduce inequalities and promote social inclusion.
- Good Health and Well-being (SDG 3) by providing healthy and nutritious food to people in need. This can improve their health and well-being and reduce the risk of diet-related diseases.
- Partnership for the Goals (SDG 17) by relying on partnerships with donors, volunteers, and community organizations to operate effectively. By fostering partnerships and collaboration, food banks support SDG 17, which aims to strengthen partnerships for sustainable development.

In conclusion, food bank operations play an important role in achieving several Sustainable Development Goals by addressing food waste and providing food assistance to people in need, food banks contribute to a more sustainable and equitable future for all.

1.2 Foodbanks in Malaysia

Food banks are becoming increasingly popular in Malaysia as a way to address food insecurity and reduce food waste. Some food banks that operate in Malaysia includes:

- *Kechara Soup Kitchen*. This organization operates in Kuala Lumpur and provides food aid to the homeless and urban poor (Kechara Soup Kitchen, 2023).
- *The Lost Food Project*. This non-profit organization collects surplus food from supermarkets, hotels and other sources and distributes it to charities and non-profits that serve the needy in the Klang Valley and other parts of Malaysia (The Lost Food Project, 2022).

- *Food Aid Foundation*. This organization collects food donations from manufacturers, retailers and other sources and distributes it to individuals and families in need to Kuala Lumpur, Selangor and Penang (Food Aid Foundation, 2023).
- *Yayasan Food Bank Malaysia*. This foundation aims to reduce food waste and combat hunger by collecting surplus food from hotels, restaurants and supermarkets and distributing it to people in need (Yayasan Food Bank Malaysia, 2023).
- *Love Food Hate Waste Malaysia*. This campaign aims to raise awareness about food waste in Malaysia and promote ways to reduce it through education and outreach programs (Love Food Hate Waste Malaysia, 2023).

These are just a few examples of food banks and initiatives that are working to address food insecurity and reduce food waste in Malaysia.

1.3 Problem Statement

Food waste has always been a global issue for years. According to the Food and Agriculture Organization of the United Nations, roughly one-third of all food produced globally, or approximately 1.3 billion tons, is wasted annually. However, during the year 2021 with the population of 32.6 million in Malaysia (Mahidin, 2021), it was indicated that the food waste that was generated in Malaysia was roughly around 17,007 tonnes per day. Although that most of the food waste were inedible (76%) such as fruit peels and animal bones, 24% was still fit for consuming (Dermawan, 2022).

Food waste disposal is under the act of Malaysia Solid Waste and Public Cleansing Management Act 2007 (Act 672) which the methods of disposal are from destruction, incineration, deposit or decomposing. The most common ways of waste disposal are landfill and incineration. Although that the landfill method is the more general and accepted method for managing for its cost effectiveness and simple, it can bring up some issues in the long run.

The landfill method in Malaysia has encountered more difficulty as many landfills has already reached their capacity due to the rising quantity of waste disposal throughout the years. The reasons behind this are because of the changes of society's eating habits due to improved living standards and rapid increasing population and urbanization (Lim et al., 2016).

As for the incineration method, it is considered as costly and require the usage of high energy and technology. Moreover, this method is rarely used for food waste treatment it can cause air pollution (Lim et al., 2016). Since incineration is a form of method of burning waste, it releases harmful chemicals and pollutants. Not to mention the horrendous smell, the fumes can also cause disease to the people living in the immediate vicinity (Rosenberg et al., 2021). Altogether, these methods arise significant environmental impacts and are not sustainable for food waste management. Food waste also convey the current issue of the environment due to not properly separating food waste which leads to the emission of greenhouse gases in landfills and furthermore bringing impacts towards climate changes (Lim et al., 2016).

Although that over 90% of the food waste is biodegradable, Malaysians are still not aware on how to manage them properly. Unlike papers and plastics, no proper instruction or method are heralded on the ways to manage these food waste. Other than that, the practices of food source separation and waste composting are also not widely common among Malaysian and it can be said that solving the issue of food waste handling still has a long way to go (Lim et al., 2016).

Apart from that, The Sustainable Development Goals (SDGs) have not been fully achieved yet. The SDGs were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. While progress has been made towards achieving the SDGs, significant challenges remain. According to the UN's Sustainable Development Goals Report 2021, progress towards

achieving the SDGs has been uneven across regions and countries. The COVID-19 pandemic has also had a significant impact on progress towards the SDGs, particularly in low-income countries and vulnerable populations. Some of the SDGs have made more progress than others. For example, the world has made progress towards ending poverty (SDG 1) and increasing access to clean water and sanitation (SDG 6). However, progress towards other SDGs, such as reducing inequality (SDG 10) and achieving sustainable consumption and production (SDG 12), has been slower. In conclusion, while progress has been made towards achieving the SDGs, significant challenges remain, and there is still much work to be done to ensure that all people enjoy peace, prosperity, and a sustainable future by 2030 (United Nations, 2015).

As it was suggested that establishing a food bank can assist the reduction of food waste and contribute towards the SDGs, however, little to no study was done regarding the best practices of food bank model for the newer establish food bank to follow, especially in Malaysia.

1.4 Research Questions

There have been a few studies on food waste management in Malaysia which suggests that establishing a food bank is one of the solutions to food waste and world hunger. However, these studies did not focus or mention about the food bank itself in terms of their practices and operation. Many questions arise regarding the food bank operation and it must be carefully investigated, identified and studied. Hence, the questions to this research study are listed below:

- i. What is the best practice a food bank can follow to achieve sustainable development goals?
- ii. How does a food bank in Malaysia manage food waste and distributes the food?
- iii. What are the impacts of food banks in Malaysia?

1.5 Research Objectives

The purpose of this study is to understand deeply about the operation of food bank and the best practices food bank model in order to reduce food waste and hunger in Malaysia. The exact research goals are:

- i. To investigate the best practice of food bank in Malaysia.
- ii. To identify the food bank operations in Malaysia and the way they manage food waste and food distribution.
- iii. To identify the impact of food banks in Malaysia.

1.6 Significance of the Study

The significance of the result for this study are as following:

- i. To provide newly established food bank organization an operation model to follow.
- ii. This study addresses the global challenges from food waste in terms of environmental sustainability, resources conservation, food security and economic development which brings awareness for society.
- iii. The result of this study contributes indirectly in the progress of achieving sustainable development goals that relates to hunger, sustainability, inequality and health. By addressing food waste and providing food assistance to people in need, food banks contribute to a more sustainable and equitable future for all.

1.7 Scope of the Study

Due to certain limitations, this study was narrowed down to the scope of research as follows:

- i. This study focuses on the food bank organization's perspective and to understand their day-to-day operation.

- ii. This study focuses on the food bank model in the aspect of key activity, key partner, value proposition, customer relationship, customer segment, key resources, channel, cost structure and revenue stream.
- iii. Three (3) food banks were selected in Malaysia and the respondents were selected among the food banks of non-profit organization with the aim to only collect and distribute food to the unfortunate.

1.8 Thesis Outline

This project paper is divided into five chapters which are introduction, literature review, methodology, findings and discussion and conclusion. In the first chapter, the issue with food waste management along with the social development goals which leads to the establishment of food bank as the solution to the issues was explained. The chapter also discussed about the goals and questions of the study. Chapter 2 discussed about the review of literature from different previous studies. As for chapter 3, the beginning chapter described about the research technique followed by the study's design, methodology, data collection, analysis and respondent's profile. Chapter 4 includes the results from the interviews which are analysed and discussed. As for the final chapter, the conclusion of the overall study was discussed including the study's limitations and potential directions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The purpose of this literature review is to conduct a comprehensive analysis of the food bank model as a strategy to attain sustainable development goals. The review will focus on evaluating the effectiveness of food banks in reducing food waste and alleviating hunger, as well as the impact of these initiatives on the local communities' economic and social aspects. The challenges faced in implementing food banks as a sustainable development approach will also be discussed. Additionally, the review will investigate the role of government policies and regulations in promoting the adoption of the food bank model, and how the scaling up of these initiatives can potentially lead to the attainment of SDGs.

2.2 Sustainable Development Goals (SDGs)

The SDGs provide a complete framework for sustainable development to potentially guide policy and action at global, national and local levels (Horn & Grugel, 2018; Sachs et al., 2019; Henderson & Loreau, 2023). However, achieving the SDGs is a complicated and multifaceted process requiring collaboration and coordination between various stakeholders such as government, civil society and private sector (Henderson & Loreau, 2023). The progress towards one goal can have a positive or negative impacts towards another which means that these SDGs are interconnected (Lohani et al., 2022; Henderson & Loreau, 2023) and requires an integrated and holistic approach to sustainable development (Sachs et al., 2019). Although that some progresses have been made in achieving some of the SDGs before 2030, significant challenges and gaps still needs to be addressed specifically in the low- and middle-income countries (Horn & Grugel, 2018; Lohani et al., 2022)

2.2.1 Zero Hunger (SDG 2)

SDG 2 focused in targeting zero hunger by 2030. It also aims to increase food securities especially in developing countries. Zero hunger and food security relate closely with each other as it is necessary to increase food security for all people, especially those who are vulnerable to food insecurity, such as low-income households, small-scale farmers, and people living in areas affected by conflict or natural disasters in order to achieve zero hunger. Food security refers to a state where individuals have consistent and adequate physical, social, and economic access to healthy and nutritious food that satisfies their dietary needs and preferences, enabling them to lead an active and healthy life. This state should be sustained over time and apply to all people (Guirindola et al., 2023). Verhagen et al. (2023) doubt that zero hunger are achievable by 2030 or even by the year 2050. This is because 690 million people are still affected by food insecurities in 2019. Moreover, it is estimated that the global population will reach to the population of 9 billion by 2050 which food production will need to increase by 70% in order to feed these increasing population (Mumuni & Joseph Aleer, 2023). The author also stated that food security is affected negatively by climate variability in which hot temperature mostly reduces food security. This is because of the rise in carbon dioxide (CO₂) concentration in the atmosphere has led to a decline in the quality of rice and other crops, impacting human health through the consumption of poor-quality food lacking adequate protein, micronutrients, and vitamins. This has affected millions of people worldwide who depend on rice as their primary food source. Climate variability or change has also impacted the global food system, leading to an increase in demand for food and environmental degradation.

Verhagen et al. (2023) emphasized that there is a lack of policy strategies that directly address food access in long-term model-based assessments of food security. In

order to improve the understanding of how to achieve zero hunger in both food access and supply, the authors have developed ambitious yet achievable policy-target scenarios that targeted at individual countries, as they are often the primary implementers of policies. Von Braun et al. (2023) also agreed that we need to improvise out policies to improve food security. The authors also added that the global food system needs to overhaul institutions, social, business and technology fronts other than policies. However, improving food security is even more complex that comes with challenge that involves food supply, environmental sustainability, and food access. Long-term model-based approaches can help identify trends in food security and policy interventions to reduce undernourishment. Traditionally, the focus has been on producing more food sustainably to feed a growing population. Recently, research has shifted towards managing trade-offs between environmental policies and undernourishment. This includes exploring alternative "green" scenarios for feeding the world and implementing policies that improve yields, reduce food waste, and promote environmentally friendly and healthy diets (Verhagen et al., 2023).

In an Islamic viewpoint, zakat can also contribute in achieving zero hunger. Zakat is a charity act of purifying one's wealth by giving a portion to those in need which typically giving money or necessities the poor and needy (Harmaini et al., 2022) or in other words, giving a money or foods to those with food insecurities. The main function of zakat is to improve the welfare of people in the economic field, and it has been considered the foundation of Islam and the pillars of Islam since the time of the Prophet Muhammad. Zakat, which is a form of charitable giving in Islam, can play a significant role in achieving SDG 2 (Zero Hunger). This is because zakat can be used to provide assistance to those who are in need, especially the poor and underprivileged who may not have access to basic necessities such as food. Zakat can be used to fund

programs that promote food security and sustainable agriculture, such as providing seeds and equipment for farming or supporting local food markets. In addition, zakat can be used to provide food aid to those who are suffering from hunger, such as refugees or those affected by natural disasters. Overall, the distribution of zakat can help to address the root causes of hunger and poverty, providing a sustainable solution to achieve SDG 2 (Anisa & Mukhsin, 2023).

2.2.2 Responsible Consumption and Production (SDG 12)

Environmental sustainability is an important issue that is increasing because our consumption and production pattern are causing planetary crisis such as biodiversity loss, pollution, and climate change. The United Nations Sustainable Development Goal 12 aims to establish sustainable consumption and production patterns that can maintain or improve human well-being without negatively impacting environmental resources which requires transforming the way energy and materials are used, which will ultimately benefit all life on planet Earth (Lange & Nakamura, 2023). De Guimarães et al. (2023) suggested to reuse and reduce the use of resource following the circular economy concept.

Circular economy is a way of promoting sustainable economic growth that aligns with both environmental and economic development goals with the aim to minimize waste and maximize the efficient use of resources by designing products and services to be used, reused, and recycled, also, reducing the need for raw materials and energy (Korhonen et al., 2018). The authors stated that the current and traditional modern economic system model of extract-produce-use-dump material and energy is unsustainable opposing to the circular economic in which is sustainable by reducing negative environmental impact along with generating new business opportunities. The circular economy approach places emphasis on reusing products, components, and

materials as well as remanufacturing, refurbishing, repairing, upgrading and utilizing renewable energy sources such as solar, wind, biomass, and waste-derived energy (figure 1). This approach is integrated throughout the entire product value chain, and across the cradle-to-cradle life cycle, on order to maximize the efficient use of resources and minimize waste (Korhonen et al., 2018).

