

A COMPARATIVE STUDY: EXPLORING THE FOOD
SECURITY IN MALAYSIA AND SINGAPORE

LIOW JIA YING

BACHELOR OF INTERNATIONAL BUSINESS
(HONOURS)

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF ACCOUNTANCY AND MANAGEMENT
DEPARTMENT OF INTERNATIONAL BUSINESS

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DECLARATION

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- (3) Sole contribution has been made by me in completing the FYP.
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Name of student:

Student ID:

Signature:

LIOW JIA YING

20BIN00213



Date: 15th December 2023

ACKNOWLEDGEMENT

I extend my heartfelt gratitude to Universiti Tunku Abdul Rahman (UTAR) for granting me the opportunity to conduct research and gain valuable experience in the realm of sustainable development goals.

A special thanks to Dr Angelina Anne Fernandez for her unwavering support and guidance throughout the research process. Her expertise and encouragement have been invaluable and having her as my supervisor has been an honor. I am grateful for her willingness to assist me whenever needed.

I also want to express my appreciation to Ms. Lee Sim Kuen, my second examiner, for her valuable suggestions and feedback, contributing significantly to the improvement of my research. Her insights, along with those of the interview participants, including herself, have played a crucial role in the success of this research.

I extend my gratitude to all the interview participants for their time and valuable insights, which have deepened my understanding and contributed to the successful completion of this research.

Lastly, I want to thank my family and friends for their unwavering emotional support throughout this research journey. Their collective encouragement has made this work possible and memorable.

DEDICATION

My deepest dedication goes to my supervisor Dr Angelina Anne Fernandez, whose guidance and support were incredible throughout the entire research process.

I am grateful to the tertiary education institution, Universiti Tunku Abdul Rahman, for providing me the opportunity to conduct my research.

Special acknowledgement is given to those individuals who have significantly contributed to the knowledge advancement in their respective fields.

Additionally, my family and friends for their encouragement and emotional support throughout the research journey.

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LIST OF ABBREVIATIONS

6MP	6th Malaysia Plan
7MP	7th Malaysia Plan
ACT	Agri-Food Cluster Transformation
AEC	ASEAN Economic Community
APF	Agriculture Productivity Fund
AVA	The Agri-Food and Veterinary Authority
DOA	Department of Agriculture
DoSM	Department of Statistics Malaysia
DSMN	National Food Security Policy Action Plan 2021-2025
FAMA	The Federal Agricultural Marketing Authority
FAO	The Food and Agriculture Organization
FDA	Food and Drug Administration
FELDA	Federal Land Development Authority
FSCC	The Cabinet Committee on National Food Security Policy
FSQD	Food Safety & Quality Division
GFSI	Global Food Security Index
HDB	Housing and development board
HSA	Health Sciences Authority
ICT	Information and Communication Technology
IoT	Internet of Things
KKM	Kementerian Kesihatan Malaysia
KPKM	Ministry of Agriculture and Food Security
KSMN	National Food Security Framework
MAFI	Ministry of Agriculture and Food Industries
MAFS	Ministry of Agriculture and Food Security
MARDI	Malaysian Agricultural Research and Development Institute
MOH	Ministry of Health
MSE	Ministry of Sustainability and the Environment

NAP 1.0	The National Agrofood Policy 2011-2020
NAP 2.0	The National Agrofood Policy 2021-2030
NAP	National Agricultural Policy
NAP1	The National Agricultural Policy 1984
NAP2	The 2nd National Agricultural Policy
NAP3	The 3rd National Agricultural Policy
NCFS	National Centre for Food Sciences
NEA	National Environment Agency
NFSP	The National Food Security Policy
NGOs	Non-governmental organizations
R&D	Research and Development
SDG2	Sustainable Development Goal 2
SFA	Singapore Food Agency
SSR	Self-sufficiency ratio
TA	Thematic Analysis
USIM	Universiti Sains Islam Malaysia
UUM	Universiti Utara Malaysia
WEF	World Economic Forum
WFP	World Food Programme
WHO	World Health Organization

PREFACE

As the author of this research project, I am pleased to present this exploration into the critical dimensions of food security in Malaysia, with a comparative analysis against Singapore's successful strategies. This venture has been an insightful journey, uncovering the challenges and opportunities that shape the food security landscape in these Southeast Asian nations.

Food security is a pressing global concern, and within this context, understanding the specific intricacies of Malaysia's situation becomes dominant. This research delves into the policies, practices, and underlying factors influencing food security, aiming to illuminate potential pathways for improvement. Drawing on primary interviews, academic literature, government reports, and legal documents, this study aspires to provide a nuanced and comprehensive perspective.

The decision to compare Malaysia with Singapore stems from the latter's outstanding success in achieving food security despite its limited land resources. Through this comparative lens, the research seeks to identify valuable lessons and best practices that Malaysia can adopt to enhance its own food security initiatives.

I hope that this research serves as a valuable contribution to the ongoing dialogue on food security, providing actionable insights for policymakers, government agencies, and non-governmental organizations. May it inspire further research and initiatives aimed at building resilient and sustainable food systems for the benefit of all.

ABSTRACT

This research explores the landscape of food security in Malaysia, delving into essential aspects, obstacles, and prospects. This study compares Malaysia's food security with Singapore because they are neighbouring countries, and the Global Food Security Index (GFSI) indicates that Singapore has a higher ranking. With a primary focus on Singapore for comparison, the study investigates the policies, regulatory framework, and historical trajectory concerning a secure and sustainable food supply in both countries. The findings highlight challenges stemming from political commitment, inadequate funding, and the absence of a dedicated food security law. Additionally, the research probes into the impact of climate change, external factors, and economic hurdles on Malaysia's food security. The study employs a diverse range of data sources, encompassing both primary and secondary outlets. This includes insights gathered from interviews, academic literature, governmental reports, and legal documents. This multifaceted approach aims to offer a thorough and comprehensive exploration of the intricacies surrounding food security in both Malaysia and Singapore. Through expert interviews and a comparative examination with Singapore, the study provides practical insights for policymakers, government bodies, and non-governmental organizations. It advocates for sector-specific inquiries, comparative analyses, and the integration of quantitative research methods in future studies to improve data precision and support evidence-based policy decisions in tackling food security challenges.

CHAPTER 1: RESEARCH OVERVIEW

1.1 Research Background

Food plays a vital role in fostering solidarity and celebrating shared cultural connections. Beyond its cultural significance, adequate nutrition is a fundamental requirement for individual well-being, alongside clean water, and adequate housing. Individuals lacking access to nutritious food are considered food insecure. Early 1970s agricultural commodity price fluctuations, influenced by the financial system and securities market, significantly impacted food security (Afzal et al., 2023). Fisher (2017) emphasizes that food security hinges on the equitable fulfilment of four essential aspects: availability, access, use, and stability.

The World Economic Forum (WEF) predicts a 2 billion rise in world population by 2050, making food security a serious global concern (United Nations, n.d.-b). Over the past 10 years, this rise has caused a 56% increase in food consumption (Bloom & Breene, 2020). According to the World Food Programme (WFP), about 345 million individuals will experience extreme food insecurity in 2023, a startling increase of almost 100% from 2020 (World Food Programme [WFP], 2023).

The United Nations' Sustainable Development Goal 2 (SDG2) directly addresses the critical issue of global food security. SDG2 aims to achieve targets by 2030 that include ending hunger, enhancing nutrition, and promoting sustainable farming practices. The Global Nutrition Report reveals that only a small number of the 194 listed countries are expected to meet four out of six maternal and child nutrition targets by 2025 (Cesare et al., 2021). Despite the UN's 2030 goal to eliminate world hunger and enhance nutrition, the Food and Agriculture Organization (FAO) warns that global hunger issues remain severe (United Nations, 2023).

1.2 Research Problem

1.2.1 Situation of Food Security in Malaysia

Malaysia faces problems with food security because of a high reliance on imports. As per the statistics provided by the Department of Statistics Malaysia (DoSM), the inflow of food imports totalled RM482.8 billion in the past decade, whereas exports reached RM296 billion (Hanif, 2023). Former Deputy Minister of Agriculture, Sim Tze Tzin said Malaysia can import food readily, but the high expenses add to its financial burden. In Southeast Asia, Singapore passes all 4 criteria for food security and outperforms Malaysia, despite Singapore not being a major food producer. Malaysia's dependence on costly food imports, despite being a trading nation, may strain its economy while temporarily easing food security concerns (Hazim, 2022). Thus, reducing reliance on imports is essential to enhance food security and stabilize prices. Since 25% of Malaysia's food supply, including staples like chilli, is imported, disruptions in import supply chains could cause price surges. Resilience can be boosted by improving undeveloped agricultural capacity, particularly about smallholder farms and urban farming. Food crises have a disproportionate impact on vulnerable populations including the poor, the orang Asli, and refugees (Urban Hijau, 2023) and hence require targeted aid.

1.2.3 Staple food shortage

Rice is a staple food in Asian countries, including Malaysia, which was almost self-sufficient in paddy production in 1976 but began importing rice due to neighboring countries' agricultural advantages. Recent Malaysian agricultural policies favored industrial crops over food crops, benefiting the oil palm sector but negatively impacting rice production. This emphasis on industrial crops has marginalized the agrofood sector, leading to its lag in development and productivity. Despite abundant land, Malaysia only produces 70% of its rice needs, importing the rest. The absence of a 20% reserve for emergencies exacerbates the risk of a food crisis, reflecting a significant rice shortage in the country. The former Penang deputy chief minister, Dr. Ramasamy, stated that it is not a question of adjusting the supply to meet the demands, as the issue lies with the supply being unable to keep up with the growing demands. The present food crisis should serve as a lesson for the government to embark on a more comprehensive food security policy in the future (Yeo, 2023; Suffian & Suffian, 2023).

1.2.3 Lack of Food Security Law in Malaysia

According to the Malaysia Reserve news article, Malaysia currently has yet to have a specific food security law in effect, in contrast to certain other nations like Iraq and India which have done so to guarantee their population have access to enough food. Malaysia suffers problems with its food security, including price increases and shortages, but to successfully address these worries, thorough planning and regulations must be done. According to the text, Malaysia should create a food security law specific to its requirements and situation. To ensure access for vulnerable groups, including children, single mothers, and elderly, limiting food prices should be an essential component of this (Osman & Baharuddin, 2022).

Conclusion: Despite consistent economic growth in Malaysia over the past three decades, questions linger about its food security compared to wealthier nations like Singapore, evident in its lower ranking on the Global Food Safety Initiative (GFSI). This inquiry aims to unravel the factors influencing food security, potentially impacting Malaysia's economic development.

1.3 Research Objectives & Research Questions

1.3.1 Research Objectives:

1. Identify the existing legislative and policy frameworks pertaining to food security in Malaysia.
2. Identify the prevailing legislative and policy structures related to food security in Singapore.
3. Examine the historical evolution of food security policies and legislation in both Malaysia and Singapore.
4. Propose actionable suggestions for enhancing the effectiveness of food security policies and legislation in Malaysia.

1.3.2 Research Questions:

1. What are the specific policies and legislation currently in place to address food security concerns in Malaysia and Singapore?
2. How can the policies and legislation related to food security in Malaysia be improved to ensure better outcomes for the nation?
3. What are the historical evolutions of food security policies and legislation in both Malaysia and Singapore?
4. How can we enhance the effectiveness of food security policies and legislation in Malaysia?

1.4 Research Significance

Due to the current global challenges associated with food security and the pressing need for nations to improve their strategies for assuring a stable and sustainable food supply, the proposed research is of critical importance. Despite the importance of this issue, there is a deficiency of research examining how Malaysia can learn from Singapore's food security experiences and practices. In addition, comparative studies analysing Malaysia's food security measures in the context of other nations are scarce.

