

Revitalizing Malaysia's Agro Sector: Cultivating A Path To Food Security

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Abstract

Malaysia's agricultural sector is crucial for ensuring food security and promoting economic growth. Since the 2008 global financial crisis, food security has become a top priority on the national agenda. Every country, including Malaysia, worries about food security. Despite the country's inability to produce food independently, food is available throughout the year. Malaysia outsources its food supply to satisfy local consumer demand, making it a net importer of food. This situation is deemed necessary due to the country's limited arable land and farmers' restricted output capabilities. This article primarily focused on the Malaysian Ministry of Agriculture and Food Security (MAFS) in its efforts to rejuvenate the agro sector and enhance food security. Malaysia's rejuvenate the agro sector and food security were analysed using some key strategic management techniques, including PEST analysis, a custom-made internal analysis, and SWOT analysis. These approaches serves as a tool for identifying food security issues. The TOWS matrix and BOS were then employed to generate many viable recommendations. This article provides information on food security in Malaysia as well as appropriate recommendations for stakeholders.

Keywords: *Agricultural Sector, Food Security, Agriculture Policy, Crop Cultivation, Food Access, Strategic Analysis, Malaysia*

INTRODUCTION

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Agriculture is a critical contributor to economic growth, accounting for 4% of global GDP and more than 25% of GDP in the least developed nations. Agriculture-driven growth, poverty alleviation, and food security, on the other hand, are jeopardized. Multiple shocks impact food systems, leading to rising food prices and an increase in growing hunger (The World Bank, 2023). As mentioned above, agriculture is closely related to food security, which is a situation in which all individuals in a population have constant and dependable access to sufficient, safe, and nutritious food that meets their dietary needs and preferences for a healthy and active life. It is a fundamental human right and a crucial component of overall well-being and development. Food security entails much more than simply having sufficient food to eat. It is also related to the quality of the food and the dependability of global supply lines. Conflict, civil turmoil, poverty, and famine may all result from a lack of food

security (Urban Hijau, 2023). Politicians from all races, religions, and ideologies have spoken out on this topic, and rightly so. At the last United Nations General Assembly (UNGA), all heads of state focused on the pandemic's disruption of supply chains for food and other essential goods (Tzin, 2023).

Although Malaysia is generally food secure on a national level, with the country ranking 40th out of 113 nations in the Global Security Index in 2018 (Shamsudin, 2019). Malaysia is not immune to food insecurity. Malaysia scored moderately for hunger on the 2022 Global Hunger Index, with a slight increase in the hunger index from 10.9 in 2014 to 12.5 in 2022, most likely due to an increase in food insecurity resulting from the pandemic (Mahmood et al., 2022). There is evidence of food insecurity at the household level, where 23.7% of parents feed their children with inexpensive food, and 20.8% cannot afford to buy a variety of meals. In addition, according to the Malaysian Adult Nutrition Survey (MANS), approximately 25.0% of adults experience food quantity insufficiency, 25.5% experience food variety insufficiency, 21.9% practice reduced meal sizes, and 15.2% miss main meals due to financial constraints (Ahmad et al., 2020). Food security has become a significant subject in recent years, particularly in the last year (2022), as the country dealt with the double whammy of a lower ringgit against a strong US currency and huge swings in commodity prices caused by the Ukraine crisis (Intan, 2023). In the Budget 2023, one of the key challenges addressed is food security. Finance Minister Anwar Ibrahim stated that the agri-food sector needs reform, with a focus on guaranteeing the sustainability of regional food production (Zailani, 2023).

Rejuvenating the agricultural sector and maintaining food security are essential components of long-term development, poverty reduction, and population welfare. They necessitate a multifaceted response including collaboration among government agencies and ministries, the corporate sectors, and international organizations. According to Syukrie Mohd Nasir, the Senior Principal Assistant Secretary of Policy and Strategic Planning Division, the Ministry of Agriculture and Food Security Malaysia (MAFS), is improving access to food resources by empowering marketing operations, such as Madani Agro Sales, to reach all segments of society (Bernama, 2023). Rejuvenating the agricultural sector and ensuring food security are interlinked issues that require a multifaceted approach. Countries can achieve both objectives by addressing agricultural sector challenges and implementing initiatives to enhance food supply, accessibility,

utilization, and stability. This effort aligns with Sustainable Development Goal 2, aiming to eliminate hunger by 2030 (Martin, 2022).