As a contribution towards SDG 12, some authors suggested consuming second-hand product by buying thrifted clothing. This method of consumption is considered to be more sustainable as it aligns with the term “reusing”. This promotes reusing existing material instead of producing new ones. Additionally, buying used cloth can divert textile waste from landfills, which is a major problem in many parts of the world (Moon et al., 2023). Roberts et al. (2023) also supports the statement of the take-make-destroy system is highly unsustainable although it is used as a strategy for reducing excess inventory, return items, damaged products and product recalls, especially in fast-fashion. The authors suggested that policy intervention is crucial to address the problem. It was suggested that policy intervention should be done through both upstream and downstream party of a business. for upstream intervention, putting a tax on customer return is a way to combat return crisis. This goes both ways for unsellable stock which will put pressure on producer to make sure that what they produces aligns with the demand. This method will also put pressure on retailer to reevaluate their and analyse which product usually resulted in high volume of unsellable stock or customers return. The authors also believed that requiring companies to publicly disclose the amounts of unsellable stock and customer returns can help highlight the extent of the problem and motivate action. This can prompt companies to take steps to avoid a negative brand reputation by reducing waste and improving their product lines. If companies produce with higher quality, they can charge higher price. This, in turn,

could discourage excessive consumption and wasteful use of resources. The authors believed that high end items often result in less disposal. Lastly, to reduce waste and make more informed decisions about product lines, companies can use data and accounting methods like cost-to-serve to identify profitable and unprofitable products. Rather than the traditional make-to-stock model, some companies are exploring made-to-order models where customers can check products in physical stores, place orders, and have products manufactured. This approach can help reduce waste and improve customer satisfaction. However, companies will need incentives to move away from made-to-stock models, and customers may need to adjust their expectations for on-demand availability (Roberts et al., 2023)

As for the downstream policy intervention, market-based instruments were suggested such as providing tax rebates for companies that repair, refurbish, or reuse products. Additionally, there could be higher taxes on products that are sent to landfills or energy recovery facilities, as part of a waste hierarchy tax. Several regulatory measures were proposed as potential solutions. For example, manufacturers and suppliers could be required to take back returns or unsold items and retailers would no longer be allowed to dispose of them on their behalf. Although this would increase costs for manufacturers, it could incentivize them to develop better disposal methods for these goods or improve product design, information and production volumes to reduce the amount of returned and surplus items. Requiring mandatory reporting of the volumes and type of products that retailers send for liquidation, donation, and recycling could increase transparency in their practices and encourage them to improve their disposal methods. This could help to optimize the channels through which these products are discarded, while also making it easier to identify opportunities for reuse or repurposing. Lastly, a changing the norm at a cultural level is also important. It is crucial to increase

awareness among consumers about the environmental impact of new production and the benefits of reusing products. People often underestimate the negative effects of their consumption on the environment and the advantages of extending the lifespan of products are not widely understood. Government initiatives could promote second-hand and refurbished goods, while sustainability reports from companies could educate retailers on the benefits of engaging in reuse programs (Roberts et al., 2023).

Figure 1: Circular Economy Cycle (Fernandes, 2020)



2.3 Food Banks

The concept of food banks emerged in the United States in the 1960s, during a time of economic recession and rising food insecurity. In 1967, John van Hengel, a retired businessman from Phoenix, Arizona, noticed that a local soup kitchen had to turn away hungry people due to a lack of food. He began to collect surplus food from local grocery stores and restaurants, which he then distributed to people in need. This led to the creation of the first food bank, St. Mary's Food Bank Alliance, which opened its doors in Phoenix in 1967. The idea quickly spread, and

food banks were established in other cities throughout the United States. The first food bank on the East Coast was the Community Food Bank of New Jersey, which was founded in 1975. By the 1980s, food banking had become a national movement, with the establishment of Feeding America (formerly known as America's Second Harvest), a national network of food banks and food rescue organizations. Food banks have also spread to other countries, with the first food bank in Canada established in 1981, and the first food bank in Europe established in Paris, France in 1984. Over the years, food banks have evolved to become more than just providers of emergency food assistance. Many food banks now offer a range of services, such as nutrition education, job training, and advocacy to address the root causes of food insecurity. They also work to address food waste by rescuing surplus food from grocery stores, restaurants, and farms, and redistributing it to people in need. Today, food banks continue to play an important role in addressing hunger and food insecurity, providing millions of people with access to healthy and nutritious food each year (Steyaert, 2013).

Food banks are basically a community-oriented warehouse that typically collect stockpile and allocated food from nearby supplier, retail food outlets, the federal community distribution program and the food industry (Santini & Cavicchi, 2014). González-Torre & Coque (2015) defines food bank as a non-profit organization that is run by volunteers aiming to retrieve surplus food in our society and distribute it to those in need while preventing any food waste or misuse. In other words, food banks are also defined as privately operated non-profit organization that are in charge of receiving, processing, storing and distributing food supplies to charitable groups (Davis et al., 2014). A food bank operation model generally consists of collecting, storing, and distributing foods to charitable agencies. However, operating models between food bank organizations are often different depending on the challenges that they faced as they need to alter their operation to adapt with the challenges. Mostly these models vary due the need to minimize cost and increase the efficiency (Gharehyakheh and

Sadeghiamirshahidi, 2018). The main activity in a food bank operation is always the operation of resource allocation. However, food banks often find it challenging because of the growing demand paired with scared resources, poor nutritional quality and uncertain number of donated items (Alkaabneh et al., 2021). Considering the fact that food banks are a non-profit organization and their intention is never to gain any profit, their success indices are namely efficiency, effectiveness and equity. The performance measure of efficiency centres on the quantity of food distributed, measured by weight. On the other hand, the effectiveness of a food bank's service is evaluated based on how well it meets the nutritional requirement of the individuals it serves. Lastly, equity, which means fairness, is gauged by how evenly resources are distributed, ensuring that no agency is disadvantaged (Alkaabneh et al., 2021). A few research has been done to address in the optimization of a food bank operation and to improve food bank efficiency in terms of distribution network.

Citations	A simplistic view of the study	Improving food bank operation
Solak Et al. (2012)	This article addressed the food distribution network problem in non-profit organization such as food banks.	Created a novel form of location-routing that can be utilized by non-profit food distribution networks.
Davis et al. (2014)	This article examines more efficient tactics for collecting and distributing food by employing a two-part methodology.	In the initial stage, a set-covering model is utilized to resolve the placement of food delivery sites and the allocation of agencies to

		those sites while the second stage tackles the vehicle routing problem for managing the distribution and collection of food.
Lee et al. (2017)	The article examines the act of gleaning to address food insecurities and reduces food waste.	Adapted an approach of simulation-optimization to enhance the staffing procedure of a food bank's gleaning operation.
Eisenhandler & Tzur (2019)	The main focus of this article is the logistical obstacles faced by a food bank that utilizes vehicles with limited capacity to distribute food acquired from food industry suppliers to welfare agencies on a daily basis while adhering to a maximum travel time constraint.	Develop a novel objective function that achieves a balance between effectiveness and equity by determining the most efficient amounts for both pickup and delivering goods when the route has already been established beforehand.
Schneider & Nurre (2019)	The article examines the issue of establishing a schedule for partner agency audits to ensure that food	Proposing a multicriteria capacitated vehicle routing method that accounts for multiple time windows

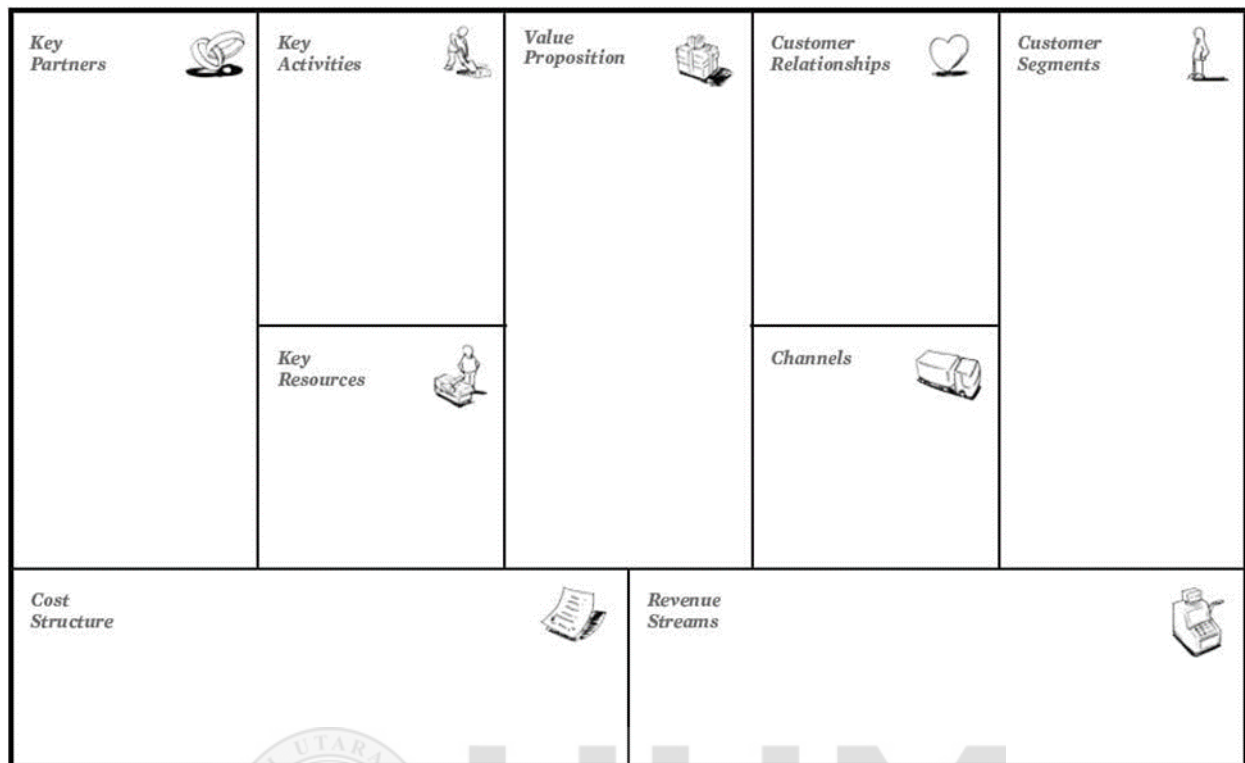
	banks comply with regulations regarding their operation.	which aims to optimize the allocation of resources and improve the efficiency of the auditing process.
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Table 1 Previous Studies on Food Bank operation

2.4 Business Model Canvas

The business model canvas is a strategic management tool in assisting businesses in describing, designing and analyzing their business model. This tool was initially developed by Alexander Osterwalder and Yves Pigneur in 2010 and since then this tool has been widely used by businesses of all shape and sizes. There are nine interconnected building blocks contained in the business model canvas that represents the key elements of a business model. The elements are key activities, key resources, key partner, channel, customer segment, cost structure, customer relationship, revenue stream and value proposition. The canvas is designed to be flexible and adapted to different business by simply filling out each block on the canvas which will then provide businesses with a better understanding of the business model and identify area to improves and innovates (Joyce & Paquin, 2016). Although that food banks operation are non-profit organizations, using a business model canvas in still relevant (Hindle & Vidgen, 2018).

Figure 2: Business Model Canvas (Hindle & Vidgen, 2018)



2.4.1 Key Activity

Key activity in a business model canvas refers to the action that a business undergoes to create value which includes all the process and operation that was involved in transforming raw or unfinished materials into higher value outputs (Joyce & Paquin, 2016). For example, in a business, key activities comprise of activities such as manufacturing product, providing services, marketing and advertising, research and development, distribution and logistics, customer support, and more. These activities are critical to the success of the business model because they directly contribute to delivering value to customers and generating revenue (Sparviero, 2019). In a food bank operation, A food bank can outline the key activities required to operate the organization, such as fundraising, volunteer recruitment, food collection, sorting, and distribution (Hindle & Vidgen, 2018).

2.4.2 Key Resources

Key resource in a business model canvas includes resources in terms of physically and also intellectually. Physical resources are such as equipment, facilities and inventory while intellectual resources are such as patents, trademarks and proprietary knowledge. Key resources can also include human resources such as skilled employees or strategic partnerships with other companies. It is important for businesses to identify and leverage their key resources to create a sustainable business model to deliver values to customers and generate revenue. Understanding their resources allows them to make decisions about how to allocate their time, money and other resources to maximize their success (Sort & Nielsen, 2018). In a food bank operation, A food bank can identify the key resources it needs to operate effectively, such as funding, volunteers, food donations, and transportation (Hindle & Vidgen, 2018).

2.4.3 Key Partner

Key partner in the business model canvas refers to the external entities that as business can rely on for efficient operation which can include suppliers, distributors, manufacturers and other strategic partners. It is important to identify the partners in a business because it allows them to strengthen other organizations while minimizing their weaknesses. Working closely with partners can help in reducing costs, improve efficiency and gain access to new markets or customer segments (Sort & Nielsen, 2018). In a food bank operation, A food bank can identify the key partners it works with to support its mission, such as local farmers, grocery stores, and corporate sponsors (Hindle & Vidgen, 2018).