This research aims to contribute to the **Malaysian Ministry of Agriculture and Food Security (MAFS)** by providing actionable insights and recommendations based on the successful strategies of Singapore. By examining Singapore's approaches and contrasting them to Malaysia's current practices, this research will facilitate a comprehensive understanding of Malaysia's food security framework's strengths and weaknesses.

Furthermore, existing **non-governmental organizations (NGOs)** in Malaysia involved in food security initiatives will benefit from this research. It will provide these non-governmental organizations with evidence-based data and knowledge to refine and improve their ongoing efforts to ensure national food security.

In conclusion, the significance of this research lies in its potential to guide and inform policymakers, government agencies, and NGOs in Malaysia by leveraging Singapore's food security experiences. The goal of this research is to contribute to the development of more effective and resilient food security strategies in Malaysia, in line with the global objective of achieving sustainable and accessible food systems for all.

CHAPTER 2: LITERATURE REVIEW

2.1 Definitions of The Food Security

The mid-1970s Food Conference of 1974 introduced “food security”. The conference’s main goal was to study food security and ensure the worldwide and domestic availability of essential food commodities. The declaration emphasizes the need to maintain a consistent and sufficient global food supply, particularly of critical food items, to ensure sustained food consumption and handle production and price changes.

The World Food Summit (1996) described food security as a situation where people always have enough safe food to meet their dietary requirements and preferences, as well as the physical and financial resources to obtain it (FAO, 1996). This allows active, healthy living (IFPRI, n.d.). The Department of Agriculture in America defines food security as having enough food to live an active and healthy existence without charity, foraging, or thieving (Bickel et al., 2013).

Food security encompasses the ability to withstand disruptions or shortages in essential food supplies induced by dangers such as droughts, transportation disruptions, fuel shortages, economic downturns, and wars (FAO et al., 2013). FAO identified four food security pillars in 2009: availability, accessibility, use, and stability (FAO, 2009). FAO shifted its analytical focus to food availability in 1983. This adjustment led to a concept that stressed the food security equation demand-supply equilibrium. The updated definition states that food security ensures people can get the food they need physically and economically (FAO, 1983). Food security has been interpreted differently and can indicate both household and individual well-being. This is especially true when assessing household food procurement and distribution patterns (Pinstrup-Andersen, 2009).

2.2 The History of Food Security in Malaysia

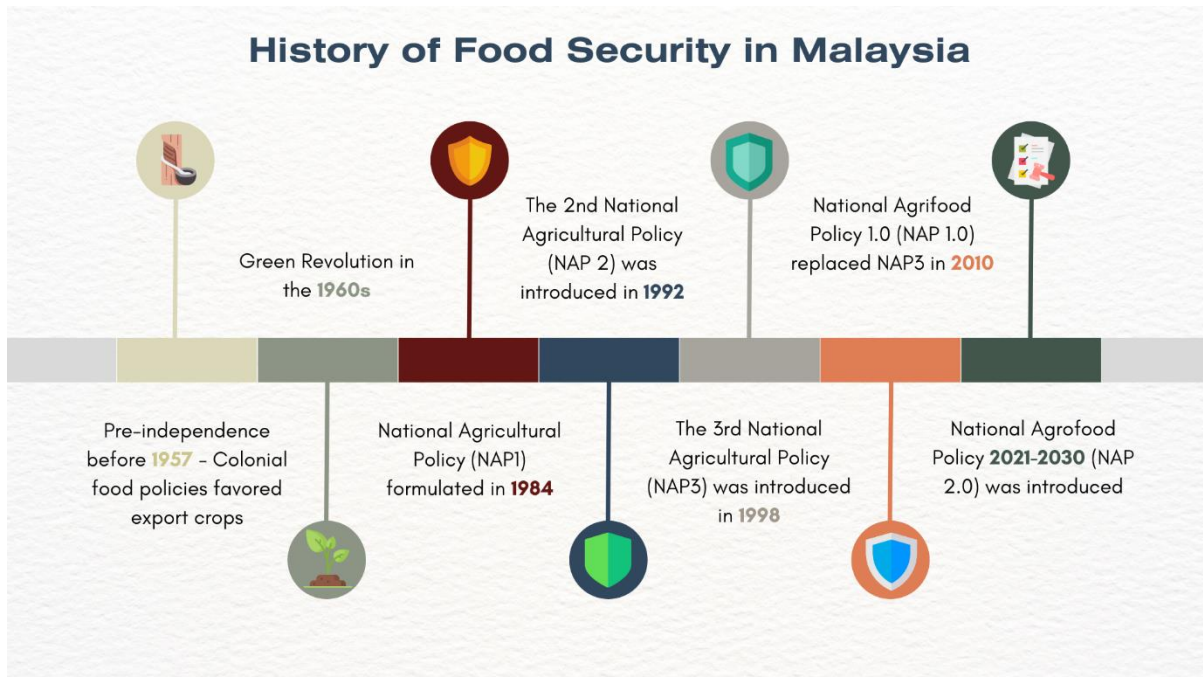


Figure 2.2 The History of Food Security in Malaysia

Preceding Malaysia's independence, food policies were tailored to serve the interests of colonial powers, with a primary focus on export-oriented crops like cocoa, rubber, and oil palm. These strategies lacked dedicated funds or initiatives for new infrastructure and research and development projects (Dorairaj & Govender, 2023). Cocoa, rubber, and palm oil agriculture dominated 86% of Malaysia's agricultural area, emphasizing their pivotal role in the nation's agricultural landscape. In contrast, only 14% of agro-food commodities comprised fruits and vegetables (Dardak, 2018).

In the 1960s, the World Bank played a key role in initiating Malaysia's Green Revolution, promoting modern farming practices, high-yield crops, and irrigation, with a particular emphasis on increasing rice production. This global movement, originating in underdeveloped nations like Malaysia, harnessed scientific advancements in plant development and technology to enhance crop yields. The Malaysian government responded by establishing the Federal Land Development Authority (FELDA) to address land inequalities among farmers and boost food production (Siddiqui, 2012).

The 1984 National Agricultural Policy (NAP1) sought to reduce rural poverty and economic inequalities between commercial and traditional farmers. It was designed after prior policies failed to reduce poverty and the agriculture sector underperformed as an economic driver (Dardak, 2015). In the 1980s, as Malaysia industrialized, NAP1 promoted export commodities

like palm oil and rubber above food crops, reducing the agriculture sector's GDP contribution and increasing food imports. It did not increase farmers' incomes, and poverty continued. NAP1 failed owing to industrialization and imbalanced agricultural priorities (Yap, 2019).

The second National Agricultural Policy (NAP 2) succeeded NAP1 and focused on enhancing agro-food productivity and efficiency to address demand issues. Under the 6th Malaysia Plan (6MP), the emphasis was on transforming smallholdings into larger commercial ventures to achieve economies of scale and compete internationally. The objective was to keep the agriculture industry competitive and economically viable by exploring high-return novel crops. However, the 7th Malaysia Plan (7MP) found NAP2's policies unsuitable for the prevailing circumstances, leading to the introduction of the Third National Agricultural Policy (NAP3) in 1998.

The 1997-1998 Asian Financial Crisis and financial market deregulation in Malaysia prompted NAP3, a revision of NAP2. It addressed shortages of land, labour competition, and resource utilization in agriculture to boost competitiveness. Malaysia used short-term steps under the National Food Security Policy (NFSP) to secure rice availability during the 2007-2008 global food crisis. These included fertilizer and pest control initiatives, automated farming, and miller subsidies for rice farmers (Yap, 2019). National Agrofood Policy 1.0 replaced NFSP and NAP3 in 2010.

Globalization and rapid economic expansion have made the environment more dynamic and competitive. This condition threatens the agro-food business and offers economic opportunities and challenges. The 2011–2020 National Agrofood Policy (NAP 1.0) focuses on improving the agro-food industry's efficiency throughout the supply chain. This ensures that the agricultural sector is more efficient, competitive, and knowledge-driven while focusing on food commodity development (Musa & Ab Aziza, 2022).

The Malaysian government launched the National Agrofood Policy (NAP 2.0) for 2021-2030, building upon the foundation of NAP 1.0. NAP 2.0 focuses on enhancing the competitiveness and innovation of the agro-food sector by prioritizing support for businesses, the well-being of food producers, and sustainability in the face of climate change. Targeting rice, vegetables, fruits, livestock, and fisheries, the policy emphasizes technology-enabled agriculture and plantation management to address demographic changes, evolving diets, and climate-related challenges. The policy promotes smart agriculture and modernization, integrating economic, social, and environmental considerations, while also enhancing market access, human

resources, and business conditions through improvements in land use, finance, infrastructure, investment, and governance (MAFI, 2021).

2.3 The History of Food Security in Singapore

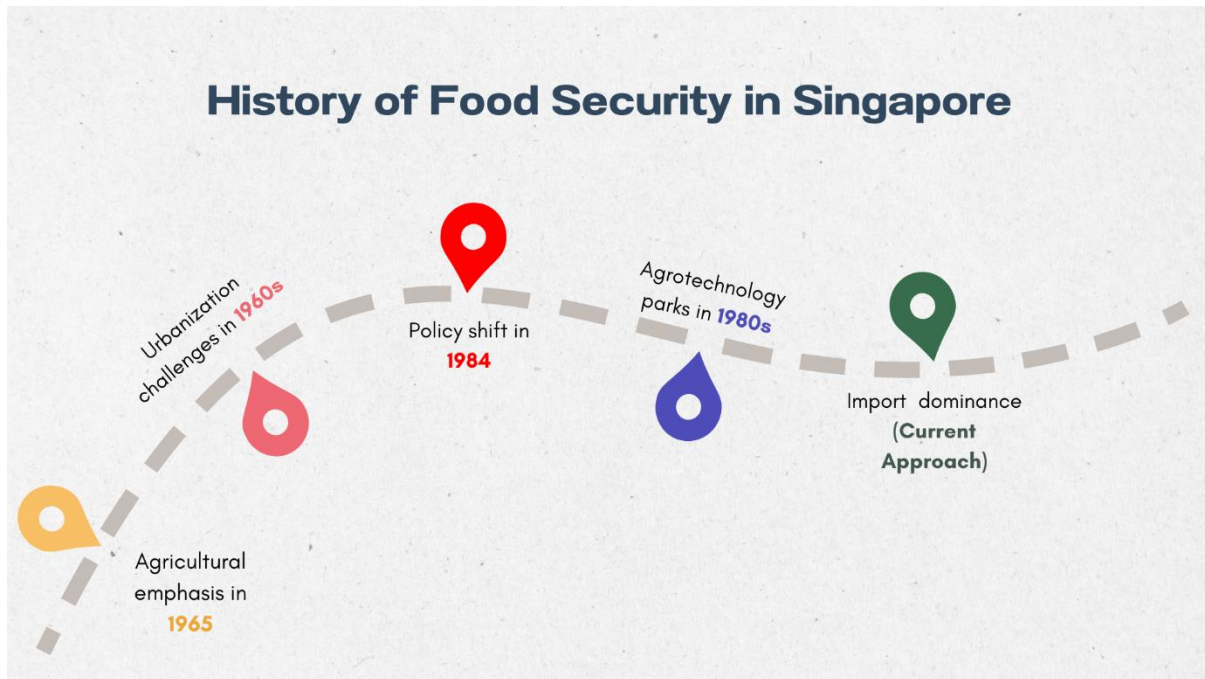


Figure 2.3 The History of Food Security in Singapore

Singapore prioritised food security from the start when agriculture was crucial to the economy and people's existence. After independence in 1965, the government understood the importance of family farms to the nation's food supply (CLC, 2018) and employed 9% of the population in agriculture and fishing. Despite land limits, these farms supplied 50% of the state's vegetables and 30% of its fish (Tham, n.d.).