BACKGROUND OF THE PROBLEM

According to Malaysian Investment Development Authority (MIDA), the agro sector in Malaysia is a significant component of the country's economy and plays a crucial role in ensuring food security and supporting rural livelihoods. It encompasses a wide range of agricultural activities, including crop cultivation, livestock farming, aquaculture, and agro processing (MIDA, 2023). Crop cultivation in Malaysia includes rice for domestic consumption, for which the government aims to achieve self-sufficiency in rice production (Radin Firdaus, 2020). Radin Firdaus echoes that paddy fields are primarily located in the northern states of Peninsular Malaysia and in the Borneo region. Other crops such as fruits and vegetables are cultivated across the country. Malaysia also produces a variety of spices and herbs, including pepper, cinnamon, ginger, lemongrass, and turmeric. These play a crucial role in local culinary traditions and are also exported.

In addition to crop cultivation, Malaysia has a thriving poultry industry, producing chicken and eggs to meet domestic demand for these products. The industry follows modern production practices and emphasizes food safety standards. Livestock farming in Malaysia includes the rearing of cattle and goats for meat production, with these animals primarily raised in rural areas of Peninsular Malaysia and Sabah (Jamaludin et al., 2023). Malaysia has a significant aquaculture industry, particularly in freshwater fish farming. Tilapia, catfish, and carp are commonly cultivated. Shrimp farming, both in marine and brackish water, is also practised. Malaysia also has a developed agro-processing industry that adds value to agricultural products (MIDA, 2023). It involves activities such as milling, refining, canning, freezing, and packaging of agricultural produce. Agro-processing industries include palm oil refineries, rice mills, fruit processing units, and fish processing plants.

Efforts are being made to enhance productivity, diversify crops, support smallholders, and promote sustainable practices to ensure a stable and sustainable agro sector in Malaysia. The agro sector in Malaysia is an important contributor to the national economy and food security. The agro sector also provides employment for

about 1.55 million people, or 10.3% of the total labor forces (DOSM, 2022). According to the statistics from the Economic Planning Unit, the agro sector accounted for 6.9% of the gross domestic product (GDP) in 2022, with a value of RM 100.7 billion (EPU, 2022) a decline from 7.2% in 2021. The main sub-sectors are crops, livestock, fisheries and forestry. The agro-food sector has been significantly lagging behind its commodity crops sector (World Bank, 2020). In 2020, the agricultural land use area for commodity crops reached approximately 91%, while the area for food crops was less than 10% (DOSM, 2021). According to the facts mentioned, industrial crops predominate over food crops in the majority of agricultural land use areas. However, a lower planted area does not necessarily translate into a higher yield (Tey, 2010). The figure is alarming and would jeopardize the country's effort in combating food insecurity in Malaysia if immediate action is not taken by the government.

According to the Food and Agriculture Organisation (FAO) of the United Nations, conceptually, food security is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. Based on this definition, four food security dimensions can be identified: food availability, economic and physical access to food, food utilization and stability over time (FAO, 2021). After gaining independence in 1957, Malaysia faced challenges in ensuring food security for its growing population (Sundaram et al., 2019). As a developing country with a growing population and economy, Malaysia faces various challenges in ensuring sufficient, safe and nutritious food for its people.

Sundaram et al. (2019) further argue that one of the main aspects of food security is food availability, which depends on domestic production and imports. Malaysia has focused its self-sufficiency policy on rice and paddy production, which are the country's primary staple food and food crop. However, climate change poses a serious threat to paddy production, as it affects temperature, precipitation and pest infestation. Therefore, Malaysia needs to adopt adaptive strategies to cope with the impacts of climate change on its rice sector. Food access, which has been associated with the availability and cost of food on the market, is one of the aspects of food security. Malaysia has experienced rising food prices due to various factors, including inflation, currency depreciation, supply disruptions, and global market fluctuations (BNM, 2023). These factors have reduced the purchasing power of low-income households and increased their vulnerability to food insecurity. Hence, Malaysia needs

to implement measures to stabilize food prices and ensure equitable access to food for all segments of society.