2.4.4 Channel

Channel refers to the way a company delivers their value proposition to its customers which can be done through physical storefronts, online marketplaces, direct sales teams or any other means of reaching customers. Identifying and optimizing channel is essential for businesses as it allow them to reach their target customers effectively and efficiently. Further understanding

which channel is most effective for their business, a business can allocate resources more effectively and maximize their chances of success. channels can also play a key role in building relationships with customers and creating brand awareness. By developing strong relationships with customers through effective channel management, businesses can create loyal customer bases that will help drive long-term growth and profitability (Sort & Nielsen, 2018). In a food bank operation, A food bank can identify the different channels it uses to distribute food to its customers, such as a physical location, mobile pantry, or home delivery (Hindle & Vidgen, 2018).

2.4.5 Customer Segment

Customer segment refers to the group of people that a business aims to serve. Customer segment includes specific demographics such as age, gender, income level, or geographic location as well as psychographic factors such as lifestyle preferences or value. Identifying customer segment in a business is important as it allow them to tailor their products or services to meet the specific needs and preferences of their target customers. Understanding about your customers creates more effective value propositions that resonate with their target audience. It also helps companies identify new market opportunities and develop more effective marketing strategies. By targeting specific customer segments with tailored messaging and promotions, businesses can increase their chances of success and build stronger relationships with their customers over time (Sort & Nielsen, 2018). In a food bank operation, A food bank can identify the different types of customers it serves, such as low-income families, homeless individuals, or seniors (Hindle & Vidgen, 2018).

2.4.6 Cost Structure

Cost structure refers to the various costs that a company incurs in order to operate its business model. These can include fixed costs such as rent, salaries, and equipment, as well as variable costs such as raw materials, shipping fees, and marketing expenses. Understanding cost

structure is important for businesses because it allows them to identify areas where they can reduce costs and improve profitability. By analysing their cost structure and identifying areas where they can cut expenses or optimize their operations, businesses can increase their margins and generate more revenue. In addition to improving profitability, understanding cost structure is also important for investors and other stakeholders who are evaluating a company's potential for success. By understanding the company's cost structure and how it compares to industry benchmarks or competitors, investors can make more informed decisions about whether to invest in the company or not (Sort & Nielsen, 2018). In a food bank operation, A food bank can identify the costs associated with operating the organization, such as rent, utilities, staff salaries, and transportation (Hindle & Vidgen, 2018).

2.4.7 Customer Relationship

Customer relationships refer to the ways in which a company interacts with its customers and builds relationships with them over time. These can include personal interactions such as face-to-face meetings or phone calls, as well as digital interactions such as email, social media, or online chat. Understanding customer relationships is important for businesses because it allows them to create more effective marketing strategies and build stronger relationships with their customers over time. By understanding how their customers prefer to interact with them and what types of messaging resonate most strongly, businesses can create more effective marketing campaigns that drive engagement and loyalty. In addition to improving marketing effectiveness, building strong customer relationships is also important for driving long-term growth and profitability. By creating loyal customer bases that are willing to advocate for the company and refer new business, businesses can reduce their customer acquisition costs and increase their chances of success over time (Sort & Nielsen, 2018). In a food bank operation, A food bank can identify the different types of relationships it has with its customers, such as

providing education and support services or working with community partners to address the root causes of food insecurity (Hindle & Vidgen, 2018).

2.4.8 Revenue Stream

Revenue streams refer to the various ways in which a company generates revenue from its products or services. These can include one-time sales, recurring subscriptions, licensing fees, or advertising revenue. Understanding revenue streams is important for businesses because it allows them to identify new sources of revenue and optimize their pricing strategies. By analysing their revenue streams and identifying areas where they can increase prices or introduce new products or services, businesses can increase their revenue and profitability over time. In addition to improving profitability, understanding revenue streams is also important for investors and other stakeholders who are evaluating a company's potential for success. By understanding the company's revenue streams and how they compare to industry benchmarks or competitors, investors can make more informed decisions about whether to invest in the company or not (Sort & Nielsen, 2018). In a food bank operation, A food bank can identify the different sources of revenue it relies on to fund its operations, such as donations, grants, and fundraising events (Hindle & Vidgen, 2018).

2.4.9 Value Proposition

Value proposition refers to the unique value that a company's products or services provide to its customers. This can include features such as quality, convenience, price, or performance, as well as intangible factors such as brand reputation or customer service. Understanding value proposition is important for businesses because it allows them to differentiate themselves from competitors and create more effective marketing strategies. By identifying their unique value proposition and communicating it effectively to their target audience, businesses can increase their chances of success and build stronger relationships with their customers over time. In addition to improving marketing effectiveness, understanding value proposition is also

important for driving long-term growth and profitability. By creating products or services that provide real value to customers and meet their needs effectively, businesses can build loyal customer bases that are willing to advocate for the company and refer new business (Sort & Nielsen, 2018). In a food bank operation, A food bank can define the unique value it offers to its customers, such as providing access to healthy and nutritious food or partnering with local farmers to source fresh produce (Hindle & Vidgen, 2018).

CHAPTER 3

METHODOLOGY

3.1 Introduction

The term “method” and “methodology is often mistaken to have the same meaning and are used interchangeably in a research paper. Although that they are referred to two things that are the same in the context of a research, in fact, they are not (Ramroodi, 2021). Methodology is a research process of collecting data through a systematic and theoretical method while the term “method” comprises of the technique, tools and strategies used by researcher in conducting a research paper and finding solutions to a research problem (Bhosale, 2022).

The research method that was used to conduct this study is based on a qualitative method. The data collection and analysis stage consisted of collecting data from several respondents, data transcription from audio recording from several interviews, coding data and thematic analysis for more details on the data analysis. The primary data that are used in this study are from interviews and secondary data are from journal articles, books, literature works and websites. Before the interview session, the interviewer will prepare a set of questions relating to the study to question the respondent. During the interview, the respondent will be interviewed based on the interview question prepared. The answers from the respondent will be recorded in a form of audio recording and memo. The data analysis proses consisted of

analyzing the data using ATLAS.ti software. ATLAS.ti is a computer software program that is designed to be used in qualitative data analysis to assist in managing, coding and analyzing large amount of textual, graphical and multimedia data.

The interview protocol was also prepared as a purpose of a guideline during the session of the interview.

3.2 The Approach Applied in This Study

This research study uses a case study approach. Case study approach in research is a methodology that focuses on in-depth analysis of several cases. It can be through an individual, a group, an organization, a community, a phenomenon or other type of analysis. This type of approach is used because an understanding of a complex phenomenon in its real-life context is needed (Rashid et al., 2019).

In this study, an exploration between several cases of food bank operation was conducted. Data was collected through several interviews and document analysis and the data was analyzed to understand the operation and model of the food bank organizations. The data between these food banks were compare to identify any patterns or themes.

3.3 Proposition Development

Proposition development is a process where a clear statement is created that summarizes what the study is trying to investigate. This part of the study helps to guide the data collection and analysis process by outlining the expected relationship between the key concepts or variables being studied (Clay, 2018).

In this case of a qualitative study, the research questions that are bound to be answered are:

1. How does a food bank in Malaysia manage food waste and distributes the foods?
2. What is the best practice a food bank can follow to achieve sustainable development goals?

3. What are the impacts of food banks in Malaysia?

The proposition development for research question (1) is that food banks in Malaysia adopts various strategies to manage food and distribute them to those in need depending on the size and operation of the food bank organization. The justification for the proposition is that based on previous study, it had been identified that food banks use different strategies to manage food waste and distribute them to those in need. This includes groceries donating their unsold and almost expires items, donations from farmers and partnering with community organizations (Lee et al., 2017).

As for research question (2), the proposition development proposed that the food bank that follows best practices in terms of effectiveness and efficiency are more likely to contribute more to the achievement of sustainable development goals. To justify, previous study has identified several best practices for banks to follow that is both efficient and effective that can further increase the progress toward achieving the sustainable development goals. For example, Davis et al. (2014) suggested tactics for collecting and distributing food more efficiently by employing a two-part methodology.

Lastly, the proposition development for research question (3) is that food banks in Malaysia have positive impacts in terms of reducing food waste, food insecurities and poverty among low-income households. To justify this statement, previous study had proven that a food bank operation has the ability to reduce food insecurity and poverty among the low-income households along with reducing food waste significantly (Lee et al., 2017).

3.4 Research Design

A research design is a strategy that outline how a study will be conducted in order to find answers to their research questions. It is also a roadmap that guides the research process altogether from deciding on a research method to data analysis to data interpretation

(McCombes, 2021). In this study of “The Best Practices of Food Bank Model to Achieve Sustainable Development Goals”, the research design is as follows:

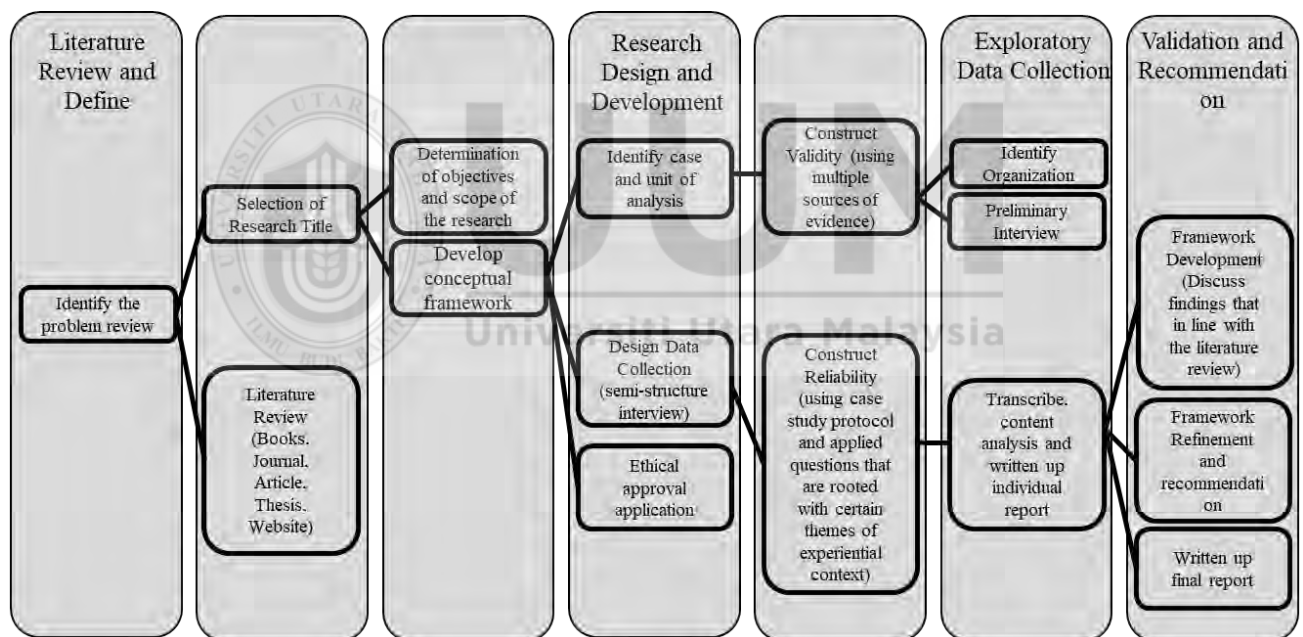
Figure 3: Planned Research Process



3.5 Research Process

The process flow of the research is shown in the figure below.

Figure 3: Research Process



The whole process of the study started off with identifying a problem or issue. In this case, the problem of food waste and hunger was identified leading the next process of reviewing literature from books, journals, articles, thesis and website. The literature relating to food waste, sustainable development goals and food bank models was reviewed. A research title was also constructed along with determining the objectives and scopes of the research. A conceptual framework was also developed which in this qualitative study, a case study

framework was used to provide an in-depth analysis of several cases which will to give more understanding about each operation of the food bank organizations.

Heading into the phase of research design and development, the framework leads to identifying case and unit of analysis, designing data collection and getting application approval to conduct data collection. Validity and reliability test was conducted and leads to the exploratory data collection phases. In this phase, food bank organization was identified and interviews was conducted. For the data analysis process, the audio recording from the interview was transcribe and analyzed. Based on the data analysis, the analysis findings and recommendation were discussed. A full report writeup was conducted to complete the whole study.

3.6 Data Collection

Data collection is a process of gathering information and insights using various methods which in this case of a qualitative study, methods such as interviews, observations, focus groups and document analysis can be used to collect data. This process aims to give understanding on the meaning and experience of the participants and to gain a more in-depth understanding of the phenomenon that is being studied. The methods of data collection are chosen based on the research question and the specific context of the study (Barrett & Twycross, 2018). In this study, primary data was collected through three (3) in-depth interviews with the organizations of food bank which would then be analyzed using thematic analysis to identify patterns and themes in the data. The food banks that were interviewed was The Lost Food Project, Food Aid Foundation and Yayasan Food Bank Malaysia.

3.6.1 Sampling

The sampling strategy used to choose the respondents for the interviews is by using a purposive sampling. Purposeful sampling refers to the respondents selected is based on the

specific criteria that is related to the research question. In this case, three (3) organizations of food banks in Malaysia were selected as a respondent, which is relevant to the research question about food bank models to achieve sustainable development goals. The selections were based on their similarities in terms of mission which aims to focus on collecting food surplus from various sources and distributing it to those in need.

The recruitment process was done by contacting each organization through e-mails and phone calls to ask for their permission to visit their organizations and to conduct an interview session with the duration of one to three hours.

3.6.2 Respondents' Background

Food banks	Founded	Number of Staff
FOOD AID FOUNDATION (FAF)	2013	10
THE LOST FOOD PROJECT (TLFP)	2016	10
YAYASAN FOOD BANK MALAYSIA (YFBM)	2019	15

3.6.3 Data Collection Procedure

For the interview, three respondents among the food banks in Malaysia were selected and interviewed. The data collection process involves following the protocol of interview to ensure that the interview session is successfully conducted. The interview was conducted through a face-to-face interview at each food bank location. The interviews were audio recorded for the purpose of to compare data between the three interview answers.