Singapore's population has grown from under 2 million in the 1960s to over 5 million now, requiring intensification of land use, especially farming (Worlddata, n.d.; Worldometer, 2023). Households, industry, highways, and infrastructure have taken up 15,000 hectares of farmland since the 1960s, leaving only 600 hectares (CLC, 2018). This transformation led new policies to meet emerging needs like relocating farmers, boosting agricultural output, streamlining food imports, and ensuring public health and safety.

In 1984, Singapore shifted from self-sufficiency to self-reliance in its food security policy (Tortajada & Zhang, 2016). This transition was motivated by the belief that Singapore should leverage its strengths in manufacturing and services rather than heavily investing in agriculture.

Urbanization and industrial expansion, prompted by environmental concerns, resulted in the displacement of farmers, particularly pig farmers, in the 1970s. To address this, agrotechnology parks were introduced in the 1980s and 1990s, serving as centers for modern, profitable commercial farms focused on producing safe, fresh food. By 2015, these parks played a crucial role in sustaining the city's food supply with various products, including animals, dairy, eggs, fish, fruits, and vegetables (Tortajada & Zhang, 2016).

As part of a long-term strategy focused on self-reliance, Singapore heavily relies on food imports. The country locally produces specific food items and strategically stockpiles staples like rice. The food security approach involves diversifying food sources across approximately 170 countries, ensuring a broad range of imports. Key source countries include Malaysia, Brazil, the United States, South Africa, Vietnam, Indonesia, Australia, and others (CNA, 2022). Diversification aims to secure the food supply, mitigate disruptions, and is complemented by investments in overseas agriculture and industry development.

In preparation, Singapore has devised a comprehensive Food Security Roadmap comprising core, supporting, and enabling strategies (AVA, 2013). The core strategies focus on diversifying import sources through overseas investments and bolstering industrial development. Supporting strategies include research and development, waste reduction, infrastructure enhancement, financial instrument development, and welfare initiatives. Enabling strategies play a crucial role and encompass cross-government coordination, emergency planning, monitoring, as well as fortifying legal frameworks.

In general, the strategies to diversify food sources have worked well. For instance, Vietnam stopped exporting rice during the global rice crisis in 2008, it didn't affect Singapore much because the restrictions were on white rice, not the premium rice that Singaporeans prefer. Thailand, a major rice supplier to Singapore, continued its exports without limitations. Singapore's rice demand is also small, making up only 2% of Thailand's total rice exports in 2008 (MTI, 2008). Another example is Malaysia's temporary restrictions on certain types of wild-caught fish and shrimp exports in 2018, which didn't impact Singapore as it sources seafood from other countries like Indonesia, Vietnam, and Thailand (Koh & Tay, 2018).

2.4 The Statistics of Food Security in Malaysia



Figure 2.4 Global Food Security Index (GFSI) 2022 Malaysia

Climate change, COVID-19, political unrest, and many other factors make it more difficult to achieve food security. In the Global Food Security Index (GFSI), Malaysia did moderately after the epidemic, ranking 41st, down 7 spots from the previous year with a score of 69.9. In addition, Malaysia's overall score decreased by 1.6 points from the previous year (Ministry of Agriculture and Food Security Malaysia, 2022).

According to a survey by the World Bank (2022), 17% of low-income households faced the possibility of food insecurity due to the financial strain imposed by food inflation. Given its open economy, Malaysia's food prices are susceptible to external factors like political events and climate change. In this case, the dispute between Russia and Ukraine has indirectly led to higher expenses for local produce since the rising cost of natural gas has increased the price of imported fertilisers, which are essential for Malaysia's agricultural industry (Azman, 2022).

The reality is that Malaysia produces less food for its population, with agricultural output only 45% of the average for high-income nations (World Bank Group, 2019). Given its plentiful water, climate, and land, economist Dr Nungsari Ahmad Radhi noted the country's food security ranking is inadequate compared to its land-scarce neighbour Singapore, which ranked 28th (Hazim, 2022).

DoSM announced that the rate of food inflation in Malaysia increased from 2.5% in 2021 to 3.3% in 2022, underscoring the escalating economic difficulties associated with food security.

This inflationary trend is linked to Malaysia's RM64 billion agro-food import spending in 2021, greatly exceeding exports at RM39 billion (Hanif & Naharul, 2023). Because local alternatives like wheat, oranges, and apples cannot be grown in Malaysia, customers are left with no choice but to reduce their consumption and spend more on groceries (Hazim, 2022).

2.5 The Statistics of Food Security in Singapore



Figure 2.5 Global Food Security Index (GFSI) 2022 Singapore

The GFSI 2022 ranks Singapore 36th in food quality and safety despite its abundance of healthy food. The population's unhealthy diet, high in starchy carbohydrates and low in nutrients and protein, explains its ranking. Singapore is the second-most affordable country globally, making it economically accessible for its citizens. Singapore maintained low inflation at 19.2% between 2010 and 2019, according to the GFSI (The Economist, 2022).

The population has a far higher average income than the global average, according to Statistics Singapore (2017). Thus, they comfortably exceed the global poverty line. Additionally, they spend only 20% of their monthly household budget on food. Despite Singapore's generally good food security, 6.6% of the population was expected to be food insecure from 2020 to 2022 (FAO, 2023). According to Singapore Food Statistics (2022), food supply sources increased from 172 nations and regions in 2019 to 183 in 2022.

Diversifying import sources while preserving food safety is essential for Singapore's food security. In 2022, the World Health Organisation (WHO) warned that foodborne illnesses, often caused by microbes, parasites, viruses, or chemical contaminants in food, can cause severe poisoning and chronic illnesses like cancer, which may result in disability or death. MSE's Grace Fu champions Singapore's strict food safety and animal health standards, which require only approved sources to export their products (Baker, 2022).

2.6 The Laws Related to Food Security in Malaysia

As mentioned in the research problem previously, Malaysia lacks food security law. However, there are several legislations related to food security in Malaysia. **The Food Act of 1983 and the Food Regulations of 1985** took the place of the Sale of Food and Drug Ordinance and Regulations from 1952 (FAO, 2004).

These 2 legislations are the main laws in Malaysia that make up the foundation of the food safety program. The laws keep people safe from health dangers and deception connected to making, selling, and using foods. These laws are enforced by the MOH and local authorities. They apply to all foods produced locally or imported to sell in the country except food for exports. The laws cover various aspects, including standards for composition, food additives, nutrient supplements, contaminants, packaging, labeling, food irradiation, handling foods not specified in the regulations, and penalties for non-compliance (FAO, 2004; Globinmed, 2013; Jiang, 2016).

In addition to the two main legislations in Malaysia, several other laws related to food safety fall under the jurisdiction of different agencies. The acts listed below are all under the Ministry of Agriculture:

- i. **The Pesticide Act 1974** – To ensure proper labelling of pesticides sold in the country
- ii. **The Fisheries Act 1985** – Covers rules for catching fish, protecting turtles, and managing river fishing.
- iii. **The Animal Ordinance 1953** – Regulates the imports or exports of livestock.

2.7 The Laws Related to Food Security in Singapore

Singapore, relying on 90% food imports from various countries, enforces regulatory measures to uphold safety and quality standards. Previous incidents of foodborne diseases linked to imported food prompted increased surveillance. This includes microbiological testing, import control, and maintaining environmental sanitation standards. Singapore regulates food factories and establishments through licensing, conducts health education, and supervises public food handlers to ensure food safety (Goh, 1987; News Desk, 2023; Tortajada & Zhang, 2016).

To control the integrity and quality of food in Singapore, the AVA oversees **The Sale of Food Act 1973 (Cap 283) and the Sale of Food Act (Food Regulations under the Sale of Food Act)**. The 1973 Act protects public health, enhances food safety, and ensures suitability for human consumption, informs customers so they can make educated decisions, and forbids misleading practises in food sales (Singapore Government Agency, 2020). These regulations cover various categories, including raw agricultural products, processed foods, and household equipment. The Food Regulations also outline the acceptable upper limits for numerous food additives, minerals, nutrient supplements, and food-specific specifications. A violation of these regulations is punishable by fines of up to SGD 5,000 for a first offence and up to SGD 10,000 or three months in jail, or both, for successive offences (Baker McKenzie, n.d.).

The following laws are also related to food security in Singapore:

- **The Wholesome Meat and Fish Act of 1999** - This act regulates and oversees meat and fish industry activities such as slaughter, processing, inspection, distribution, and sale (SSO, 2022).
- **The Control of Plants Act of 1994** - This law oversees how plants are grown, brought into or out of Singapore, and ensures protection against pests and diseases (AVS, 2019).
- **The Animal and Birds Act of 1965** - Imported fresh hen eggs are regulated under this law (Sugita, 2019).

2.8 The Agencies Related to Food Security in Malaysia

The Cabinet Committee on National Food Security Policy (FSCC) is responsible for developing a comprehensive and sustainable national food security policy. Supporting this committee is the Executive Committee on National Food Security Policy, which acts as the

coordinating body. The MAFS chairs this committee (MAFS, 2023). This cabinet is formed with 4 clusters mainly availability, accessibility, food and nutrition safety as well as stability and sustainability.

- **The Availability Cluster (KTS)**

This cluster is led by the Malaysian Ministry of Agriculture and Food Industries (MAFI) and is noted for modernising agriculture. However, following the Prime Minister's announcement on December 3, 2022, MAFI rebranded and became the Ministry of Agriculture and Food Security (MAFS) (Business Today, 2022). This cluster is coordinated by the Secretariat of the National Agricultural Advisory Council. Its primary focus is on ensuring a stable food supply, considering factors such as local production, buffer stocks, and trade (MAFS, 2023).

- **The Accessibility Cluster (KBC)**

The group is led by the Ministry of Domestic Trade and Consumer Affairs and organized by the National Subsistence Action Council. This team concentrates on making sure people can easily get healthy and safe food that suits their lifestyle, whether they buy it or produce it themselves (MAFS, 2023).

- **The Food Safety and Nutrition Cluster (KMP)**

Led by the MOH and coordinated by the Secretariat of the National Food Safety and Nutrition Council, this cluster includes the Food Safety (FSQD) and Quality Division and the Nutrition Division (ND) in the MOH. It focuses on ensuring safe and nutritious food security throughout the food value chain. The FSQD oversees activities related to food safety and quality, safeguarding the public against health risks and fraud in various stages of food handling. Similarly, the ND is responsible for similar activities, ensuring the safety and quality of food in compliance with the Food Act 1983 and related regulations (MAFS, 2023).

- **The stability and Sustainability Cluster (KSM)**

Led by MAFS and organized by the Secretariat of the FSCC, this cluster works to maintain stability in the country's food system.

In addition to the clusters, there are several agencies associated with food security too.

- **Malaysia's Agricultural Research And Development Institute (MARDI)**

For almost 4 decades, MARDI has promoted the country's agricultural and agro-based companies. Its extensive research has produced new agricultural methods, animal breeds, crop varieties, and food processing and post-harvest management technologies. MARDI studies ecologically sustainable agriculture and employs information and communication technology (ICT) for precision farming and yield estimation. In addition to research and development, MARDI offers consulting, consultancy, training, laboratory services, and product development. Farmers and business owners widely utilize MARDI's innovations, which helps in growing Malaysia's agriculture sector and economy. MARDI also actively disseminates its research and agricultural skills through publications, exhibitions, conferences, and international alliances to maintain worldwide relevance (Land Portal, 2017).