Another aspect of food security is food utilization, which refers to the quality and safety of food as well as the nutritional status of the population. Malaysia has achieved remarkable progress in reducing malnutrition and improving health outcomes over the past decades. However, it also faces the double burden of undernutrition and overnutrition, as well as emerging issues such as food waste and contamination (BNM, 2023). Therefore, Malaysia needs to promote healthy eating habits and enhance food safety standards to improve its food utilization. Ultimately the last aspect of food security is food stability, which means that food availability, access and utilization are maintained over time despite shocks and stresses. Malaysia has been exposed to various risks that threaten its food stability, such as natural disasters, pandemics, trade disputes and geopolitical conflicts (Nor Le et al., 2024). These risks could disrupt the supply chain and distribution network of food, as well as affect the income and livelihood of farmers and consumers. Therefore, Malaysia needs to strengthen its resilience and preparedness to cope with potential shocks and stresses that could affect its food security.

Food security is a complex and multidimensional issue that requires a holistic and integrated approach from various stakeholders. MAFS has implemented various policies and programmes to support and enhance the agro sector in Malaysia through the Ministry of Agriculture and Food Security, such as the National Agro-Food Policy 2011-2020, the National Key Economic Areas (NKEA) for Agriculture, and the National Food Security Policy 2021-2030. These initiatives aim to increase productivity, competitiveness, sustainability and resilience of the agro sector.

METHODOLOGY

The paper aims to analyze strategies for rejuvenating the agro sector and food security in Malaysia. Several strategic management methods were implemented in developing the strategies. In developing the strategies, the visions and missions of MAFS were reviewed and analyzed to determine their relevance in addressing the issues surrounding the agro and food security sector in Malaysia. The missions is then analyzed to see whether it is translated into strategic goals of MAFS.

In the initial stage of the strategy formulation, PEST analysis was conducted to identify the external factors that would become opportunities or threats to the strategic goals that are beyond MAFS control. It consists of four elements which are political and legal, economic, social-cultural and technology. Next would be identifying the internal factors through the custom-made internal analysis to determine the strengths and weaknesses of MAFS. These are the internal factors which are within the control of MAFS. The internal and external analysis were conducted through examinations of secondary sources such as MAFS websites, articles, news, reports and the National Agrofood Policy 2.0 (NAP 2.0). To gather additional information on MAFS, a semi-structured interview was conducted with a representative from the MAFS Policy and Strategic Planning Division.

Once the internal and external factors have been identified through the specific tools, the result are projected through the SWOT matrix for examinations. Based on the SWOT matrix, TOWS matrix was developed to link the internal and external analysis. This is in order for the strategist to generate alternative strategies to achieve the goals. TOWS analysis utilizes the strength to take advantage of opportunities and minimize weaknesses, thereby protecting the organization against the impact of threats.

RESULTS

The SWOT matrix is a strategic planning tool used by organizations to evaluate their internal strengths and weaknesses, as well as external opportunities and threats. "SWOT" stands for Strengths, Weaknesses, Opportunities, and Threats. From the SWOT matrix, the internal and external factors can be easily identified as shown in Table 1.