The questions for the interview were asked based on their food bank operation model in terms of key partner, key activities, value proposition, customer relationship, customer segment, key resources, channel, cost structure and revenue stream.

Primary Sources	Secondary Sources
<u>Interview</u> An in-depth interview was conducted for 1 to 2 hours to collect data and information.	<u>Journal Article</u> Related articles were collected from previous studies and interpreted as a supporting source to back up the research.
<u>Annual Report</u> The food banks' annual report was obtained to retrieve more information regarding their food bank operation. <u>Website</u> Data was retrieved from the organization's official website	

Table 2: Primary Sources and Secondary Sources

3.7 Data Analysis

After each interview, the audio recording of the interview was manually transcript. The data from the interview was then analyzed using ATLAS.ti which is a software program that was designed for qualitative data analysis. The data was imported into the software and the software assisted in coding the data which is a process of labeling and categorizing the data. In the software, codes for themes or concepts can be created from the data. The code was then search, sort and analyzed using ATLAS.ti by exploring the relationship between codes and identify patterns in the data. Lastly the analysis was then used to interpret the data and provide answers

to the research question. The finding was used to create summaries, conclusion and recommendations.



CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

The inquiry and result of the finding are from three respondents with similar background who are in the food bank organization in Malaysia are presented in this chapter. In this study, a case study approach was applied for the purpose of analysing and understanding the findings obtained from the interviews based on the respondent's experience. The research question was adapted for this study.

Three respondents from the non-government organization (NGO) that operates a food bank organization was chosen. The location of food bank was chosen within Malaysia. The respondents were chosen from the NGO organizations that aims to reduce waste and hunger by distributing wasted foods to the needy. The interview questions were asked based on their key partners, key activities, value proposition, customer relationship, customer segment, key resources, channel, cost structure and revenue stream. The response was analysed and investigated to determine the most ideal food bank model that can be followed.

4.2 Findings

The purpose of the interview was to further investigate and enhance the literature evaluation about food bank model in Malaysia. Based on literature from previous studies, different food banks follow different models depending on the suitability especially when it comes to minimizing cost. The following is the brief interview response for each respondent:

4.2.1 Customers Segment

Q1: Who are your recipients?

Questions	Response		
	The Lost Food Project (TLFP)	Yayasan Food Bank Malaysia (YFBM)	Food Aid Foundation (FAF)
1. Who are your recipients?	Charities organization and zoo	B40 household, special abilities, welfare centre, aboriginal, disaster victim and students	B40 community, refugee centre and homes

Table 3: Food Banks Recipients

Based on the question of “who are your receiver?”, the receivers for the food banks are almost similar as they provide food for the needy. However, TLFP limits their distribution to only organization where only charities entities are allowed to collect food from them. But they will provide help to individual who approach them for help by referring them to organization that can further distribute the foods to them. They stated that *“We don’t give to individual, we only give to organization. This is because we don’t give in small quantities, we usually distribute in bulks.”* They also mentioned that foods that are no longer consumable by humans such as overly wilted vegetable are being sent to zoos to be consumed by animals or being hand over to a composting company.

The recipient for YFBM and FAF are almost identical as they both also distribute foods to individual. However, individual receiver will only be getting food packs and organization entities will be receiving foods in bulk. YFBM also mentioned that *“We also do programs*

where we help fisherman before the monsoon season. What we do is, we distribute basic necessities and also cash donation”.

Q2: How do you decide who to help? (Selection Process)

For the selection process, the organization that wishes to receive food from them will have to register with them first. There is not much of a procedure, it is just to let them know beforehand that the organizations need help from them. According to them, TLFB will investigate who are the one applying. They mentioned that, *“This is because we need to know if they have the facilities to store the food or not. We do not want them to go to waste, that does not go with our food bank objective. Usually most will be approved but they need to follow a certain process because too many organizations are asking for food.”* Since TLFB only deals with organization, they don’t deal with individual application.

Opposite from YFBM and FAF where they have to deal with both individual and organization application. For YFBM, those individuals who wishes to apply will need to fill a form on their website and inform the food bank what kind of items they need where the application is under a program called “food bank runcit”. Same goes to community application but it goes under a different program which are “food bank lestari” and food bank community program. After further questioning of “Who is qualifies in receiving help? Is it anyone who apply will receive help?”, they answered with *“We will ask them a few questions for example their household income or if they have any disable person in their household. We will also ask the people nearby if that person really need help or not.”* Assuming that most who applied will receive help. YFBM stated that they are they are the one selecting which person get help, *“We are the one who selects which person get the help. Donors just donate. Before that, we already have an agreement with the donors. For example, we already talk about what items we are*

going to give to the receiver and after that, we are the one who is in charge of food purchasing and packing.”

The interviewer also asked if the process is the same if a lecturer wants to apply for help for students who are needy at university which they replied with, *“If you want food product, we will inform you what we have. For example, we have milo, chocolate or biscuit. You just have to inform us the quantities of item that is needed. The distribution can be more frequent if you can cover the transportation costs if not, we can only deliver the items if we have other plans to go to UUM area.”*

As mentioned earlier, YFBM also do programs where they focus on a location for emergency cases such as sending aids to fishermen during monsoon season. The selection process of the location that they are going to hold their programs are replied with, *“We usually rely on other NGOs at a location and they will tell us which area is affected. For the selection on who to help, we also depend on our donors. For example, the donors specifically said that they want to help people like rubber tappers. So, the NGOs will inform us the location that these people are affected.”*

For FAF, the responses for these particular questions were, *“For homes, at first, we did have to look for them especially those around the Klang Valley area and then they will register with us. After obtaining a whole list of homes, these homes will agree to receive help from us. There are also homes that come to us and ask for help. We will just give them a form to fill out with some information.”* However, FAF differs with other food bank by only focusing on homes that are registered but also mentioned that, *“We do give to unregistered homes but only if we know about their financial and sponsorship situation, usually those who don’t get much from food banks. Before that, we will question them about a few things and go visit their place and see how their condition is. Sometimes we want to know if they have the facilities to cater*

the product. For example, we need to know if they have freezer, if not, we are not able to distribute frozen food items to them.” Another selection criteria are that they focused on homes that are under privilege and don’t have a fixed income. “We don’t accept application from homes if we know that they are already sponsored by big companies such as Maxis. However, it’s not like we reject them 100%, we help them only if we have excess food.”

For individual receiver, their selection criteria are for the ones who are among the B40 community living at a low-cost residential area. The process are firstly they will do an arrangement with the residential association and stated that, *“because they will know who need the food bag in their residential area. So, we rely on that information from them and just let them pick who receives the food bags and then we distribute it to them.”*

During the pandemic of COVID-19, FAF open help to those in need. They will receive information that a family is in need of a food bag and proceed to donate it to them depending on the items that they have in their inventory. However, they stated that, *“we do ask them a few questions first. We don’t want them to take advantage of us.”* Although it seems that they don’t provide help to financially capable people, FAF replied with, *“Yes, but not for emergency cases. We don’t put any requirement for emergency cases such as flood. If a person is a victim, we will help them but we will have to look at the condition of the victim for post-flood aids.”*

4.2.2 Key Partner

Q3: Who are your partners in delivering food to your food bank recipients?

When asking this question, the partners for all three food banks are partner with companies, restaurants, produce markets, manufacturers, retailers, farms and NGOs. TLFP mostly partner with the sellers from the wholesale market where the seller will deliver to them every time there are excess food that are not sold. When collaborating with companies, TLFP will sign a contract with them. They mentioned, *“we have signed a contract with PNG and*

Nestle for one year and they will give us whatever they want to us.” These are companies that donates in terms of food products and cash. They also did collaboration with company such as Village Grocer, where they explained, *“On their apps, there is a ‘charities’ option at the bottom and you can donate your coins to us. We also do collaboration with malls and companies. For example, certain amount that is sold from the certain brand, certain amount of money will be donate to us.”* TLFP also collaborate with stores such as Nando’s, Secret Recipes and bakeries where they collect cooked meals, pastries, breads from the vendors that can no longer be sold due to exceeding certain time period and directly deliver them to homes and charities. TLFP also work together with other NGOs where they explained that, *“In Malaysia, we have a strategic partner that consisted of few food banks in Malaysia. We work together between us. For example, if there is flooding, we will give the foods that we have to other food bank for them to go help the flood victims.”* They also mentioned that whenever a company donates too much products and they have no space in their warehouse, they will send the products to the partner NGOs.

For FAF, partnering company will often propose a project to perform with them. They explained, *“companies usually come to us to do projects. We will arrange the project and they will send some volunteers to cook for 500 pax.”* They often interchange the term “partner” with “sponsor” as these company donates or sponsor food items to FAF. FAD added, *“They are also company who donate RM 10,000 to support our operational costs.”* Once in a while, FAF will receive offer from a company to become their main partner, *“Every year they will give us around RM 500,000. There are some companies that only wants to do project and some only wants to give out cash, but we try to look for main partner so we know that we have a concrete funding.”* FAF partners with other NGOs in term of receiving help from them to deliver food items to location outside their area. In return, FAF will share their items with them. In this area, FAF goes further by collaborating with university where they said, *“We also keep in contact*

with the University that is doing research on food in terms of expired food or “best before”.”

They also added *“we do have our own nutritionist. We are under a university so any problem we would just turn to them for advice.”*

YFBM stated that they have over 70 partners with company, locally and internationally. They even work together with NGOs similar to other food banks. These NGOs will inform them the location of the people who are in need and also which area is affected in emergency cases. YFBM added, *“We also collaborate with shopping malls or company where we put a donation box at the mall or company so people can donate.”*

Q4: How do you find partners?

All three food banks gave similar response where they answered that companies usually come and approach them to collaborate together. TLFP responded, *“This is because they have to reduce their inventories. Instead of throwing out the product, they choose the initiative to donate the items to us.”* These companies are also required to do corporate social responsibility program so that is why they usually approaches the food bank first. TLFB also mentioned, *“We have staff that will reach out to store such as Speedmart and inform them if they have food products that are due to expired.”*

4.2.3 Key Activities

Q5: How do you distribute your foods?

All three food banks have very similar operation in terms of food distribution where they collected consumable food from sources such as restaurant, wholesale market and manufacturer and distribute it to charities organization and individuals in need. The purpose of them operating the food banks is to reduce wasted food and reduce hunger. However, the operation between the food banks varies slightly with each other.

For TLFP, they stated that they collect food from sources. Their operation is to sort and distribute them. They mentioned, *“Every Wednesday night, we will receive vegetable from the suppliers and volunteers will come to the warehouse and sort them out from the goods and bad ones. After that, we put in one place and in the morning, people from the charities will come and collect them.”* They added, *“Sometimes we will go and send it ourself. There are charities that is a bit far from the warehouse such as in Kajang and there are also charities that don’t have transportation. So, we will help them. But only for every 2 weeks. It can be more frequent if they can come and collect them themselves.”* For the bread and chicken rescue program, TLFP will send their volunteers to each vendor, collects the food and directly distribute them to homes and charities the same day. They mentioned that sometimes they receive frozen seafood to distribute, *“we will try to distribute them as fast as we can and we have to check if the organization that will be receiving the frozen seafood is equipped with freezer or not. If not, we can’t give it to them.”*

On the other hand, FAF distribute food, usually cooked food and food bags containing dry foods such as uncooked rice to individuals and organization. If the food bank is distributing to homes, FAF will deliver it to them 3 to 4 times a month depending on the type of products that they have. They also added, *“We will distribute them based on the amount of occupant in the homes. If there are 30 people living there, we will give them a week worth of food for 30 people. The next week, they can come and collect again.”* For individual receiver, FAF will do arrangement with residential association because they know who need the food bag in their residential area. For emergency cases, FAF would just distribute food products to the local community and they are the one who distribute them to those in need. They usually rely on logistics for food deliveries. There are times when the receivers need to come and collect the food items from them. If not, they could rent a third-party logistic provider to deliver the items.

YFBM distribute their food by distributing food bags to the community and individual. They usually distribute food items in bulk when they are sharing their inventories with other NGOs. However, these NGOs will have to come and collect the items themselves.

Q6: Do you distribute other types of necessities other than food?

	The Lost Food Project (TLFB)	Food Aid Foundation (FAF)	Yayasan Food Bank Malaysia (YFBM)
Type of donation	Basic Necessities	Basic necessities, cash and cleaning product	Basic necessities, cash

Table 4: Type of non-food donation

Based on table 2, it can be seen that all food banks distribute basic necessities for non-food donation. Both FAF and YFBM distribute cash donation to their receivers. However, only FAF distribute cleaning product. They mentioned, “*We will proceed to find donation for non-food items such as cleaning appliances and self-care items when there are cases like flood.*”

Q7: Do you do any special programs?