- **The Federal Agricultural Marketing Authority (FAMA)**

FAMA was established on September 30, 1965, as a marketing agency under MAFS. It handles the marketing of agro-food products like vegetables, fruits, and floriculture, along with products from agro-based industries. FAMA contributes to both domestic and international marketing, working to enlarge the market for agro-food products and boost the income of producers. Additionally, FAMA ensures that agricultural and food industry products are accessible and affordable for consumers (FAMA, 2023).

- **Department of Agriculture (DOA)**

This department started in 1905, and after Malaysia became independent in 1957, it grew a lot. It was heavily involved in research, helping farmers sell their products, and developing farmers' associations. But when FAMA, MARDI, and Agriculture Development Board (LPP) were set up, the department changed. Now, it mainly works on helping farmers develop. Another important job is to protect the country's agriculture industry and make sure the food and environment in Malaysia are safe (DOA, 2022).

2.9 The agencies related to food security in Singapore

- **The Singapore Food Agency (SFA)**

The AVA was established to assure a reliable supply of food and focuses on food safety, stable prices, technologically advanced large-scale farming, and fostering agricultural trade (Tortajada & Zhang, 2016). The Singapore Food Agency (SFA) succeeded the AVA as Singapore's food safety and security board on April 1, 2019 under the Ministry of the Environment and Water Resources, also known as MEWR to ensure the safety and security of food throughout the entire process from farm to fork (AVA, 2019).

The SFA aims to enhance management with outbreaks of diseases caused by food. They plan to coordinate more effectively in responding to food-related problems, like tracing and recalling products. The SFA will also engage with different groups and the public to handle issues faster and more thoroughly. This way, they can simplify public feedback by having just one contact point (SFA, 2022b).

- **The Ministry of Sustainability and the Environment (MSE)**

The MEWR is now known as the MSE. MSE is dedicated to keeping the surroundings clean and sustainable while ensuring a steady supply of safe food and water. They focus on three key areas: economic resilience, resource resilience, and climate resilience. Resource resilience involves securing a safe and stable supply of essential resources like water and food, using resources efficiently, and closing resource loops to overcome global constraints. Economic resilience aims to maintain Singapore's competitiveness by addressing carbon and resource limitations, promoting sustainable growth, and uniting stakeholders. Climate resilience is about dealing with the serious threats of climate change to maintain a liveable environment (MSE, 2023).

- **The National Environment Agency (NEA)**

The NEA plays a crucial role in maintaining a clean and sustainable environment in Singapore. It has five main responsibilities: ensuring a clean environment, promoting sustainability and resource efficiency, providing reliable meteorological information, upholding high public health standards, and supporting a lively hawker culture (NEA, 2023). When it comes to food security, the NEA is a key player as it oversees the cleanliness and hygiene of hawkers. They have created a 'Food Handler' handbook with essential information for those handling food,

covering proper and hygienic food preparation, storage, and cooking for public sale (NEA, 2016).

- **The Health Sciences Authority (HSA) & The National Centre for Food Sciences (NCFS)**

The Health Sciences Authority (HSA) is created to oversee health products like supplements, traditional medicines, and therapeutic items. It also manages justice administration, ensures the safety of the nation's blood supply, and protects public health. In 2019, the Food Safety Division moved to the SFA under its National Centre for Food Science (NCFS) on April 1 (HSA, 2023). This shift enhances food safety capabilities by consolidating the food laboratory expertise of three agencies into the NCFS under SFA, focusing on food diagnostics and research and development in food safety (AVA, 2019).

2.10 The Food Security Policies in Malaysia

Malaysia had formulated several agricultural policies to improve food security. The most recent ones are the NAP 2.0 and the National Food Security Policy 2021-2025 (DSMN Action Plan). All these policies are created to attain self-sufficiency level in the country.

- **National Food Security Framework (KSMN)**

To bolster national food security, the KSMN has been created, encompassing four main elements: availability, accessibility, utilization, and stability and sustainability. Aligned with FAO recommendations, these components will be reinforced by strategies, supports, and enablers addressing political, social, economic, environmental, and technological factors. The framework also includes considerations for employment, resource stability and sustainability, climate change, investment, studies and research, and governance structures for food security across various agencies and ministries.

- **DSMN Action Plan 2021-2025**

According to an article (Daim, 2021), this policy seeks to improve food security using technology, research, data strengthening, partnership growth, and governance reinforcement. According to KPKM (2023), this extensive plan consists of 15 strategies and 96 initiatives spread across various agencies. It highlights the "society as a whole" approach, supporting Daim's 2011 viewpoint on the contribution of the private sector, NGOs, state governments, and

the public to enhancing the country's food security. The 4 main objectives of the action plan are as follows:

- i. To increase internal resources and diversify import resources
- ii. To increase the involvement of the private sector and the population in the food system
- iii. To ensure there is safe food available at fair prices and encourage a healthy way of eating
- iv. To ensure the country's preparedness in the face of a food security crisis

- **National Agro Food Policy 2.0 (2021-2030, NAP 2.0)**

NAPF 2.0 signifies the government's commitment to addressing food security and sustainability in Malaysia's agriculture sector, building upon NAP 1.0. Emphasizing the modernization and development of the agrofood sector, it serves as a comprehensive framework for stakeholder collaboration, aiming to advance the sector and tackle current challenges (Suffian & Suffian, 2023).

2.11 The Food Security Policies in Singapore

Most of the food in Singapore comes from other countries, more than 90%. Even though Singapore has plans to make sure it always has enough food, there are global risks like running out of natural resources, changes in the weather, and unpredictable events like political issues and diseases such as COVID-19. Ensuring food safety is a shared responsibility. The SFA collaborates with both the industry and consumers to enhance their abilities and educate them about their roles in maintaining food safety. An example is the Basic Food Hygiene Course (BFHC), which is mandatory for food handlers in places like restaurants, hawker stalls, and coffee shops. They need to attend and pass this course before they can start working.

- **3 Food Baskets**

SFA safeguards food supply in Singapore through 3 strategies, known as the 3 “food baskets” as below:

Diversify food imports: Diversifying food sources reduces dependence on a single supplier, enabling Singapore to work with a network of importers for alternative options during disruptions and ensuring a stable food supply.

Grow local: Producing locally cancels out reliance on imports and helps with disruptions on food supply. The SFA helps local farming by creating farming spaces, offering financial support, using research and development (R&D), developing local talent, and encouraging the use of local products.

Grow overseas: The SFA helps Singapore companies sell their urban food solutions to other countries. This helps them overcome issues with land and manpower and enter new markets. These companies can benefit from producing on a larger scale and can also sell food back to Singapore. Some local farms have expanded to countries like Australia, Brunei, Hong Kong, Thailand, and China.

- **30 by 30 goal**

Through the "30 by 30" project, which aims to strengthen food resilience and enhance the vitality of the agri-tech industry, Singapore aims to fulfill 30% of its nutritional needs by 2030. Singapore now uses barely 1% of its land for food production, making it severely dependent on food imports.

Farming spaces: Since 2017, SFA has been leasing agricultural land to agri-food companies. They also plan to revamp the Lim Chu Kang area to optimise food production and expansion of sustainable fish farming (SFA, 2023c). Additionally, SFA also considered alternative local spaces like vacant state properties and rooftops for urban farming. In 2019, a pilot project was launched on a housing and development board (HDB) multi-storey carpark rooftop, and in 2020, a tender was opened for 9 rooftop sites on HDB carparks for urban rooftop farming (SFA, 2023b). Another example is the 'Sky Greens' vertical farming founded by Jack Ng and SFA in 2010. Vertical farming, where crops are grown in stacked layers, addresses the challenge of limited land space and promotes sustainable food production (Nelson, 2021).

Embrace tech innovation: SFA offers strong funding support to help the farming industry use new technologies. They provide grants to share the cost of advanced farming systems that control the environment and increase production. One example is the Agriculture Productivity Fund (APF), which has \$63 million. This fund helps pay for high-tech farming systems that

improve environmental control and increase production. The fund can also help with the cost of researching and testing new technologies. For example, certain farms are adopting innovative methods such as indoor multi-storey LED lighting and recirculating aquaculture systems. These approaches allow them to produce multiple times more than traditional farms (MSE, 2023b; SFA, 2023b, SFA, 2023c).

Stimulate innovation in R&D: R&D are crucial for creating new ideas and filling in technological gaps. To help achieve the "30 by 30" goal, money has been set aside for research under the Singapore Food Story R&D program. Over \$309 million has been allocated to this program to support R&D in three main areas: future foods, sustainable urban food production, and innovations in food safety science (MSE, 2023b; SFA, 2023b, SFA, 2023c).

Develop local talents: As the agri-food industry evolves there is a need for new jobs that require expertise in science, engineering, and information technology. SFA is actively partnering with higher-educational institutions and local farms to develop programs like diploma courses and internships. The goal is to provide students and job seekers with the necessary skills for specialized careers in agriculture and aquaculture. The emphasis is on attracting young individuals to the agricultural sector by showcasing promising career opportunities that involve various skills such as engineering, IoT, information technology, biochemistry, and R&D (MSE, 2023b; SFA, 2023b, SFA, 2023c).

Support local produce: This underscores the significance of encouraging citizens to back local produce for sustainable growth in local farming. Consumer support is vital for a healthy agri-food ecosystem, especially as Singapore intensifies its focus on local production. Local products, known for safety, freshness, and extended shelf life, play a role in reducing food waste, spoilage, and carbon footprint. The "SG Fresh Produce" logo introduced by the SFA aids consumers in easily identifying and choosing local produce in retail outlets. The overarching objective is to engage citizens in actively bolstering Singapore's food security through a preference for locally produced food (MSE, 2023b; SFA, 2023b, SFA, 2023c).

CHAPTER 3: METHODOLOGY

3.1 Research Design

Research design, defined as the structuring of data collection and analysis settings, aims to align with the research purpose efficiently (Abosede & Onanuga, 2016). It serves as the conceptual framework guiding data collection, analysis, and measurement (Kothari, 2004). This study employs qualitative research methods, particularly interviews, to delve into the lived experiences and perspectives of individuals regarding food security in Malaysia and Singapore, enabling a detailed exploration of its intricate dynamics.

3.1.1 Qualitative Research

Qualitative research examines phenomena based on specific characteristics, expressions, contexts, and perspectives, avoiding quantification and rigid cause-and-effect chains. It often uses textual data rather than numerical information (Busetto et al., 2020). Focusing on feelings, thoughts, and experiences, qualitative studies address "how" and "why" questions, offering insights into real-world issues that may not be easily captured through numerical solutions (Cleland, 2017). Unlike quantitative research, which collects numerical data and implements interventions, qualitative research generates hypotheses and explores quantitative data (Tenny et al., 2022).

As highlighted by Moser and Korstjens (2017), the research method is distinctive in its focus on addressing real-life issues individuals encounter daily. Engaging with people directly allows for a deeper understanding of their perspectives, experiences, and actions related to food insecurity. In contrast to quantitative research's emphasis on numbers and statistical analysis, qualitative research delves into the human experience, providing nuanced insights into complex phenomena like food security, influenced by various socioeconomic and climatic factors (Glossary, 2023). Qualitative approaches offer greater adaptability and flexibility in communication with participants, allowing for improvisation (Mack et al., 2005). Exploring the background of food security challenges through qualitative study is vital for informing the development of effective policies and actions.

3.1.2 Doctrinal Legal Research

This study incorporates doctrinal research methodologies, specifically emphasizing the analysis of legal texts and frameworks related to food security in Malaysia and Singapore, complementing the qualitative research component. Legal scholars commonly employ doctrinal or library-based research methods, as highlighted by Neel (2023). Legal scholarship, as defined by Neel, involves the reasoned analysis of statutes and cases, focusing on understanding legal doctrines. Doctrinal inquiry centers around the question "what is the law in this case?" and delves into the analysis of legal philosophy, including its historical and contemporary applications (Ali et al., 2017).