	The Lost Food Project (TLFB)	Food Aid Foundation (FAF)	Yayasan Food Bank Malaysia (YFBM)
Programs	Workshops	Emergencies Food Relief and skill training programs	Foodbank relief, Jelajah Merdeka Program and seasonal programs

Table 5: Special Programs

According to TLFB, they usually do program with companies that need to do CSR programs. The programs are such as companies will send over some of their staff to volunteer at the food bank warehouse every week. They added that, *“we are also planning on doing some workshops such as teaching people on how to do composting.”*

As for FAF, they came up with a program where they provide aids to emergency cases victims such as flood and COVID-19. FAF also have this skill program where they organize classes which are food handler course and culinary training. FAF mentioned, *“For food handler course, it’s for the operators to gain certificate on food handling. Usually these courses cost money, so we help them by providing the training for free. We also provide typhoid jab. For culinary training, we train the receiver to cook. From the food handler course, we will pick a few students to train them in the culinary training. Maybe it’s for a duration of 1 month or 6 months depending on the suitability and funds.”* They also added, *“We teach them on how to handle food properly. They are even provided with transportation allowance. Other than that, we teach them about business such as budget, modal and so on. We do this because we want to give them the initial knowledge for them maybe if they want to start earning money by doing business.”*

YFBM also have similar program with FAF where they provide aids for emergency cases. They also held programs depending on the season. YFBM explained, *“In April and May, we usually have the Ramadan season, so our program will be related to this season. In June and July, we will do campaign on Independence Day. For example, we did a “Jelajah Merdeka” program in Johor and Selangor.”*

4.2.4 Key Resources

Q8: How do you financially sustain your organization?

Upon interview, these food bank organizations financially sustain their organization through donations from companies and individuals. Donation given are mainly in terms of cash and items. According to TLFP, FAF and YFBM, cash donation that were donated by companies are used to cover their operation cost. TLFP was asked a question on what will happen if someday companies stop given cash donation to them. They replied with, *“Every year, these companies have their own budget for CSR (corporate social responsibility), so they will donate to us every year.”* They also added *“The amount is not fixed. Sometimes we get more, sometimes less. What we get is enough to cover the operational cost for 3 to 5 years.”* So, they will try to minimize their cost as much as possible. A way to make that happen is by operating efficiently through logistics. They gave example of efficiency through their “bread rescue” program. *“We don’t bring them to the warehouse first because we don’t want them to go bad. So, it’s more efficient that way. We do this bread rescue everyday but we only sent them to the nearest charities usually between the range of 5 to 10 KM.”* According to the quote, more food can be distributed without any waste, more people are saved from hunger and cost for logistics are used efficiently. TLFP also mentioned that they were planning to hold some workshop on composting and use the fee to cover some of their operation cost. On the other hand, keeping a good relationship with donors is one of the ways to sustainability. *“A way that we are keeping a good relationship with the companies and try to provide the best service for them and protect their brand.”* Gaining their trust is important to keep them to constantly provide funding.

FAF stated that they rely entirely on funders to fund their operation. They added, *“We also do fundraise sometimes for additional support. If there are flash flood victim that are in need of cash donation, we will conduct a fundraising for them. Alhamdulillah so far, just with individual fundings along, we are able to cover the minimum cost of operation.”* Same goes with this food bank, they will try to minimize their cost as much as possible. *“In terms of the sustainability of our operation, showing people what we do is how we can sustain this food*

bank operation. When they don't see what we are doing, they don't want to donate. So, by showing people what we do, people might want to donate more." It shows here that just by publicising the aims and objective of the food bank operation will help in sustaining the operation. This is because food banks operation are purely sustainability work in terms of society and environmentally.

For YFBM, they rely on their marketing department to sustain their operation is which relying on them to look for more funding. *"It can be through crowdfunding on our website or social media. For individual who donates to us, we will provide them with a receipt so that they can claim for their tax exemption"* Providing tax relief for donor tends to drive them to donate more. This statement is also supported by previous study that higher tax deductible means higher tendency for people donate. This is because they know that their money goes to a better cause (Blackman, 2016).

Q9: Who and what are they key resources in your food bank?

As discussed previously, the key resources of food banks which in this study, applies to the three interviewed food banks are donors. However, staff and volunteer are also one of the main resources in their operation. TLFP mentioned, *"This year we only have not more than 10 staffs and mostly rely on volunteers."* They also stated that keeping a small quantity of staffs is a way for them to minimize cost.

FAF also minimize their cost by keeping their overall staff at 12 people. However, FAF is a bit different as they stated, *"For every project, we rely on our permanent staff so that's why we need to be consistence. We cannot just rely on our volunteer."* Relying on staff comes with as cost as not many people are willing to work in a non-profit organization. This is because it has been proven that staffs need a reward system so that they feel more motivate and willing to work harder on their next project (Wickham, 2022). FAF admitted that they cannot provide

much to the worker as they don't get receive much as an NGO. However, they try their best to keep the employer-employee relationship going strong. *"As for now, we try to give if we are able to save a lot for that year. Sometime we try to give them something during the festive season. We also make sure that our staff are insured. For example, if our staff was admitted to the hospital, we would fund our staff to pay for their hospital bill. Although we can't give anything fancy, we try to support them whenever we can."*

Similar with YFBM, they highly rely on their marketing department to look for fund. They mentioned that they currently have 15 contract staffs. They also added that, *"Our marketing department handles all the social media and they try to do their best to market the food bank and capture the public's attention towards us."* Based on this statement, they rely on staff to gain more funding to sustain their operation.

4.2.5 Value Proposition

Q10: What is the main goal for the foodbank?

During the interview, TLFP, YFBM and FAF mentioned that their main goals is to rescue food waste and reduce hunger as they are contributing to the SDG 2 and 12. However, TLFP highlighted several times that they only distribute food that are being wasted. Their operation also revolves around "trying very hard not to waste anything". They mentioned, *"This is because our motive is never to build a warehouse to store items but to distribute them as fast as we can."* During the food distribution process, they will investigate the one applying for help beforehand just because they want to know if they have the facilities to cater the foods. *"This is because we need to know if they have the facilities to store the food or not. We do not want them to go to waste, that does not go with our food bank objective."* They added, *"Sometimes we will also go visit their organization for audit purposes. We want to see if they really need the food. We don't want them to be over stocked and waste the food"* Cash donation

that they received strictly goes to in covering operation cost. TLFP highlighted, *“We never use the money to buy more food to distribute. This is because we build the food bank to rescue food waste, not to buy more food. If not, our objective to reduce food waste are not able to achieve.”* Apart from distributing foods, non-edible food will be going towards composting as it can be turned to soil and be used to grow more produce.

FAF explained their establishment history of the food bank and stated that, *“The initial idea to open up this organisation was of course to rescue access food from being wasted.”* Although that both FAF and YFBM aims to reduce waste, they mentioned in the interview that they sometimes use the cash donation money to buy food items.

Q11: What values do you provide to your food bank recipients?

There are several values that the food banks provide to their receiver. Generally, they provide the value of basic need. Food bank recipients are usually those with food insecurities. By distributing foods to them, they are able to escape from it. Both FAF and YFBM provide the value of education through continues aids to their receiver by funding for training and classes. FAF funded a food handler course and culinary training. YFBM stated that, *“We fund for classes for a few weeks in the orang asli village. Our objective for this program is we want to enrol them in primary school.”* Lastly, these food banks provide the recipients with health benefits. Although not in terms of medical but through eating healthy food. YFBM also added that, *“We expect them to have a better life. For example, the people in needs are usually malnourished because they don’t have proper meals. When we help them, we want them to eat more nutritious food and be healthier. That is what we expect from them. To be healthy and live better.”* To add to this statement, FAF also collaborate with nutritionist and professional chef to provide healthy and nutritious meals for their receivers.

4.2.6 Customer Relationship

Q12: How do you manage relationship with your recipients?

Each food banks have a different way in keeping a good relationship with their receivers. When FAF was asked with the question of “What are your expectation with your recipients?”, they replied with, *“We don’t expect much from them. We don’t have any deep relationship with the receiver except from homes”*

After further interview, FAF and TLFP have similar ways in keeping a good relationship with their receivers which is by providing disclaimer to them regarding the food items. TLFP stated, *“We will inform those who are receiving the food items about the expiry date of the item so that they are aware of it. It’s up to them if they want to receive it or not.”* This is because most of the donated food items are due to expiry. Although that their job is to just distribute food, but showing their receivers that they care about them even after food distribution proves that they care about their relationship. Similar to FAF, *“We do explain to them beforehand about our product condition so they know what to expect.”* They also consult with their nutritionist and professional chef because they want to avoid any case of food poisoning. FAF also added, *“We also hope that the donors can spread the words that we here at the Food Aid Foundation are helping people so that we hope to get more donation from other companies. We also just hope that the receiver gives us good feedback. Maybe someday the people we helped might help us back in the future.”*

However, for YFBM, they manage their relationship directly with the receiver. *“Operation department is in charge of keeping in touch with the receiver. Before we do any programs, we will have a group chat ready before hand with all the receiver in the group.”*

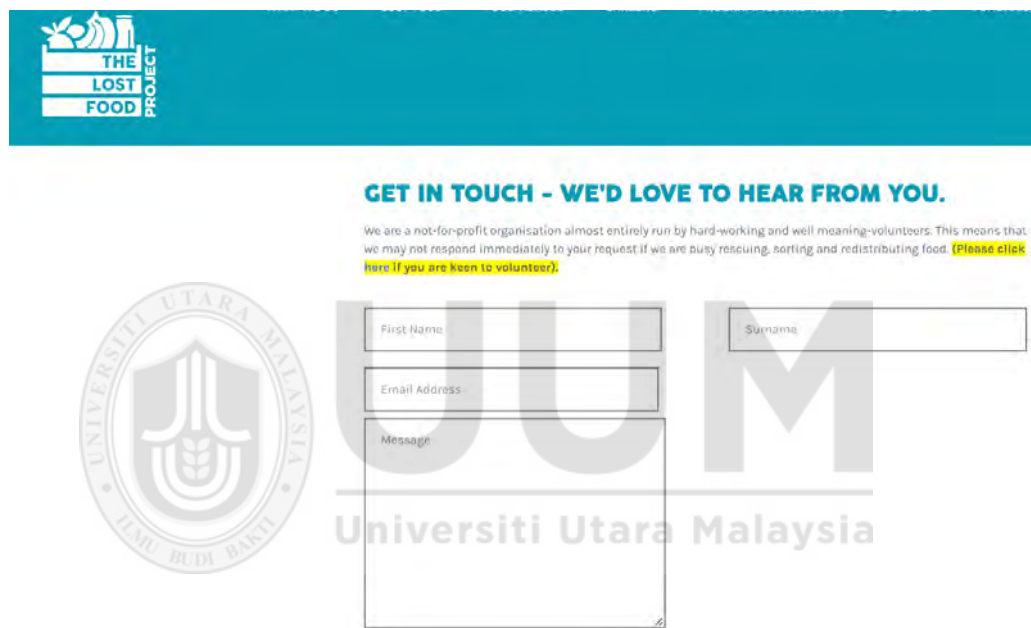
Q13: How do you update about activities and events to the publics?

All of the interviewed food banks publicise their activities either through their social media such as Facebook and Instagram and their official website.

Q14: How do people give feedback regarding your food bank?

The food banks did not give any information about the feedbacks. However, each of their website provides emails address and contact information for the public to contact. Their website also provides a section to contact them (refer figure 1). Another way of giving feedbacks to these food banks is the public can post at the comment section on all their social media.

Figure 4: Medium for Giving Feedbacks (The Lost Food Project, 2023)

The image shows a contact form for 'THE LOST FOOD PROJECT'. At the top left is the logo, which consists of a stylized fruit basket icon above the text 'THE LOST FOOD PROJECT'. Below the logo is a teal header bar. Underneath the header, the text 'GET IN TOUCH - WE'D LOVE TO HEAR FROM YOU.' is displayed in bold. A paragraph of text follows, stating that the organization is a not-for-profit run by volunteers and may not respond immediately. A link is provided for those interested in volunteering. Below this text is a contact form with three input fields: 'First Name', 'Email Address', and 'Message'. To the right of the 'First Name' field is a 'Surname' field. The form is overlaid on a background featuring the University of Utara Malaysia (UUM) logo and name. The UUM logo is a circular emblem with a shield in the center, and the text 'UNIVERSITI UTARA MALAYSIA' and 'IZAM BUDI BAKTI' is visible around it. The text 'Universiti Utara Malaysia' is also written in large, semi-transparent letters across the background.

4.2.7 Channel

Q15: What or which platform do you use to advertise your foodbank?

This question was also answered in the previous questions. All three food banks used social media and website as their marketing platform. YFBM also advertise their food bank through the connection of other NGOs. They mentioned that, *“If we attend any program, we will try to start a conversation with the people there and introduce them to our foodbank, just to create an awareness that we exist.”*

Q16: How do you accept donation? Which platform?

All three food banks use bank transfer for cash donation. YFBM stated, *"We will provide them with qr code or bank account number for them to transfer their donation to our bank account."* FAF also replied with, *"We have account transfer. Others can find us at donation platform such as simplygiving."* YFBM also mentioned that they collaborate with company and mall there these organization will put a donation box in their company for their staff and customers to donate and also added that, *"we use our marketing department as a platform to search for funding"*

4.2.8 Cost Structure

Q17: What are the costs incurred to operate a food bank?

After the three interviews, it can be said that all food bank incurred the same cost such as warehouse maintenance, labour, facilities and logistic. YFBM stated that their monthly cost is around RM 100,000 to RM 120,000 and logistic contributes the highest towards the cost. They all agreed that logistics one of the challenges of operating a food bank as they need constant fund to cover the cost. YFBM supported the statement with, *"Yes, our main struggle is in terms of funding"*

Q18: How do you cover the cost?

All three food banks responded to the question by saying that all operating cost are cover by the cash donation. FAF stated *"They are also company who donate RM 10,000 to support our operational costs."* For TLFP, they stated that company will donate to them in terms of cash every year but the amount is uncertain. Some years are higher than the other and some are not. They also added, *"What we get is enough to cover the operational cost for 3 to 5 years. We do need through planning to avoid any mishap."* FAF stated, *"we 100% rely on funders. The donors that donate cash, we allocate 10% of it for our operation cost. Sometimes, there are companies who give cash donation to us just to cover our operation cost although*

that they are not our main partner.” “Alhamdulillah so far, just with individual fundings along, we are able to cover the minimum cost of operation.”

YFBM also allocate some percentage from the cash donation towards their operation cost. *“If we have corporate funding, we will take about 15% to 20% from the donation to cover our cost.”*

4.2.9 Revenue Stream

Q19: Do you generate any revenue from the operation? If yes, how do you get revenue?

All the food banks denied that they gain any profit from the operation. Their measure of ‘revenue’ is when cash donation exceeds the cost and expenditure. However, they organization does not take it a bonus. YFBM highlighted that, *“The funding that we got is enough only to cover the cost. Sometimes, there was even deficit but then our marketing people will look for more funding and we are able to cover it later.”* FAF supported their answered with, *“As for now, the revenue is more than cost. The excess money will be carried forward to future projects”.*

4.3 Discussions

This study was conducted to satisfy the research questions which are (1) How does food bank manage food waste and distribute the food? (2) What is the best practice a food bank can follow to achieve sustainable development goals? And (3) What are the impacts of food bank in Malaysia?

4.3.1 RQ1: What is the best practice a food bank can follow to achieve Sustainable Development Goals

4.3.1.1 Customer Segment

Customer segments refers to a group or individual who share similar characteristic, needs and behaviour. In this case of food banks operation, the term “customer” can be replaced

by receivers or beneficiaries. These are the group of people or individual who the foods will be distributed to. After analysing the findings of the interviews, most food banks have their targeted receiver. This part depends on each food bank organization which it is up to them who are the groups that will be receiving their help. Since most food banks have the same general goal which is to reduce hunger and wasted food, food banks organization tend to have similar targeted group which are such as distributing foods to homes and charities. Again, selecting the groups of who to help depends on the aims of the food bank organization. For example, if the organization's goal is to help in emergency cases, they can target their receivers on flood victim.

The selection process of the receiver is also important for efficient distribution. The organization should start by either approaching their target receiver or having them to apply to the food bank if they want to get help. The application can be made through various platform such as the organization's website, social media and e-mail. However, it must be stressed that the most important part to perform is to investigate the receiver's background beforehand no matter if the food bank is the one approaching the receiver. During the investigation, the organization must question them in terms of their needs, conditions and facilitates. Firstly, the organization can ask the receiver on what kind of item that they need. Next is to check their living condition. The organization can even visit the receiver's location such as at home and charities if needed. This is to ensure that they really need the items that they are asking. The organization also need to make sure that the receivers have the facilities to cater the food items. For example, if the receivers are asking for frozen produce, they need to have a freezer at their location to store the frozen produce. This part of the selection process is important to make sure that each item goes to who really needs them and to make sure that no food further goes to waste.

4.3.2.2 Key Partner

In an NGO, key partners are the groups or individuals that plays an important role in supporting the organization's mission and also help them to reach their goals. In a food bank organization, partners are crucial to look for mainly because they are the one funding the organization. Partners can be either individual or groups such as companies. The funds that are donated by the partners can be in terms of cash donation or items. It can be said that partners keep the organization going as no funding means no food to distribute so it is very important to keep a good relationship between the partners.

Food banks can start off by selecting a targeted partner. This part also depends on each organization's aims and goals. For example, if the organization aims to reduce waste, they can partner with wholesale market and manufacturer where they can donate unsold vegetable and due to expiry food items. If the goal of the organization is to help in emergency cases such as flood, they can partner up with retailers or groceries store where cleaning items can be donated to the victims.

There are two ways to look for partners which are by approaching them or they will approach the organization. One of the ways that TLFP look for partner is to go to a retailer store such as 99 SpeedMart and ask them if they have anything to donate. On the other hand, most company will allocate certain amount towards their CSR program and these company tend to look for charities organization to fulfil their company's annual qualification. If possible, try to seek for companies who are willing to sign a contract stating that they will donate certain amount of money to the organization monthly or yearly. This is to ensure that the organization have a concrete funding.

Collaborating with other NGOs is also crucial because they provide plenty benefits for the organization. For example, the interviewed food bank stated that often rely on other NGOs

for help such as to distribute item outside their location. NGOs will often share their inventories among them. So, keeping a good relationship with partners is a great way to run the organization more efficiently and effectively especially in terms of cost and funding.

4.3.1.3 Key Activities

General activities in a food bank operation consisted of collecting food items and distributing it to the one in need. Food bank organization in Malaysia differ slightly in terms of their activities. Some food banks don't distribute food items to individual but to homes and charities and some distribute to both. Some don't collect cooked food and some do. It all depends on the organization itself especially in terms of their financial situation.

All the interviewed food banks have similar ways in distributing their foods which is by suppliers sending the foods to their warehouse. The food is then sorted and then distribute to the receiver. The only difference is whether the receiver come and collect the donation from the warehouse themselves or the food bank organization have to deliver it to them. For distribution to homes and charities, it is better to have them come and collect the items at the warehouse as it will save more logistic cost. For individual distribution, the food bank organization can either sent the items to one location and have their representative to further distribute them to individual or the food bank have to distribute to each individual. However, some ways of distribution can incur more cost than the other. It all depends on the food bank organization's financial situation.

All interviewed food banks distributed non-food item such as cash donation, basic necessities and cleaning supply. The selection for non-food item for distribution also depends on the organization's receiver. for example, if the receivers are among the flood victim, the organization can distribute item such as cleaning supplies.

Programs can be held within the food bank organization to add more value. For example, TLFP was planning to operate a composting workshop because their organization emphasized on reducing waste and the program is a great way to contribute more to reducing waste. Depending on the organization's mission, organization can make a program to support their mission operation and also goals.

4.3.1.4 Key Resources

Resources in a food bank organization are mainly in terms of finance and labour. An organization is usually sustained financially by collecting funds from donors. Donor will usually donate in terms of cash and food items. Sometimes, collaborating company can crowdfund from their staff and later donate the crowdfund outcome to the organization. So, it's better to have a good relationship with donor as they can provide constant donation. Constant donation results in financial sustainability. A way to have a good relationship with donor such as company is to protect their brand image. For example, sometimes a company will donate items that are labelled with "not for sale", the food bank has to make sure that the receiver will not sell the item. A way to make sure of this is by investigating thoroughly before distributing the items.

Volunteers and staff are usually one of the key resources of a food bank. An organization can choose to rely on volunteers to help them with operation such as during the sorting or delivering process. Relying on volunteers will save more operating cost. If an organization choose to rely on their staff, it can incur more cost as the organization need to pay them salary. Food banks usually keep their staff circle small which is less than 15 persons. Rewarding the staff will be needed to boost their working motivation. However, it is understandable that an NGO don't make much and cannot afford to give their staff anything fancy. A way to keep an employee is to make sure that the working environment stays at a healthy level.

4.3.1.5 Value Proposition

Value proposition in a food bank organization refers to the benefits or value it offers to the receiver. Normally a food bank operation will have the goals of to reduce waste and zero hunger. This process of determining what kind of value that a certain food bank want to provide depends on each food bank's goals.

The values food bank provides to the receiver depends on their operation. For example, a food bank provides health value by distributing nutritious food to their receiver. To help them achieve this, they collaborate with a nutritionist and a professional chef to cook healthy food for their receiver. In return, they can live their life being healthy. Some food bank also provides education value to their receiver by funding for educational classes.

4.3.1.6 Customer Relationship

The term customer relationship can be referred to relationship with receiver. Although that other food bank organizations don't directly show their interest in keeping in touch with the receiver after distributing the foods but they manage their relationship indirectly through food guarantee. They will make sure to inform the receiver about the condition of the foods and how to handle them since the foods are due to expiry. Managing the organization's relationship with the receiver is also important especially with homes and charities as they will tend to spread the words about the organization to other NGOs or company. This will increase the chances new partner funding.

Food bank organization should update their activities to the public. This will provide a sense of transparency towards the receivers. Updating the activities can be performed throughout various platform such as website and social media. Food bank organization should also provide a platform for the receiver to give the organization their feedbacks. Improvement can be done in the future based on the receiver's feedbacks.

4.3.1.7 Channel

It is crucial for food bank organization to advertise their organization as it attracts funding and also receivers. Publicising the organization can be made through various platform. However, the most effective platform would be through social media such as Instagram and Facebook. As for donation, the platform that can be used to accept donation is through bank transfer. To make it easier for the donors to donate, the organization can provide them with bank account number or QR code. Food bank organization can also use platform such as jomdonate.com to find more donation. It is a website where people can donate to multiple charities just at one web location. The less hassle it is for donors to donate, the more they will donate.

4.3.1.8 Cost Structure

Operating cost refers to the logistics cost, warehouse maintenance, utility bills and labour. It is important for organization to do their best to minimize cost. That is why food bank organizations tends to keep a good relationship with other NGOs to ask them for help in terms of delivery so that operation cost can be cut down.

The cost for the food bank operation is covered fully by the cash donation. Companies will sometime give cash donation just to cover for the operating cost. Food bank organization need to make sure that cash donation is always higher than cost so that they don't have any deficit.

4.3.1.9 Revenue Stream

For an NGO, they don't make any profit. If funds exceed the cost amount, food bank organization don't consider it as revenue or profit. The excess money will go towards future project or to cover future operation cost.

4.3.2 RQ2: How does food bank manage food waste and distribute the food?

Food banks operation usually manage food waste by rescuing surplus food from grocery stores, restaurants, farmers, and other food businesses that would otherwise be thrown away. This food is still safe to eat but is often unsellable due to cosmetic imperfections, close-to-expiration dates, overproduction, or other reasons. By rescuing this food, food banks are able to redirect it to people in need, while also reducing food waste.

Based on the three interviewed food banks which are The Lost Food Project, Food Aid Foundation and Yayasan Food Bank Malaysia, these food banks manage food waste and distribute their food by following similar approaches in managing their food waste and distributing the foods. They rescue excess food, sort and store it in a warehouse and then distribute it to their networks of charity partners. For added value, they provide education and leverage the awareness about food waste and promote food recovery.

All the food banks rescue excess food from supermarkets, hotels, restaurants and other businesses. The collected food is then inspected for quality and safety and then store inside a warehouse or a refrigerator for foods that are required to be stored in a cold condition until it is ready to be distributed to their targeted charity partner. The distribution process started with sorting and storing of foods by volunteers. They distribute to over 50 charities partners by their own fleets of trucks or the food is being collected by the charities partner themselves.

The Food Aid Foundation and Yayasan Food Bank Malaysia provide added value of education in terms of managing waste by providing education and training on how to reduce food waste and advocate for policies that support food waste reduction and food recovery.

4.3.3 RQ3: What are the impacts of food bank in Malaysia?

4.3.3.1 Environmental

The aim of a food bank is usually to reduce waste by rescuing excess food that would otherwise be thrown away. Reducing food waste reduced the amount of food that ends up in landfills where it will then generate harmful gasses such as methane and greenhouse gasses that is harmful to the environment. By rescuing food, food banks helped in conserving the resources that went into producing, processing and transporting the foods such as water, energy and fossil fuels. By supporting farmers and producers who prioritized sustainable agriculture practices, food banks helped to promote more sustainable food systems.

The Lost Food Project had rescued 1,239,525 kg of surplus which prevents 3,100,000 kg of greenhouse gases from entering the atmosphere in 2021. Food Aid Foundation had successfully rescued 2,760,512 kg of food surplus and distributed over 2,493,731 of food which equivalent to 7,080,283 of meals to the ones in need in 2021 while Yayasan food Bank Malaysia had managed to rescue 2,727,740 kg of edible surplus food and distributed 7,793,533 of meals to the needy in 2021. By reducing food waste and redistributing surplus food, The Lost Food Project helped mitigate the environmental impact of food overproduction and waste.

Overall, food banks played an important role in promoting environmental sustainability by reducing food waste and its associated environmental impacts, promoting sustainable agriculture, and conserving resources.

4.3.3.2 Social

In terms of society, food bank alleviated food insecurities by providing a source of food for people who does not have reliable access to nutritious and safe food or in other words, food-insecure. By distributing rescued food to charity partners, food banks helped in ensuring that the needy have access to nutritious food which then reduced hunger and malnutrition.

Indirectly, distributing food surplus to the needy through their charity partner leverages the supports of the food banks towards the vulnerable groups. Food banks worked together with their networks of charity partners which includes orphanage, homeless shelters and refugee centres to distribute rescued food which showed their support in helping these organizations to provide better care and services to the people they serve.

These food banks also relied on volunteers with their operation such as sorting, distributing and delivering the food which fostered a sense of community spirit and encouraged people to come together to support a common cause, promoting social cohesion and a sense of belonging. By providing access to free, nutritious food, food banks helped to promote dignity and empower people who may be struggling with food insecurity to better their lives. Food banks also provided a source of support and helped to reduce social exclusion for vulnerable groups. They helped to build stronger communities and contributed to social and economic development. Overall, all three food banks played a vital role in addressing food insecurity, promoting social cohesion, and contributing to the well-being of the communities they serve.

4.3.3.3 Economic

The operation of The Lost Food Project, Yayasan Food Bank Malaysia and Food Aid Foundation of rescuing and distributing surplus food has helped to reduce the amount of food that would otherwise be thrown out and go to waste which then can lead to cost savings for businesses and the government. This is because they do not have to spent more money on disposing the wasted foods. All three food banks relied on volunteers and employs staffs. This created jobs and income for the people who might be struggling in looking for employment and also contributed to the economy of Malaysia. since these three food banks provided foods to the vulnerable communities. These organizations helped to alleviate poverty and improved health outcomes, which reduced the burden on the healthcare system. This led to long-term cost savings for the government and the economy. Lastly, all three organizations worked to

educate the public about food waste and food insecurity in Malaysia. This helped to raise awareness of these issues and promoted sustainable behaviours that contributed to the economy of Malaysia.