Doctrinal research, involving the analysis of legal texts like legislation, case law, regulations, and treaties, aids in understanding legal concepts, principles, and doctrines (Neel, 2023). This approach enables a thorough examination of the legal systems in both Malaysia and Singapore, allowing for a deep dive into the laws governing food security. By scrutinizing and contrasting both countries' laws, this research identifies parallels, variances, and potential areas for harmonization. Moreover, it assesses the effectiveness of current laws and policies in ensuring food security, aligning legal provisions with real-world challenges faced by each nation. The study goes beyond descriptive analysis to propose legislative changes or recommendations, contributing to the enhancement of food security in both countries.

3.2 Sampling Design: Purposive sampling

According to the definition provided by Robinson (2014), "purposeful sampling" is the process of selecting interviewees for their perceived capacity to shed light on a target topic. It is a non-probabilistic approach in which participants are chosen based on their potential usefulness in answering the research topic (Frost, 2022). Qualitative and exploratory research projects can benefit from the targeted and in-depth investigation of the chosen subjects that is possible with the help of purposeful sampling.

3.3 Data Collection Method: Semi-structured Interview

Semi-structured interviews will be the primary approach used in this study to gather data. Semi-structured interviews provide a flexible yet organised method for obtaining in-depth expert

thoughts. A semi-structured interview entails asking open-ended questions to participants and using follow-up questions to delve deeper into both their responses and the primary area of interest (Delve, 2022). The interviewer may have prepared questions to guide the conversation, but not all will be asked (Doyle, 2022). Semi-structured interviews offer several benefits. They enable interviewers to formulate questions in advance and encourage focused discussions. Open-ended responses provide detailed information, stimulate 2-way communication, and explain the rationale behind answers. These interviews also allow for the discussion of topics that are sensitive and provide qualitative information for useful comparisons (Shakespeare, 2023).

3.4 Proposed Data Analysis Tool: Thematic analysis

A technique for locating and analysing patterns of meaning in qualitative data is thematic analysis (TA) (Clarke & Braun, 2014). A variety of epistemologies and research issues can be addressed using this qualitative research technique (Nowell et al., 2017). TA includes looking at data to spot important trends, assisting with the study of different research questions, and allowing researchers to use their prior expertise to learn more (Indeed Editorial Team, 2022). The flexible nature of TA makes it possible for academics to develop original notions and insights from data (Delve, 2020). TA is a research method suitable for beginners. It doesn't require extensive knowledge of complex theories and technical aspects, making it straightforward for researchers who are new to qualitative methodologies. The simplicity of theme analysis lies in its lack of strict rules and intricate processes, allowing researchers to grasp the method quickly (Braun & Clarke, 2006; Nowell et al., 2017). Analysing a huge amount of data when conducting qualitative analysis might be difficult. Instead of attempting to examine all resources at once, this method allows resources to be divided into various data sets, enabling a concentrate on one group at a time (Indeed Editorial Team, 2022).

3.5 Biography of Participants

3.5.1 Dr. Noor Dzuhaidah Binti Osman

Dr. Noor Dzuhaidah Osman, a senior law lecturer and Coordinator for the Ph.D. in Law program at the Faculty of Syariah and Law, Universiti Sains Islam Malaysia (USIM), brings a wealth of experience in both educational and legal spheres. With 8 years dedicated to the

Department of Law at the International Islamic University Malaysia and 4 years in USIM, her specialization lies in biosafety and biosecurity law, covering areas such as international environmental law, technology and law, media and cyberlaw, cyber-biosecurity law, and agricultural law. Dr. Dzuhaidah's global recognition is evident from her invitations as a keynote speaker at prestigious events, and her commitment to advancing legal understanding is reflected in her extensive contributions to journals. Particularly, she authored an article addressing Malaysia's imperative for food security. Inspired by her work, I successfully approached her for an interview, facilitating a meaningful exchange of insights for my research project.

3.5.2 Ms Lee Sim Kuen

Miss Sim Kuen Lee, currently a Lecturer in the Faculty of Accountancy and Management (FAM), brings a wealth of experience in law and corporate affairs to her academic role. Holding a Certificate in Legal Practice from the University of Malaya and a Bachelor of Arts in Combined Studies (Law) from the London Metropolitan University, she previously held the role of Managing Partner at Messrs. Iqbal Hakim Sia & Voo in Kuala Lumpur, ultimately retiring as an Advocate & Solicitor. With more than 23 years of combined expertise in legal practice and the commercial/corporate industry, Miss Lee excels in various domains, including Cross Border Transactions, Securities and Capital Markets, Business and Corporate Services, Corporate and Offshore Banking, Real Estate Law, Company Law, Company Secretarial Work, Listing Companies on Bursa Malaysia, Commercial Litigation, and General Legal Matters. Her diverse background makes her a valuable educator, providing students with insights into the nuances of law and corporate services, reflecting a career marked by dedication and excellence.

3.5.3 Prof. Madya Dr. Bakri Bin Mat

Dr. Bakri Mat is an Associate Professor with over 2 decades of experience and has notably served as the Deputy Dean at the School of International Studies, UUM. His expertise spans a broad spectrum in Security and Strategic Studies, covering national security threats, international conflicts, as well as food and cyber security issues. Dr. Bakri, holding a Ph.D. focused on nontraditional and human security, has delved deeply into the challenges of food security in Malaysia. Apart from his teaching roles, he actively contributes to both national and

university research projects, leading to his prolific publication across various academic journals, books, and proceedings. His academic achievements have been acknowledged through prestigious recognitions like the Excellence Service Award and the Best Research Book Award. Beyond his academic pursuits, he plays a pivotal role in policy-making and educational quality assurance. He serves on consultative committees for government ministries, acts as an academic program assessor for several universities, and holds Senior Research Fellow positions at AIIAD UUM and CENTHRA. As a dedicated member of the Malaysian Social Science Association (PSSM) and the Malaysian International Studies Association (MyISA), He actively contributes to the fields of Social Sciences and International Relations in Malaysia.

3.5.4 Prof Dato' Dr. Hj. Abd Rahim bin Hj. Mohamad

Prof Dato' Dr. Hj. Abd Rahim bin Hj. Mohamad is a highly accomplished professional and educator, currently serving as a professor at the Faculty of Medicine in the University of Cyberjaya. With a Medical Degree from Alexandria University, Egypt, in 1980, he went on to earn an M.ScPH in Public Health Administration from the National University of Singapore (NUS) in 1984 and a master's in public health (MPH) with a major in Epidemiology from Boston University School of Public Health, Massachusetts, USA, in 1995. In 2008, he made significant contributions to the MOH's Food Safety and Quality Division. His extensive experience includes focusing on Change Management in Food Safety at the University of Western Sydney, Australia, in 1999, and the Food Sanitation Programme with the US Food and Drug Administration (FDA) in various regional/district FDA offices in the United States in 1986. He was also awarded Fellow of Faculty of Public Health(UK)- FFPH(UK) by distinction by Faculty of Public Health of the Royal College of Physician of the United Kingdom in 2011. Prof Abd Rahim's diverse expertise underscores his pivotal role in public health and education in Malaysia.

3.5.5 Law lecturer from Public School A and B

Prefer to be remained anonymous.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This section includes the main points extracted from the respective interviewees' responses.

4.1 Responses from participants

1. In your expert opinion, how would you define “food security”?

Dr Noor Dzuhaidah	The concept of Food security is to make sure that every people in the world have access to food so we won't get starved. The 4 main principles are availability, accessibility, utilisation, and stability.
Ms Lee	According to the 1996 World Food Summit, food security is achieved when everyone consistently has enough safe and nutritious food, both physically and economically, to meet their dietary needs and preferences for an active and healthy life. The four key criteria for food security include the availability of food, access to food in terms of both economics and physical presence, the utilization of food, and the stability of these criteria over time.
Dr Bakri	Food security is formed based on several criteria, including availability/economic access, nutritional content, adherence to food preferences, and the assurance of safe food that aligns with culturally accepted standards.
Dr Abd Rahim	Government responsibility to ensure adequate food supply for the population of a country.
Law lecturer A	A nation be able to produce and self-sustain without relying on import from other country.
Law lecturer B	N/A

2. Please provide a summary of Malaysia's historical food security laws and policies.

Dr Noor Dzuhaidah	<ul style="list-style-type: none"> • Malaysia does not have food security law • National food security action plan and policy, NAP • Food safety law and label law
Ms Lee	First to third National Agricultural Policy, NAP1.0 and the current NAP 2.0.
Dr Bakri	Malaysia initially aimed for self-sufficiency in food security, focusing on domestic production to minimize reliance on external sources. Pertinent

	policies in this context include The 11th Malaysia Plan, The 12th Malaysia Plan 2021-2025, Action Plan 2021-2025, NAP 1.0, and NAP 2.0.
Dr Abd Rahim	There are no specific Food Security laws that I know of in Malaysia but the naming of Agriculture Ministry to Agriculture and Food Security Ministry under PMX is a good indicator that the present government is concerned about the food security issues for the future in Malaysia.
Law lecturer A	N/A
Law lecturer B	NAP 1.0 and NAP 2.0.

3. Can you list the main agencies in Malaysia that oversee food security?

Dr Noor Dzuhaidah	<ul style="list-style-type: none"> MAFS, Kementerian Pertanian dan Keterjaminan Makanan (KPKM) Coat of arms of Malaysia Ministry overview Preceding ministry MAFI MOA, DOA, MARDI, FAMA, FELDA
Ms Lee	<ul style="list-style-type: none"> MAFS Federal Agricultural Marketing Authority (FAMA) MARDI The Food Safety and Nutrition Cluster (KMP) led by MOH and National Food Safety and Nutrition Council (MKMPK) Food Safety and Quality Division and the Nutrition Division in MOH
Dr Bakri	<ul style="list-style-type: none"> MAFS FSCC Dasar Jaminan Bekalan Makanan (DJBM) Padiberas Nasional Berhad (BERNAS)
Dr Abd Rahim	<ul style="list-style-type: none"> Agriculture and Food Security Ministry FSQD, MOH Malaysian Quarantine and Inspection Services (MAQIS)
Law lecturer A	<ul style="list-style-type: none"> MAFS
Law lecturer B	<ul style="list-style-type: none"> BERNAS KPKM

4. Can you list and describe the Malaysia's current laws and policies related to food security?

Dr Noor Dzuhaidah	NAP2.0, Food safety law, labelling food under food regulations.
Ms Lee	According to the article by Osman and Baharuddin (2022), Malaysia has its own food security plan and policy. Malaysia appears to be in no urgent need of enacting such food security law in those countries but we are in desperate need of planning

	food security issue at larger scale considering rich biodiversity and improving infrastructure to eliminate hunger.
Dr Bakri	The NAP 2.0, incorporates the National Food Security DSMN Action Plan to address challenges highlighted by Malaysia's current 41st ranking in the GFSI. Key concerns include availability, stability, and exposure to uncertainties like climate change. To tackle these issues, the government is prioritizing technology usage and research. The Food Security Law covers aspects such as ingredients, including allowances for genetically modified organisms (GMO) and HALAL foods, as well as animal consumption.
Dr Abd Rahim	<ul style="list-style-type: none"> • Malaysian Quarantine and Inspection Services Act 2011 and its Regulation • Food Act 1983 and Food Regulations 1985 • General Procedure Import Meat, Poultry, Milk And Egg Products To Malaysia(Under Disease Control and Veterinary Biosecurity Division Department of Veterinary Services, Malaysia (DVS) Ministry of Agriculture & Food Security Malaysia • Pesticides Act 1974(Pesticide Board of Malaysia)
Law lecturer A	N/A
Law lecturer B	N/A

5. What difficulties do you think Malaysia faces in enhancing food security?

Dr Noor Dzuhaidah	Plan, policy, finance.
Ms Lee	As per Dardak's article in 2020, Malaysia is going through a tough period because the demand for food keeps going up each year, but local farms can't produce enough to meet this demand. Overall, the food production in the country can only meet about 20% to 70% of what people need.
Dr Bakri	<ul style="list-style-type: none"> • The agricultural sector contends with land competition, as various sectors vie for • There's a labour shortage exacerbated by the departure of foreign workers, particularly from Indonesia. This impacts sectors like palm oil plantations and the rice industry, with the local youth's reluctance to engage in agriculture compounding the issue. • Despite heavy fertilizer use, there's low productivity and quality, especially in the paddy industry. R&D in technology are crucial to enhancing productivity. • The minimal adoption of technology, proven in the GFSI rankings. Slow adaptation and political commitment hinder Malaysia's technological progress compared to neighboring countries.

	<ul style="list-style-type: none"> • While Malaysia excels in formulating policies like NAP 1.0/2.0, implementation gaps persist, and heavy reliance on imports poses a significant concern.
Dr Abd Rahim	<ul style="list-style-type: none"> • Dependence of food importation • Agriculture research in Malaysia is not competitive as against Thailand food production. MARDI must be revitalised to improve food production in Malaysia • Escalating cost due to weak Ringgit may cause a burden to population • Political will on food security is long overdue • MAFS food policy and direction on food security is not highlighted to the public
Law lecturer A	Too much of palm oil plantation, too few of paddy rice field and domestic agricultural industry. Currently shortage of staple foods and the food security are in Yellow alert. Price fluctuation has worsened the condition as government is pulling back subsidy to the industry and turn the cost to publics.
Law lecturer B	Nowadays food prices are increasing, staple food is important to us and we have to pay more. We need better management and digitalization platform, blockchain in food supply. Malaysia should adopt a transparent blockchain platform for its food supply to cut costs.

6. Could Malaysia consider adopting any foreign opportunities or best practices to improve its food security policies?

Dr Noor Dzuhaidah	Political will is crucial. In Italy, the government incentivizes Milan fashion handbags to support businesses. Similarly, to bolster food security, we should offer incentives to small-scale farmers, especially in rural areas. Currently, underutilized paddy fields lead to imports from Thailand; incentives for small-scale farmers can address this issue. Comparatively, our technology level lags behind Thailand, impacting food production. Learning from Thailand's practices can enhance our technological capabilities.
Ms Lee	Yes
Dr Bakri	Malaysia can learn from Thailand and Indonesia. While Singapore's approach, emphasizing self-reliance through innovative methods, provides lessons, direct comparison is challenging due to physical differences. Malaysia focuses on self-sufficiency, acknowledging challenges like achieving 100% self-sufficiency in rice without modern technology. Learning from Cuba's crisis response in 1970, the Malaysian government is embracing technology and urban agriculture. Policies implemented in 2020 allocate national budget portions to initiatives like

	aquaponics, recognizing the importance of urban food security amid disruptions in the supply chain.
Dr Abd Rahim	Definitely. Lots of knowledge on agriculture are out there in agricultural research centres or universities in other countries. Malaysia should spend to send our agriculture experts to learn from those experiences and bring the knowledge home and do it in a large scale. We can learn a lot from Thailand and China.
Law lecturer A	Yes. Malaysia should follow Taiwan and China practice to maintain high storage, high food supplies to prepare for World War 3.
Law lecturer B	Yes.

7. Please provide a summary of the Singapore's historical food security laws and policies.

Dr Noor Dzuhaidah	Comparing Malaysia to Singapore faces challenges due to the latter's smaller population and unique urban landscape. Singapore's shift from self-sufficiency to self-reliance, covering 719.1 km ² with a population of 5.54 million, is overseen by the AVA, ensuring food safety, stable prices, and technological advancements. In the early years, family farming played a vital role, covering 25% of the land, but urbanization led to a shift to intensive practices with fewer farms. Strategic decisions, like relocating pig farms in 1974 to Punggol, addressed environmental concerns and promoted commercial pig farming, successfully relocating 547,000 pigs (70%) in six years.
Ms Lee	According to a report from SFA in 2022, Singapore aims to meet 30% of its nutritional needs by 2030, and they plan to achieve this using less than 1% of the land for farming.
Dr Bakri	Singapore's success in the GFSI can be attributed to its unique strategies, given its limited capacity for local food production. Malaysia is making progress, particularly in embracing technology. Malaysia is implementing policies to enhance urban food security, allocating budgetary resources to initiatives like aquaponics. This recognizes the importance of securing food sources in urban areas during supply chain disruptions.
Dr Abd Rahim	Not sure.
Law lecturer A	Not interested. Singapore is mainly relying on Johor to import food into their Nation.
Law lecturer B	N/A

8. Can you list the main agencies in Singapore that oversee food security?

Dr Noor Dzuhaidah	<ul style="list-style-type: none"> • AVA • SFA • HAS • NEA
Ms Lee	The SFA was created on April 1, 2019, as a part of the MSE to manage food safety and security throughout the entire food supply chain. It combines the responsibilities related to food from the previous AVA, the NEA, and the HAS (SFA, 2022b).
Dr Bakri	N/A
Dr Abd Rahim	Not sure. I did not study Singapore plan of action on food security.
Law lecturer A	Not interested.
Law lecturer B	N/A

9. Can you list and describe the Singapore's current laws and policies related to food security?

Dr Noor Dzuhaidah	Singapore plans to enact a new food safety and security bill in addressing emerging risks. The SFA will introduce comprehensive act to consolidate and enhance regulatory powers. The SFA will continue to inspect and sample novel food products, ensuring compliance with existing requirements, including accurate food labelling. The SFA is also imposing hygiene and cleanliness information disclosure for food delivery companies, which are currently not licensed by the agency.
Ms Lee	Singapore has a food security plan known as the 3 "food baskets" and the "30 by 30" local production goals. The first one focus on diversifying import sources, growing food locally, and expanding overseas. The second goal aims to strengthen Singapore's ability to produce 30% of its nutritional needs locally and sustainably by 2030 (Ministry of Sustainability and the Environment, 2023).
Dr Bakri	N/A
Dr Abd Rahim	Not sure. Beter not to answer.
Law lecturer A	N/A
Law lecturer B	N/A

10. In your opinion, can Malaysia improve its food security, considering the framework of Singapore as a model?

Dr Noor Dzuhaidah	Unlike Malaysia, Singapore's proactive approach to food security involves strict laws rather than focusing solely on HALAL regulations. Singapore, despite not being a food producer, successfully manages its food security through import
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	controls and technological investments. Malaysia, as a food-producing nation, can learn from Singapore by implementing a comprehensive Food Security Act. This legislation should encompass farmer and fisherman incentives, conservation initiatives for rare animals, and strategies to address political challenges. Malaysia's commitment to government support and advanced technology is vital for bolstering its food security measures.
Ms Lee	Yes, but must take the following points before considering improvement its food securities like in the following – <ul style="list-style-type: none"> • JAKIM • The 12th Malaysia Plan • DSMN Action Plan 2021-2025 • The 4 pillars of food security • Enhancing food security, reducing government subsidies key issues for Malaysia's 2024 budget. • Malaysia can address the 5 areas of food security with three focused actions on legislative policies to achieve a sustainable food system, targeted investments to drive R&D and innovation, and partnerships with the private sector to support the national food agenda (Wong et al., 2023).
Dr Bakri	Singapore adopts a self-reliance strategy, diversifying food sources and embracing technology to ensure a stable food supply. In contrast, Malaysia, responding to the 2008 rice shortage, shifted to diversification and technology adoption. Malaysia focuses on improving rice cultivation cycles using advanced seeds to combat climate challenges. Both nations recognize the importance of proactive measures, as seen in Singapore's emphasis on technology and Malaysia's efforts to enhance the resilience of its paddy industry against future water scarcity.
Dr Abd Rahim	Malaysia can improve its food security better than Singapore as Malaysia has got abundance of land still for agriculture. It is a matter of government policy, the serious effort by the relevant ministries to actively support farmers, fishermen, vendors in enhancing food production in Malaysia.
Law lecturer A	No. Singapore has limited lands to produce food for their citizen and heavily rely in import due to strong SG currency.
Law lecturer B	Not necessarily. Singapore adopts strict and robust laws that its citizens willingly comply with. While we can learn from Singapore's best practices, it's not mandatory for us to replicate their approach. Instead, Malaysia should focus on rebranding its food infrastructure and raising awareness among the younger generation. United States and Europe might provide better role models for Malaysia.

CHAPTER 5: DISCUSSIONS, CONCLUSIONS, AND IMPLICATIONS

5.1 Discussions of major findings

While Malaysia has an extensive food policy aimed at securing and sustaining food development, a significant obstacle to any progress in programs or initiatives is the insufficient commitment from political leaders. Securing financial backing is essential to ensure there are adequate funds for critical activities outlined in the plan, such as researching and innovating new farming methods and enhancing agricultural infrastructure. Without this support, these vital aspects of the plan may not receive sufficient funding, creating challenges in improving farming practices. Additionally, consistent backing from politicians is crucial for the successful long-term implementation of the plan, and without it, Malaysia may face difficulties in ensuring sufficient food and advancing its agricultural development.

Insufficient funding is a major challenge for Malaysia in supporting its food security objectives. In contrast, Singapore, Indonesia, and Vietnam receive considerably more financial support in their agricultural sectors (Wong et al., 2022). The government acknowledges this problem and has initiated planning to address it. In the 2024 budget, Malaysia plans to fortify its food security such as allocating RM2.6 billion in subsidies and incentives to bolster rice farmers and fishermen. The increase in the floor purchase price of rice to RM1,300 per ton aims to augment the income of rice farmers. To further support agriculture, the government plans to elevate the subsidy for rice planting from RM40 million to RM50 million, contributing to the expansion of planting areas. Moreover, RM400 million has been designated for food security enhancement programs to increase the production of local food crops currently reliant on foreign imports. The additional allocation of RM150 million for collaboration with state governments to optimize land use underscores a concerted effort to strengthen Malaysia's overall food security strategy (The Star, 2023).

Malaysia's agricultural progress relies significantly on effective land use, particularly through repurposing abandoned land for farming to bolster food security. This approach aims to reduce reliance on imports and enhance resilience to future shocks. Challenges faced by small farmers, including difficulties for new entrants in securing agricultural land, underline the need for targeted reforms, emphasizing land redistribution and a well-defined plan to allocate more land for food farming. The government is taking a proactive step by utilizing up to 800 acres of abandoned lands owned by entities like FELDA for food crops (Malay Mail, 2022b; Noris, 2022).

In series with optimizing land utilization, technology adoption is important for modernizing Malaysia's agricultural sector, improving yield, and efficiency while reducing production costs. The government's commitment to this transformation is evident through investments in Controlled Environment Agriculture projects. A dedicated allocation of RM20 million is reserved for training smallholders in adapting to digital technologies, showcasing a concerted effort to enhance the efficiency and competitiveness of Malaysia's agriculture (Malay Mail, 2022b; Noris, 2022).

Malaysia lacks a coordinated and collaborative strategy among government entities to propel the national food security agenda forward. MAFS primarily focuses on agricultural aspects without considering the entire farm-to-fork process, spanning from agricultural production to consumption. There is a need for more specific policy targets and action plans to bolster food security and sustainability, drawing inspiration from initiatives like Singapore's 30 by 30 program. A holistic approach involving multiple sectors beyond agriculture should be adopted for an effective national food security framework.