Overall, the impacts of The Lost Food Project, Yayasan Food Bank Malaysia, and Food Aid Foundation on the economy of Malaysia are positive, as they helped to reduce waste, created jobs, provided social support, and promoted education and awareness.

4.3.3.4 Health

The impacts from the operation of The Lost Food Project, Food Aid Foundation and Yayasan Food Bank Malaysia had created significant impacts toward the health of society in Malaysia. These organizations provided access to nutritious food to vulnerable communities, including low-income households, homeless individuals, and orphanages. This helped to improve their health and well-being by ensuring they have a balanced diet and access to fresh produce. By providing food aid to those in need, these organizations helped to reduce food insecurity in Malaysia. This can have a positive impact on the mental and physical health of individuals and families, as they have access to regular, nutritious meals. By rescuing and redistributing surplus food, these organizations helped to reduce food waste, which can have environmental and health benefits. Reducing food waste can reduce greenhouse gas emissions and pollution, which can improve air and water quality and contribute to better overall health outcomes. Lastly, these organizations also raised awareness about food waste and food insecurity in Malaysia, which helped to improve knowledge about healthy eating and sustainable food practices. This contributed to better overall health outcomes for individuals and communities.

Overall, the impacts of The Lost Food Project, Yayasan Food Bank Malaysia, and Food Aid Foundation on the health of Malaysians are significant, as they helped to improve access to

nutritious food, reduced food insecurity, promoted sustainable food practices, and raised awareness about the importance of healthy eating.

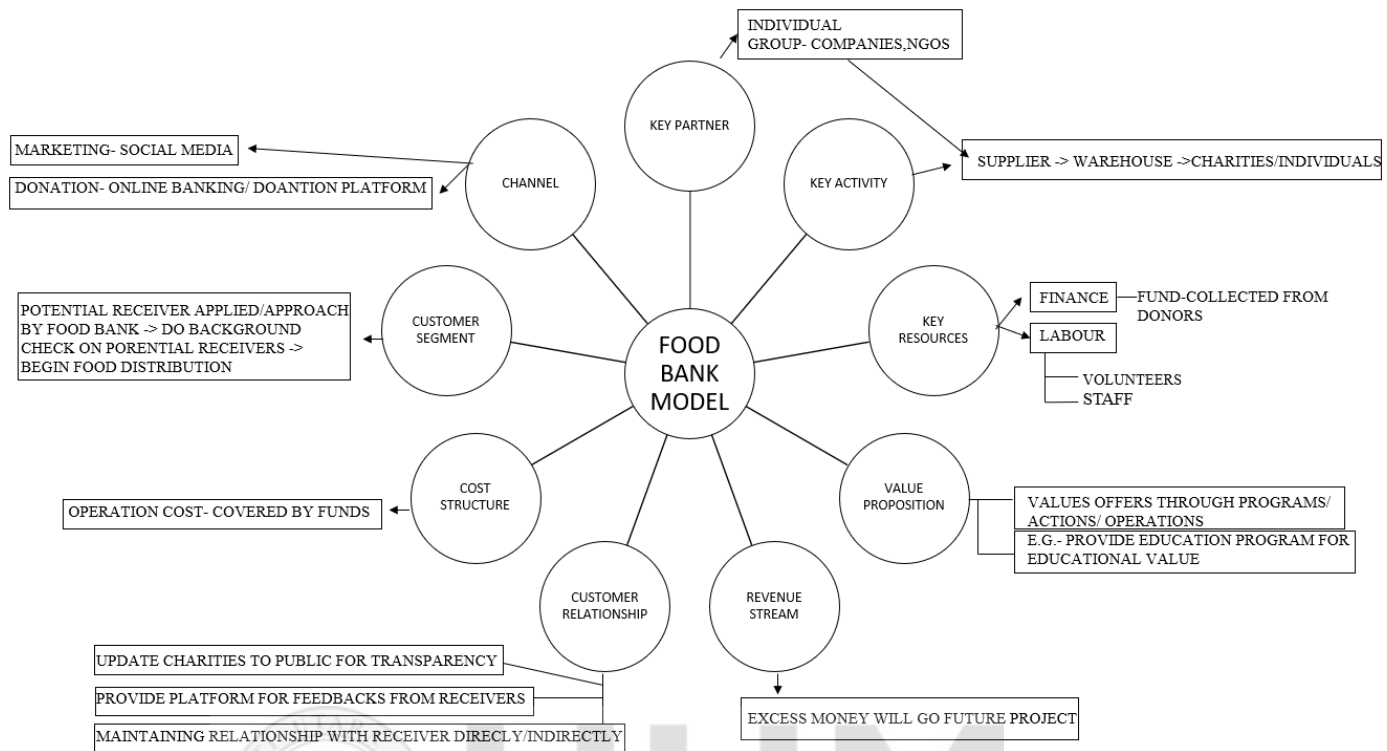
4.3.3.5 Educational

The Lost Food Project, Food Aid Foundation and Yayasan Food Bank Malaysia had managed to provide food waste education towards the society. These organizations raised awareness about food waste and its impact on the environment, economy, and society. By educating the public about the issue, they encouraged individuals and businesses to reduce food waste and promote sustainable food practices. These organizations also provided access to nutritious food to vulnerable communities, including low-income households, homeless individuals, and orphanages. By providing access to healthy food and promoting healthy eating habits, they helped to improve the nutrition and health of Malaysians. The work of these organizations encouraged individuals and businesses to become more socially responsible. By highlighting the issue of food waste and food insecurity, they encouraged individuals and businesses to take action and contribute to positive social and environmental impacts. Lastly, these organizations relied on volunteers and community engagement to carry out their work. By involving the community in their activities, they provided opportunities for individuals to contribute to positive social impacts and raised awareness about the issue of food waste and food insecurity in Malaysia.

Overall, the impacts of The Lost Food Project, Yayasan Food Bank Malaysia, and Food Aid Foundation on education in Malaysia are significant, as they helped to promote awareness about food waste and food insecurity, improved access to healthy food, promoted social responsibility, and engaged the community in positive social impacts.

4.4 Proposed Food Bank Model

Figure 5: Proposed Food Bank Model



CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter will provide summary of the study, implication and also limitation of the study which is regarding the study of exploring the best food bank model. Recommendation and suggestion will also be explained for improvement in future research.

5.2 Summary of the Study

The purpose of this study is to investigate about the food bank operation in Malaysia, focusing on their business model. This research used structured interview to collect data by observing several food banks that operate in Malaysia. The respondents were from three NGO operations that establish a food bank operation. The outcome of the interview reveals information on their food bank operation in terms of customer segment, key partner, key activity, key resources, value proposition, customer relationship, channel, cost structure and revenue. Some discoveries were identified and investigated in this research which satisfy the research question of “What is the best practice a food bank can follow to achieve Sustainable Development Goals?”

A food bank operation must have a strong aims and objective to stick to so that they can operate their operation around it efficiently and effectively. All of the interviewed food banks’ objectives was to reduce waste and reduce hunger and the contents of their programs held in the food bank provide values catering to their organization’s objective. It was also revealed that funding was seen to be the main cause that effects the food bank operation entirely. Having values that can attract partners donor along with having a good relationship with will sustain the food bank operation longer.

In the discussions part, general food bank operation model was proposed for newly established food banks to follow so they know what to focus on, to expect and to be cautious of.

As for the second research question of “How does food bank manage food waste and distribute the food?”, food banks play a critical role in reducing food waste and addressing food insecurity. By rescuing surplus food that would otherwise be thrown away, food banks are able to redirect it to people in need, while also reducing the environmental impact of food waste. The Lost Food Project, Food Aid Foundation, and Yayasan Food Bank Malaysia all follow similar approaches in managing their food waste and distributing food to their networks of charity partners. They rescue excess food, sort and store it in a warehouse, and distribute it to charities through their own fleets of trucks or by having the charities pick up the food.

In addition to food distribution, food banks provide education and training on how to reduce food waste and advocate for policies that support food waste reduction and food recovery. By raising awareness about the issue of food waste and food insecurity, they encourage individuals and businesses to become more socially responsible and contribute to positive social and environmental impacts. Overall, food banks are an important solution in addressing food waste and promoting sustainable food practices, while also supporting vulnerable communities in Malaysia.

Lastly for the third research question of “What are the impacts of food bank in Malaysia?”, the themes that was generated during the investigation of the impacts of the three food banks towards Malaysia is in terms of environmental, social, economic, health and education.

5.3 Implication of the Study

It is predicted that the result of this study will be applied in other projects that is in the same study area as in this paper. The findings of the study can also be used by current food

bank models as a reference to further modify, enhance and suggest the best practice for food bank. The recommendations can help the food bank to operate while contributing to the SDG mainly that target zero hunger and sustainable food production and consumption.

The result of this study can also help in better allocation of resources by helping policy maker and donors to have allocation of resources that goes into food banks model. By implementing the proposed model, it is possible that the impacts of the funds that is invested in food banks can be maximize to achieve SDG.

This study can also promote more collaboration among NGOs to exchange ideas and practices. This way they can improve in terms of operation, efficiency and target SDG more effectively.

Raising awareness among the publics and businesses will also be the implication of the study about the importance of supporting a food bank organization. The finding of the study also highlighted the challenges that is faced by the food banks and the benefit of investing in a food bank.

5.4 Limitation of the study

This study has its limitation. The biggest limitation has got be during the process of selecting respondents. Most of the respondents that was contacted to get permission to be interviewed either did not give their cooperation or rejected our application. This study can be more stable in terms of its finding if selecting respondents was not a part of the challenges.

Moreover, due to cost and constraint, the food bank organizations that was chosen were limited to the peninsular Malaysia which believed to have impacted the information as well as the data and result.

5.5 Recommendation for Future Research

It is recommended for future study who are investigating further into the food bank operation to focus more on the financial issues of the food bank since the study finds that financial stability is one of the main challenges in food bank operation. A comparative analysis can be conducted between different food banks to identify much more effective model that further targets SDG targets which could include more food banks as a respondent not limited to the peninsular Malaysia.

A longitudinal study can also be performed which it can provide deeper understanding of food banks impacts in reducing hunger and improve food security in long-term effect. The study is suggested to explore and understand the long-term effects of the intervention of food banks along with identifying the factors that contribute to the success or failure factor of the food bank.



REFERENCES

- Abiad, M. G., & Meho, L. I. (2018). Food loss and food waste research in the Arab World: A Systematic Review. *Food Security*, 10(2), 311–322. <https://doi.org/10.1007/s12571-018-0782-7>
- Alkaabneh, F., Diabat, A., & Gao, H. O. (2021). A unified framework for efficient, effective, and fair resource allocation by food banks using an approximate dynamic programming approach. *Omega*, 100, 102300. <https://doi.org/10.1016/j.omega.2020.102300>
- Anisa, Y., & Mukhsin, M. (2023). THE ROLE OF ZAKAT IN REALIZING SUSTAINABLE DEVELOPMENT GOALS (SDGs) TO INCREASE COMMUNITY ECONOMIC INCOME. *Al-Infaq: Jurnal Ekonomi Islam*, 13(2), 286-296.
- Barrett, D., & Twycross, A. (2018). Data collection in qualitative research. *Evidence Based Nursing*, 21(3), 63–64. <https://doi.org/10.1136/eb-2018-102939>
- Bhosale, U. (2022, November 6). Top 5 key differences between methods and methodology. Enago Academy. Retrieved March 24, 2023, from <https://www.enago.com/academy/difference-methods-and-methodology/#:~:text=Methods%20are%20just%20behavior%20or,stage%20of%20the%20research%20process.>
- Blackman, A. (2016, January 22). *The surprising relationship between taxes and charitable giving*. MarketWatch. Retrieved April 2, 2023, from <https://www.marketwatch.com/story/the-surprising-relationship-between-taxes-and-charitable-giving-2016-01-22>

Buzby, J. (2022, January 24). *Food waste and its links to greenhouse gases and climate change*.