While acknowledging the land disparities between Singapore and Malaysia, there are valuable lessons to learn from Singapore's approach to ensuring food security. Singapore has demonstrated a commendable commitment to leveraging technology and implementing innovative strategies to overcome its limited land resources. The emphasis on vertical farming, agrotechnology adoption, and efficient resource allocation has allowed it to enhance local food production. Malaysia can learn from Singapore's proactive efforts in diversifying food sources, promoting sustainable practices, and creating a supportive ecosystem for local farmers through well-allocated funds. Adopting aspects of Singapore's successful model, tailored to Malaysia's unique context, could enhance the nation's food security, and promote a resilient agricultural sector.

5.2 Implications of Study

My research addresses crucial aspects of food security in Malaysia, emphasizing challenges like heavy import reliance, vulnerabilities in staple food sources, and the absence of a dedicated food security law. This highlights the need for targeted interventions and strategic planning to enhance the nation's food security. Identifying the regulatory gap signals a crucial area for policymakers to address, urging the development of tailored legislation. The comparative analysis with Singapore offers valuable lessons for Malaysia, presenting an opportunity to

adopt effective strategies. Examining the historical evolution of food security policies provides insights into current strategies' effectiveness, guiding the formulation of future policies. The research aims to guide Malaysian policymakers and organizations by offering actionable insights inspired by successful strategies, contributing to the development of more effective and resilient food security measures in alignment with global goals.

5.3 Limitations of study

Throughout the course of this research, I encountered several challenges that influenced the scope and execution of the study. Firstly, in the literature review phase, managing an overwhelming amount of data became a difficulty, leading to uncertainties about which information was most pertinent to include in the research. Additionally, the multitude of agencies and Malaysian policies, each with distinct names and potential language variations, presented challenges in accurate identification and differentiation. In Chapter 4, finding experts in the food security field initially proved challenging due to the limited pool of specialists. Fortunately, I managed to engage with experts. Moreover, the scarcity of research on food security in Malaysia poses challenges in finding relevant data. Despite these challenges, the responses received enriched the research with valuable insights, contributing to a deeper understanding of the project.

5.4 Recommendations for future study

Future research could delve into more specific sectors within the broad realm of food security, such as agricultural policies, import-export dynamics, or the impact of climate change on food production. This could provide a more nuanced understanding of the factors influencing food security in Malaysia.

Conducting comparative studies with other countries, especially those facing similar challenges or with successful food security models, could offer valuable insights. Analysing diverse approaches and outcomes can help identify best practices and areas for improvement.

A suggested direction for future research could involve examining the anticipated food security of the expanding population. This study would investigate the influence of factors like population growth, climate change, technological progress, and global economic changes on food security. By anticipating challenges and developing proactive strategies, this research

aims to provide valuable insights for policymakers and stakeholders committed to ensuring ongoing food security.

Future researchers may explore alternative research methods by incorporating quantitative approaches. Quantitative research can offer more specific and measurable data, facilitating a more profound analysis of trends and precise conclusions. These methods, involving statistical tools and structured surveys, enable numerical insights into various aspects of food security, including access, availability, and utilization. This methodological shift holds the potential to enhance data collection precision, contributing to a more systematic comprehension of the dynamics influencing food security. Researchers utilizing these methods would be better positioned to quantify intervention impacts, assess trends over time, and derive evidence-based insights crucial for informed policy decisions in addressing food security challenges.

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INTERVIEW QUESTIONNAIRE



UNIVERSITI TUNKU ABDUL RAHMAN
FACULTY OF ACCOUNTANCY AND MANAGEMENT
BACHELOR OF INTERNATIONAL BUSINESS (HONOURS)
MAY-OCT or OCT-JAN

UKMZ3016 RESEARCH PROJECT

A Comparative Study: Exploring Food Security in Malaysia and Singapore

Dear expert interviewees,

I am Liow Jia Ying, a student from Universiti Tunku Abdul Rahman (UTAR), Faculty of Accountancy and Management, currently pursuing degree in Bachelor of International Business (Hons). I am currently conducting a study on “A comparative study: Exploring Food Security in Malaysia and Singapore” for my final year project.

The main objective of the interview is to obtain valuable insights, expertise, and perspectives from food security specialists (interviewees) regarding the legislative and policy aspects of food security in Malaysia and Singapore. The purpose of the interview is to gain a deeper understanding of the historical evolution, current status, challenges, and prospective opportunities associated with food security policies and legislation in both countries by exploring their knowledge and experience. Through this interview, I hope to collect firsthand information that will serve as valuable input for my research on improving food security in the region.

Your response to this interview will be strictly PRIVATE AND CONFIDENTIAL. Your identity will not be revealed in the report or to any third parties. Your personal data will be handled in accordance with the Personal Data Protection Act 2010 (For more details, please visit https://www2.utar.edu.my/PrivacyNotice_English.jsp).

I sincerely appreciate your willingness to participate in this interview, and your contribution is highly valued. Thank you for your time and insights.

Yours sincerely,



Liow Jia Ying

Interview questionnaires:

1. In your expert opinion, how would you define “food security”?
2. Please provide a summary of Malaysia’s historical food security laws and policies.
3. Can you list the main agencies in Malaysia that oversee food security?
4. Can you list and describe the Malaysia’s current laws and policies related to food security?
5. What difficulties do you think Malaysia faces in enhancing food security?
6. Could Malaysia consider adopting any foreign opportunities or best practices to improve its food security policies?
7. Please provide a summary of the Singapore’s historical food security laws and policies.
8. Can you list the main agencies in Singapore that oversee food security?
9. Can you list and describe the Singapore’s current laws and policies related to food security?
10. In your opinion, can Malaysia improve its food security, considering the framework of Singapore as a model?

APPENDICES

Interview detailed responses from participants.

1. In your expert opinion, how would you define “food security”?

Dr Noor Dzuhaidah	The concept of Food security is to make sure that every people in the world have access to food so we won't get starved. The 4 main principles are availability, accessibility, utilisation, and stability.
Ms Lee	Based on the 1996 World Food Summit, food security is defined when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. The 4 main criteria of food security are physical availability of food, economic and physical access to food, food utilization and stability of the 3 criteria previously over time.
Dr Bakri	Academically, by discipline, food security is formed based on several criteria, including availability/economic access, nutritional content, adherence to food preferences, and the assurance of safe food that aligns with culturally accepted standards.
Dr Abd Rahim	Government responsibility to ensure adequate food supply for the population of a country.
Law lecturer A	A nation be able to produce and self-sustain without relying on import from other country.
Law lecturer B	N/A

2. Please provide a summary of Malaysia’s historical food security laws and policies.

Dr Noor Dzuhaidah	Malaysia does not have food security law. National food security action plan and policy, Dasar Agro Makanan Negara. We have policy in Food safety related to agriculture but no specific food security law. Food safety law and label law.
Ms Lee	First to third National Agricultural Policy in 1980s to 2010, NAP1.0 and the current policy NAP 2.0.
Dr Bakri	Malaysia adopted a self-sufficiency approach to food security. At one point in time, the government emphasized food self-sufficiency at all costs, aiming to reach a point where the country produces enough food domestically, reducing reliance on external sources to feed its people. However, this approach proved to be costly. Unfortunately, I am not familiar with the law area, but the policies

	that I know of are The 11 th Malaysia Plan, The 12 th Malaysia Plan 2021-2025, Action Plan 2021-2025, NAP 1.0 and NAP 2.0.
Dr Abd Rahim	There are no specific Food Security laws that I know of in Malaysia but the naming of Agriculture Ministry to Agriculture and Food Security Ministry under PMX is a good indicator that the present government is concerned about the food security issues for the future in Malaysia.
Law lecturer A	N/A
Law lecturer B	We do have road map such as the NAP 1.0 and NAP 2.0.

3. Can you list the main agencies in Malaysia that oversee food security?

Dr Noor Dzuhaidah	<ul style="list-style-type: none"> Ministry of Agriculture and Food Security (MAFS) Kementerian Pertanian dan Keterjaminan Makanan (KPKM) Coat of arms of Malaysia Ministry overview Preceding ministry Ministry of Agriculture and Food Industry (MAFI) MOA, DOA, MARDI, FAMA, FELDA
Ms Lee	<ul style="list-style-type: none"> Ministry of Agriculture and Food Security Federal Agricultural Marketing Authority (FAMA) Malaysian Agricultural Research & Development (MARDI) The Food Safety and Nutrition Cluster (KMP) led by Ministry of Health (MOH) and National Food Safety and Nutrition Council (MKMPK) Food Safety and Quality Division and the Nutrition Division in MOH
Dr Bakri	<ul style="list-style-type: none"> Ministry of Agriculture and Food Security Cabinet Committee on the National Food Security Policy Dasar Jaminan Bekalan Makanan (DJBM) Padiberas Nasional Berhad (BERNAS)
Dr Abd Rahim	<ul style="list-style-type: none"> Agriculture and Food Security Ministry Food Safety and Quality Department, Ministry of Health Malaysian Quarantine and Inspection Services (MAQIS)
Law lecturer A	Ministry of Agriculture and Food Security of Malaysia
Law lecturer B	<ul style="list-style-type: none"> BERNAS Kementerian Pertanian dan Keterjaminan Makanan (KPKM)

4. Can you list and describe the Malaysia's current laws and policies related to food security?

Dr Noor Dzuhaidah	Dasar Agro Makanan Negara (national agrifood policy), Food safety, labelling food under food regulations.
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Ms Lee	According to the article by Osman and Baharuddin (2022), Malaysia has its own food security plan and policy. Malaysia appears to be in no urgent need of enacting such food security law in those countries but we are in desperate need of planning food security issue at larger scale considering rich biodiversity and improving infrastructure to eliminate hunger.
Dr Bakri	Most recent policy is the NAP 2.0, includes the National Food Security DSMN Action Plan. Focusing on our current position in the GFSI, where we rank 41st, the main concerns are availability, stability, and exposure to uncertainties like climate change. Realizing these challenges, the government is placing increased emphasis on technology usage and research. The Food Security Law addresses issues related to ingredients, such as the allowance of genetically modified organisms (GMO) and HALAL foods, and animal consumption. Generally, discussions on food security often refer to the implemented policies.
Dr Abd Rahim	<ul style="list-style-type: none"> • Malaysian Quarantine and Inspection Services Act 2011 and its Regulation • Food Act 1983 and Food Regulations 1985 • General Procedure Import Meat, Poultry, Milk And Egg Products To Malaysia(Under Disease Control and Veterinary Biosecurity Division Department of Veterinary Services, Malaysia (DVS) Ministry of Agriculture & Food Security Malaysia • Pesticides Act 1974(Pesticide Board of Malaysia)
Law lecturer A	N/A
Law lecturer B	N/A

5. What difficulties do you think Malaysia faces in enhancing food security?

Dr Noor Dzuhaidah	Plan, policy, finance.
Ms Lee	According to the article by Dardak (2020), Malaysia faces challenging time as the food demand is increasing continuously year after year while food product supplies from domestic farmlands are unable to meet the demand. In general, food production is only able to supply between 20% and 70% of the local consumers requirements.
Dr Bakri	<p>There are several issues surrounding food security in Malaysia. Firstly, the agricultural sector faces challenges such as competition for limited land, with various sectors like housing, industry, academia, and government vying for space. This competition particularly affects the availability of land for crucial crops like rice, our staple food.</p> <p>The second issue is the labor shortage, worsen in post-pandemic due to the departure of a significant number of foreign workers, namely from Indonesia. This</p>