USDA. Retrieved February 15, 2023, from <https://www.usda.gov/media/blog/2022/01/24/food-waste-and-its-links-greenhouse-gases-and-climate-change#:~:text=Production%2C%20transportation%2C%20and%20handling%20of,eve n%20more%20potent%20greenhouse%20gas.>

Clay, C. (2018, June 25). *Difference between proposition & hypothesis*. Sciencing. Retrieved March 25, 2023, from <https://sciencing.com/difference-between-proposition-hypothesis-12749814.html>

Davis, L. B., Sengul, I., Ivy, J. S., Brock, L. G., & Miles, L. (2014). Scheduling Food Bank collections and deliveries to ensure food safety and improve access. *Socio-Economic Planning Sciences*, 48(3), 175–188. <https://doi.org/10.1016/j.seps.2014.04.001>

Davis, L. B., Sengul, I., Ivy, J. S., Brock, L. G., & Miles, L. (2014). Scheduling Food Bank collections and deliveries to ensure food safety and improve access. *Socio-Economic Planning Sciences*, 48(3), 175–188. <https://doi.org/10.1016/j.seps.2014.04.001>

De Guimarães, J. C., Severo, E. A., Klein, L. L., Dorion, E. C., & Lazzari, F. (2023). Antecedents of sustainable consumption of remanufactured products: A circular economy experiment in the Brazilian context. *Journal of Cleaner Production*, 385, 135571. <https://doi.org/10.1016/j.jclepro.2022.135571>

Dermawan, A. (2022, August 29). *Cap: Crack the whip on Food Waste* | *New Straits Times*. New Straits Times. Retrieved February 18, 2023, from <https://www.nst.com.my/news/nation/2022/08/826643/cap-crack-whip-food-waste>

- Eisenhandler, O., & Tzur, M. (2019). The humanitarian pickup and distribution problem. *Operations Research*, 67(1), 10–32. <https://doi.org/10.1287/opre.2018.1751>
- Fernandes, P. (2020). *Circular economy as a way of increasing efficiency in organizations*. The Porto Protocol. Retrieved March 19, 2023, from <https://www.portoprotocol.com/circular-economy-as-a-way-of-increasing-efficiency-in-organizations/>
- Filho, W. L., Brandli, L., & Wall, T. (2020). *Responsible consumption and production*. Springer International Publishing.
- Food Aid Foundation. (2023). Retrieved February 15, 2023, from <https://foodaidfoundation.org/>
- Gharehyakheh, A., & Sadeghiamirshahidi, N. (2018). A sustainable approach in food bank logistics. In *Proceedings of the International Annual Conference of the American Society for Engineering Management*. (pp. 1-8). American Society for Engineering Management (ASEM).
- Giannelis, M. (2023, March 20). *30 different types of technology cited in 2022*. Tech Business News. Retrieved March 29, 2023, from <https://www.techbusinessnews.com.au/types-of-technology/>
- Gillard, J. (2022, May 24). Editor's Blog: Why is Food Waste Increasing? [web log]. Retrieved February 11, 2023, from <https://nerc.org/news-and-updates/blog/nerc-blog/2022/05/24/editors-blog-why-is-food-waste-increasing#:~:text=Oh%20yeah%2C%20and%20food%20waste,out%2072%20tons%20each%20second.>

- González-Torre, P. L., & Coque, J. (2015). How is a Food Bank managed? different profiles in Spain. *Agriculture and Human Values*, 33(1), 89–100. <https://doi.org/10.1007/s10460-015-9595-x>
- González-Torre, P. L., & Coque, J. (2015). How is a Food Bank managed? different profiles in Spain. *Agriculture and Human Values*, 33(1), 89–100. <https://doi.org/10.1007/s10460-015-9595-x>
- Guirindola, M. O., Custodio Jr, C. G., Villanueva, J. D., & Guirindola, R. B. (2023). Unmasking the Real Effect of Gender of Household Head in Household Food Security in the Philippines. *Philippine Journal of Science*, 152(1), 205-218.
- Harmaini, Basri, Y. Z., & Arafah, W. (2022). Determinant of interest in paying zakat with age as a moderating variable (study on Minang Society). *APTISI Transactions on Management (ATM)*, 7(2), 92–104. <https://doi.org/10.33050/atm.v7i2.1821>
- Harvey, L. D., & Huang, Z. (1995). Evaluation of the potential impact of methane clathrate destabilization on future global warming. *Journal of Geophysical Research*, 100(D2), 2905. <https://doi.org/10.1029/94jd02829>
- Henderson, K., & Loreau, M. (2023). A model of sustainable development goals: Challenges and opportunities in promoting human well-being and Environmental Sustainability. *Ecological Modelling*, 475, 110164. <https://doi.org/10.1016/j.ecolmodel.2022.110164>
- Hindle, G. A., & Vidgen, R. (2018). Developing a business analytics methodology: A case study in the foodbank sector. *European Journal of Operational Research*, 268(3), 836–851. <https://doi.org/10.1016/j.ejor.2017.06.031>

- Horn, P., & Grugel, J. (2018). The sdgs in middle-income countries: Setting or serving domestic development agendas? evidence from Ecuador. *World Development*, 109, 73–84. <https://doi.org/10.1016/j.worlddev.2018.04.005>
- Ishangulyyev, R., Kim, S., & Lee, S. (2019). Understanding food loss and waste—why are we losing and wasting food? *Foods*, 8(8), 297. <https://doi.org/10.3390/foods8080297>
- Joyce, A., & Paquin, R. L. (2016). The triple layered business model canvas: A tool to design more sustainable business models. *Journal of Cleaner Production*, 135, 1474–1486. <https://doi.org/10.1016/j.jclepro.2016.06.067>
- Kammerzelt, A. (2022, June 7). *What is technology? and why is it so important for us in everyday life?* voestalpine. Retrieved March 29, 2023, from <https://www.voestalpine.com/blog/en/innovation-en/what-is-technology-and-why-is-it-so-important-for-us-in-everyday-life/#:~:text=We%20use%20technologies%20to%20exchange,driving%20cars%20or%203D%20printing.>
- Kaplan, S. (2022, November 10). *A third of all food in the U.S. gets wasted. fixing that could help fight climate change.* The Washington Post. Retrieved February 15, 2023, from <https://www.washingtonpost.com/climate-solutions/2021/02/25/climate-curious-food-waste/>
- Kechara Soup Kitchen.* Kechara Soup Kitchen. (2023). Retrieved February 15, 2023, from <https://kecharasoupkitchen.com/food-bank/>

- Korhonen, J., Honkasalo, A., & Seppälä, J. (2018). Circular economy: The concept and its limitations. *Ecological Economics*, 143, 37–46.
<https://doi.org/10.1016/j.ecolecon.2017.06.041>
- Landre, R. (2021, June 4). *7 ways to reduce food waste*. Mayo Clinic Health System. Retrieved February 15, 2023, from <https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/7-ways-to-reduce-food-waste-in-your-kitchen>
- Lange, K. W., & Nakamura, Y. (2023). Potential contribution of edible insects to sustainable consumption and production. *Frontiers in Sustainability*, 4.
<https://doi.org/10.3389/frsus.2023.1112950>
- Lee, D., Sönmez, E., Gómez, M. I., & Fan, X. (2017). Combining two wrongs to make two rights: Mitigating food insecurity and food waste through Gleaning Operations. *Food Policy*, 68, 40–52. <https://doi.org/10.1016/j.foodpol.2016.12.004>
- Lim, W. J., Chin, N. L., Yusof, A. Y., Yahya, A., & Tee, T. P. (2016). Food waste handling in Malaysia and comparison with other Asian countries. *International Food Research Journal*, 23, S1.
- Lohani, S. P., Gurung, P., Gautam, B., Kafle, U., Fulford, D., & Jeuland, M. (2022). Current status, prospects, and implications of renewable energy for Achieving Sustainable Development Goals in Nepal. *Sustainable Development*, 31(1), 572–585.
<https://doi.org/10.1002/sd.2392>
- Lost Food Project. (2022, October 6). Retrieved February 15, 2023, from <https://www.thelostfoodproject.org/>

Love Food Hate Waste. (2023, February 6). Retrieved February 15, 2023, from <https://lovefoodhatewaste.com/>

Mahidin, M. U. (2021, July 15). *Current Population Estimates, Malaysia, 2021*. Department of Statistics Malaysia Official Portal. Retrieved February 18, 2023, from https://www.dosm.gov.my/v1/index.php?r=column%2FcthemByCat&cat=155&bul_id=ZjJOSnpJR21sQWVUcUp6ODRudm5JZz09&menu_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09

McCombes, S. (2021, June 7). *What is a research design: Types, guide & examples*. Scribbr. Retrieved March 25, 2023, from <https://www.scribbr.com/methodology/research-design/>

Moon, D., Kurisu, K., & Tahara, K. (2023). Which products are bought second-hand and by whom?: Analysis of consumer-preferred acquisition modes by product type. *Resources, Conservation and Recycling*, 190, 106860. <https://doi.org/10.1016/j.resconrec.2022.106860>

Mumuni, S., & Joseph Aleer, M. (2023). Zero hunger by 2030 – are we on track? climate variability and change impacts on food security in Africa. *Cogent Food & Agriculture*, 9(1). <https://doi.org/10.1080/23311932.2023.2171830>

Paritosh, K., Kushwaha, S. K., Yadav, M., Pareek, N., Chawade, A., & Vivekanand, V. (2017). Food waste to energy: An overview of sustainable approaches for food waste management and nutrient recycling. *BioMed Research International*, 2017, 1–19. <https://doi.org/10.1155/2017/2370927>

Ramroodi, A. (2021, June 10). *What is research methodology?* Do Not Edit. Retrieved March 24, 2023, from <https://www.donotedit.com/what-is-research-methodology/>

- Rashid, Y., Rashid, A., Warraich, M. A., Sabir, S. S., & Waseem, A. (2019). Case study method: A step-by-step guide for Business Researchers. *International Journal of Qualitative Methods*, 18, 160940691986242. <https://doi.org/10.1177/1609406919862424>
- Roberts, H., Milios, L., Mont, O., & Dalhammar, C. (2023). Product destruction: Exploring unsustainable production-consumption systems and appropriate policy responses. *Sustainable Production and Consumption*, 35, 300–312. <https://doi.org/10.1016/j.spc.2022.11.009>
- Rosenberg, D., Singla, V., & Hoover, D. (2021, July 19). *Burned: Why waste incineration is harmful*. NRDC. Retrieved February 18, 2023, from <https://www.nrdc.org/experts/daniel-rosenberg/burned-why-waste-incineration-harmful#:~:text=Regardless%20of%20what%20is%20being,cause%20lung%20and%20heart%20diseases>
- Sachs, J. D., Schmidt-Traub, G., Mazzucato, M., Messner, D., Nakicenovic, N., & Rockström, J. (2019). Six transformations to achieve the Sustainable Development Goals. *Nature Sustainability*, 2(9), 805–814. <https://doi.org/10.1038/s41893-019-0352-9>
- Santini, C., & Cavicchi, A. (2014). The adaptive change of the Italian Food Bank Foundation: A case study. *British Food Journal*, 116(9), 1446–1459. <https://doi.org/10.1108/bfj-06-2014-0201>
- Schneider, K., & Nurre, S. G. (2019). A multi-criteria vehicle routing approach to improve the compliance audit schedule for Food Banks. *Omega*, 84, 127–140. <https://doi.org/10.1016/j.omega.2018.05.002>

- Solak, S., Scherrer, C., & Ghoniem, A. (2012). The stop-and-drop problem in nonprofit food distribution networks. *Annals of Operations Research*, 221(1), 407–426.
<https://doi.org/10.1007/s10479-012-1068-7>
- Sort, J. C., & Nielsen, C. (2018). Using the business model canvas to improve investment processes. *Journal of Research in Marketing and Entrepreneurship*, 20(1), 10–33.
<https://doi.org/10.1108/jrme-11-2016-0048>
- Sparviero, S. (2019). The case for a socially oriented business model canvas: The Social Enterprise Model Canvas. *Journal of Social Entrepreneurship*, 10(2), 232–251.
<https://doi.org/10.1080/19420676.2018.1541011>
- Stancu, V., Haugaard, P., & Lähteenmäki, L. (2016). Determinants of consumer food waste behaviour: Two routes to Food Waste. *Appetite*, 96, 7–17.
<https://doi.org/10.1016/j.appet.2015.08.025>
- Steyaert, J. (2013). *1967 John van Hengel & food banks*. History of social work, details.
https://historyofsocialwork.org/eng/details.php?cps=20&canon_id=172
- The 17 goals | sustainable development* (2015) United Nations. United Nations. Available at:
<https://sdgs.un.org/goals> (Accessed: February 22, 2023).
- Tibbits, G. (2009, November 27). Food Banks go high-tech to feed the hungry. Phys.org. Retrieved March 29, 2023, from <https://phys.org/news/2009-11-food-banks-high-tech-hungry.html>
- Verhagen, W., Bohl, D., Pulido, A., Pirzadeh, A., Meisel, C., Solorzano, J., Hughes, B., & Moyer, J. (2023). Policy strategies to achieve zero hunger by 2040 at the country-level.
<https://doi.org/10.21203/rs.3.rs-2495038/v1>

von Braun, J., Afsana, K., Fresco, L. O., & Hassan, M. H. (2023). Food systems: Seven priorities to end hunger and protect the planet. *Science and Innovations for Food Systems Transformation*, 3–9. https://doi.org/10.1007/978-3-031-15703-5_1

Wickham, N. (2022, July 13). *The importance of employee recognition: Statistics and Research*. Employee Success Software. Retrieved April 2, 2023, from <https://www.quantumworkplace.com/future-of-work/importance-of-employee-recognition#:~:text=When%20employees%20are%20rewarded%20for,the%20likelihood%20they'll%20stay.>

Yayasan Food Bank Malaysia. (2023, February 2). Retrieved February 15, 2023, from <https://www.yfbm.org/>



APPENDIX

Interview Questions

1. Who are your food bank recipients?
2. How do you decide on who to help (selection process)?
3. Who are your partners in delivering food to your food bank recipients?
4. How do you find your partners?
5. How do you distribute your food?
6. Do you distribute other types of necessities other than food?
7. Do you hold any other special program?
8. How do you financially sustain your organization?
9. Who and what are the key resources in your food bank? (volunteer/hired staff)?
10. What are the main goals of the food bank?
11. What values do you provide to your food bank recipients?
12. How do you manage your relationship with the recipients?
13. How do you update about activities and events to the public?
14. How do people give feedback regarding your food bank?
15. What/which platform do you advertise your food bank?
16. How do you accept donation? Through which platform?
17. What are the costs incurred to operate a food bank?
18. How do you cover the cost?
19. Do you generate any revenue from the food bank? If yes, how do you generate the revenue?