	<p>shortage impacts sectors like palm oil plantations and the rice industry. The reluctance of local youth to work in agriculture, possibly due to perceptions of the industry is not professionally looking, adds to this challenge. Additionally, reliance on foreign labor may be affected by better opportunities and policies in their home countries.</p> <p>The third point is the low productivity and quality, especially in the paddy industry, despite heavy fertilizer use. We need to do a lot to increase the productivity with the help of technology. That is why research and development is important on technology area.</p> <p>The fourth point is the minimal adoption of technology, which can be proven in the GFSI. Due to our slow adaptation to technology and slow political commitment to change, Malaysia lags behind neighboring countries like Singapore and Thailand in technological advancement. Therefore, we must do something about it.</p> <p>Furthermore, while Malaysia is good in formulating policies such as DAN 1.0 and 2.0, the challenge lies in their implementation. I've received feedback suggests a gap between policy vision and actual practice. We also rely heavily on import, which is factual and also troublesome for Malaysia, we must do something to improve our reliance on foreign sources.</p>
Dr Abd Rahim	<ul style="list-style-type: none"> • Dependence of food importation • Agriculture research in Malaysia is not competitive as against Thailand food production. MARDI must be revitalised to improve food production in Malaysia • Escalating cost due to weak Ringgit may cause a burden to population • Political will on food security is long overdue • Ministry of Agriculture and Food Security policy and direction on food security is not highlighted to the public
Law lecturer A	<p>Too much of palm oil plantation, too few of paddy rice field and domestic agricultural industry. Currently shortage of rice, egg, live stocks, and the food security are in Yellow alert. Price fluctuation has worsened the condition as government is pulling back subsidy to the industry and turn the cost to publics.</p>
Law lecturer B	<p>This is a very important question. Nowadays food prices is increasing, rice/bread/staple food is important to us and we have to pay more. We need better management and digitalization platform, blockchain in food supply, land/plant/chicken. Malaysian cannot anymore depend on internal system, have to opt for blockchain platform to be more transparent for our food supply, to reduce our price.</p>

6. Could Malaysia consider adopting any foreign opportunities or best practices to improve its food security policies?

Dr Noor Dzuhaidah	Yes, political will. In Italy, Milan fashion handbags are not funded from their own pockets; it is an incentive from the Italian government to popularize handbags, providing support to businesses. Similarly, we should enhance our food security by offering incentives to small-scale farmers, including those in rural areas. Currently, when 100 small-scale farmers do not fully utilize their paddy fields, we resort to importing from Thailand. Providing incentives, especially to small-scale farmers, can address this issue. In terms of technology, our level is much lower compared to Thailand. They can produce a substantial amount of food due to better technology and the use of fertilizers. There's a lot we can learn from Thailand.
Ms Lee	Yes
Dr Bakri	<p>Yes, we are enhancing our food security and can draw insights from various countries. Our natural environment aligns more with our close neighbors, such as Thailand and Indonesia, rather than Singapore, which lacks vast available land like Malaysia. However, Singapore and Malaysia adopt different approaches to food security. Malaysia emphasizes food self-sufficiency, aiming for reservations and local production where possible. For rice, despite efforts, we acknowledge the challenge of reaching 100% self-sufficiency without modern technology. Singapore, on the other hand, focuses on food self-reliance, diversifying food sources and implementing strategies like vertical farming, aquaponics, and indoor farming. Although we can learn from others, direct comparison with Singapore might be challenging due to physical differences.</p> <p>We may not be directly comparable to Singapore, but we are progressing, especially in embracing technology. Learning from countries like Cuba, which faced a crisis in 1970 when its close partner, the Soviet Union, withdrew support, can provide valuable insights. Cuba adapted by focusing on urban agriculture, and our government is also recognizing its importance. In 2020, policies were implemented, emphasizing urban food security in household areas. The government allocated a portion of the national budget to support initiatives like aquaponics, aiming to empower urban agriculture. This strategic move acknowledges that urban areas could face significant challenges in food security during disruptions in the supply chain, making such initiatives crucial for the well-being of urban populations.</p>
Dr Abd Rahim	Definitely. Lots of knowledge on agriculture are out there in agricultural research centres or universities in other countries. Malaysia should spend to send our agriculture experts to learn from those experiences and bring the knowledge home and do it in a large scale. We can learn a lot from Thailand and China.

Law lecturer A	Yes. Malaysia should follow Taiwan and China practice to maintain high storage, high food supplies to prepare for World War 3.
Law lecturer B	Yes.

7. Please provide a summary of the Singapore’s historical food security laws and policies.

Dr Noor Dzuhaidah	We cannot draw a direct comparison with Singapore due to its smaller population. Shifting from self-sufficiency to self-reliance, Singapore, as a city-state, covers approximately 719.1 km ² , with a population of 5.54 million and a GDP of S\$391.3 billion at 2010 prices. The AVA oversees the nation's food supply, ensuring safety, stable prices, and technological advancements in large-scale farming. In the early years of independence in 1965, family farming played a pivotal role in food security, with 20,000 farms covering 25% of the land. However, as Singapore developed, farmland diminished, and the agricultural approach shifted towards more intensive practices with fewer farms. By 1990, family farms achieved near self-sufficiency in various products. Notably, in 1974, a strategic decision was made to relocate pig farms to a specific area, Punggol, addressing environmental concerns and promoting intensive commercial pig farming. Over six years, 547,000 pigs (70%) were successfully relocated.
Ms Lee	According to an article by SFA (2022), Singapore has “30 by 30” goal to be able to produce 30% of the nutritional needs by 2030 and to achieve this with less than 1% of land set aside for farming.
Dr Bakri	To be frank, I am not familiar with this. But in term of policies, due to differences of capacity they have with Malaysia, they choose different path and ways to survive and they performed well in GFSI without producing on their own. They go for diversification and also aspire to grow locally and expansion to contract farming and so on. They emphasis on research and develop, emphasis on optimization of food production in sustainable value, this is a very beautiful thing of Singapore. That is also a part that we can learn from. We may not be directly comparable to Singapore, but we are progressing, especially in embracing technology. Learning from countries like Cuba, which faced a crisis in 1970 when its close partner, the Soviet Union, withdrew support, can provide valuable insights. Cuba adapted by focusing on urban agriculture, and our government is also recognizing its importance. In 2020, policies were implemented, emphasizing urban food security in household areas. The government allocated a portion of the national budget to support initiatives like aquaponics, aiming to empower urban agriculture. This strategic move acknowledges that urban areas could face

	significant challenges in food security during disruptions in the supply chain, making such initiatives crucial for the well-being of urban populations.
Dr Abd Rahim	Not sure.
Law lecturer A	Not interested. Singapore is mainly relying on Johor to import food into their Nation.
Law lecturer B	N/A

8. Can you list the main agencies in Singapore that oversee food security?

Dr Noor Dzuhaidah	<ul style="list-style-type: none"> • AVA • SFA • HAS • NEA
Ms Lee	The SFA was formed as a statutory board under the Ministry of the Environment and Water Resources (MEWR) on 1 April 2019 to oversee food safety and food security from farm-to-fork. MEWR has been renamed as the Ministry of Sustainability and the Environment (MSE). The SFA brings together food-related functions carried out by the former AVA, the National Environment Agency and the Health Sciences Authority (Singapore Food Agency [SFA], 2022b).
Dr Bakri	N/A
Dr Abd Rahim	Not sure. I did not study Singapore plan of action on food security.
Law lecturer A	Not interested.
Law lecturer B	N/A

9. Can you list and describe the Singapore's current laws and policies related to food security?

Dr Noor Dzuhaidah	Singapore will be introducing a bill on food safety and security later this year to manage new and emerging risks. Formed in 2019, the SFA will introduce the act, to consolidate and strengthen official powers that are currently in several pieces of Singaporean legislation. The new rules will provide better clarity on the regulatory framework for novel foods, including mandatory pre-market safety assessments before approval for sale is granted. In addition, as is currently done for other food items, SFA will inspect and sample novel food products. Existing requirements will stay in place, such as those that require companies to indicate the true nature of the food on packaging labels and those that help customers make informed choices. Currently, food delivery companies are not licensed by the SFA, because they are not involved in food preparation or processing. SFA is looking at whether these companies will need to indicate hygiene and cleanliness information on their platforms.
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Ms Lee	Singapore has food security policy which is the 3 “food baskets” and “30 by 30” local production goals. There are 3 food security in 3 food baskets mainly diversifying import sources, growing local and growing overseas. The 30 by 30 goal aims to build up Singapore’s agri-food industry’s capability and capacity to produce 30% of the nutritional needs locally and sustainably by 2030, up from less than 10% today (Ministry of Sustainability and the Environment, 2023).
Dr Bakri	N/A
Dr Abd Rahim	Not sure. Better not to answer.
Law lecturer A	N/A
Law lecturer B	N/A

10. In your opinion, can Malaysia improve its food security, considering the framework of Singapore as a model?

Dr Noor Dzuhaidah	Indeed, Singapore seems to be consistently ahead of us. Unlike Malaysia, Singapore has stringent laws specifically addressing food security, whereas we mainly focus on HALAL regulations. Singapore, although not a food producer, effectively manages its food security by controlling imports and investing in technology. In contrast, Malaysia, being a food producer, can learn from Singapore's model by enacting a comprehensive Food Security Act. This legislation should address incentives for farmers, fishermen, and conservation efforts for rare animals, along with navigating political challenges. Government support and a commitment to advanced technology are crucial steps for enhancing Malaysia's food security.
Ms Lee	Yes, but must take the following points before considering improvement its food securities like in the following – <ul style="list-style-type: none"> • JAKIM • The 12th Malaysia Plan • DSMN Action Plan 2021-2025 • The 4 pillars of food security which are availability, access, utilization and stability • Enhancing food security, reducing government subsidies key issues for Malaysia’s 2024 budget. • Malaysia can address the five areas of food security with three focused actions on legislative policies to achieve a sustainable food system, targeted investments to drive R&D and innovation, and partnerships with the private sector to support the national food agenda (Wong et al., 2023).

Dr Bakri	Yes, Singapore adopts self-reliance approach to reach food security. The first one is diversification source of food import, Malaysia implemented that too after experiencing food crisis in 2008. In 2008, our government has to pledge and negotiate with Thailand government to sell rice to us. Climate havoc/climate change in 2008 affected the pricing of rice reach high value, the price of rice has doubled or tripled in international market due to disruption at that time and also due to currency issue. Singapore also emphasis on adoption of technology. For example, right now we are pertaining issue to rice seed, we are going to grow rice in 5 cycles in 2 years, usually 2 cycles in 1 year. Government wants to speed up the cycle and MARDI has improved the research in this area and came up with variety of paddy seeds which are more resistance on draught. The National Water Research Institute of Malaysia (NAHRIM) predicts severe drought conditions from 2025 to 2035. Given the significant reliance of our paddy industry on water, this poses a critical challenge. To address this issue, extensive research is underway to develop drought-resistant paddy seeds. This proactive approach aims to ensure the resilience of the paddy industry in the face of impending water scarcity.
Dr Abd Rahim	Malaysia can improve its food security better than Singapore as Malaysia has got abundance of land still for agriculture. It is a matter of government policy, the serious effort by the relevant ministries to actively support farmers, fishermen, vendors in enhancing food production in Malaysia.
Law lecturer A	No. Singapore has limited lands to produce food for their citizen and heavily rely in import due to strong SG currency.
Law lecturer B	No, not necessarily. While Singapore adopts strict and robust laws that its citizens willingly comply with, Malaysia takes into consideration the welfare of its people. While we can learn from Singapore's best practices, it's not mandatory for us to replicate their approach. Instead, Malaysia should focus on rebranding its food infrastructure and raising awareness among the younger generation. Looking to the United States, France, and Europe might provide better role models for Malaysia.