Table 1:
SWOT Analysis Technique

Strength	Weaknesses
S1. 4 Federal Departments, 7 Federal agencies (Statutory Body), 1 bank (Agrobank) with offices throughout the country	W1. Issues of overlapping in functions between agencies and federal departments
S2. New minister with a new mandate	W2. Tall organizational structure with many layers (typical government structure)
S3. The Stability and Sustainability Cluster (KSM) - reports to the Cabinet Committee on National Food Security Policy (FSCC).	W3. Based on the Auditor's Report 2021, although 78% of projects under the Food Security Fund Programme of the Prihatin Rakyat Economic Stimulus Package (Prihatin) were successfully
S4. The Availability Cluster (KTS) - reports to National	

Agricultural Advisory Council (MPPN} S5. Strategies are well-documented - National Food Security Policy Action Plan 2021-2025 (5 core strategies, 15 strategies and 96 initiatives) S6. Closely work with the relevant ministry on the availability and sustainability of food S7. 2023 - Budget of 5.39 billion S8. Free long- and short-term courses for the benefit of the public in general and the target group S9. Implementation of the Large-Scale Smart Field Project or SMART SBB to increase rice production (11000 ha/5000 participant) S10. Internal and external system are available to be utilized by the public and the target group.	completed, the programme did not achieve its set objectives. The contribution of production under this programme is very small and insignificant to domestic production. W4. Monitoring issue of social obligation fund under concession agreement- RM37 millions of fund was not received (2021) W5. Irregular payment of subsidies - RM0.73 m to deceased paddy farmer W6. Underutilised asset for paddy farmers - RM870,000 W7. Lack of promotion from MAFS
Opportunities O1. Existence of a stable government - It has become a key political agenda item for the government of the day to address the food security issue. O2. Shift of priority from industrial commodities to the food crop industry O3. Public awareness on the state of agro sector and the food security issue O4. Interventions such as price controls on selected food items (KPDNHEP) O5. Public awareness of food wastage is rising O6. National Internet of Things (IoT) Strategic Roadmap (MOSTI-MIMOS)	Threats T1. The period for the temporary occupation lease (TOL) is only 1 year, which limits investments from farmers in agricultural land. T2. The Russia-Ukraine war may indirectly compromise Malaysia's food security through a surge in the price of fertilisers and animal feed among other things. T3. A change in the world's climate may pose a threat to the ecosystem, affecting productivity and the economy. T4. Malaysia's agro-food import stood at RM64 billion compared to exports of RM39 billion in 2021. T5. GFSI - Malaysia ranked 41 (113 countries) with score of 69.9 (moderate) T6. The agricultural sector faces structural issues, including labor shortages, leading to an increase in idle agricultural land and a high dependence on foreign labor. T7. Malaysia's agricultural sector is still dominated by smallholders, with an average age of over 55 years. Youths constitute 44% of Malaysia's total population, out of which only about 15% are involved in the agriculture sector T8. The country is particularly lacking in agricultural research and development (R&D), as well as climate change adaptation. T9. Low level of automation and technology adoption T10. Lack of market linkages for small-scale farmers

Source: Gathered from multiple secondary sources

Developing Alternative Strategies

The section presents a set of actionable strategies aimed at addressing the issue within the agro sector and ensuring food security. These recommendations are the result of utilizing the TOWS matrix technique, which facilitated the formulation of a comprehensive strategy to effectively tackle the issues at hand. Table 2 represent several alternative strategies identified after the process of mapping between external factors (Opportunities and Threats) as well as internal factors (Strengths and Weaknesses). By implementing these suggested measures, MAFS can better equip itself to confront and overcome the complexities posed by the external and internal factors, thus securing a stable and sustainable food supply. The TOWS matrix technique involves four distinct quadrants: Strength-Opportunities (SO), Weakness-Opportunities (WO), Strength-Threats (ST), and Weakness-Threats (WT). Each quadrant draws upon the elements identified in the SWOT analysis to develop effective strategies. The SO Strategy leverages internal strengths to capitalize on and optimize external opportunities available to the organization. By aligning strengths with favourable opportunities, MAFS can maximize its potential for success and growth.

As for the ST Strategy, the focus lies on maximizing the organization's strengths to proactively address and mitigate potential threats. By utilizing its inherent advantages, MAFS can effectively neutralize or reduce the impact of external threats. The WO Strategy aims to minimize MAFS's weaknesses while taking advantage of external opportunities. By identifying and addressing weaknesses, MAFS can better position itself to capitalize on emerging opportunities. Finally, the WT Strategy concentrates on minimizing both weaknesses and external threats. By tackling internal weaknesses and proactively addressing external threats, the organization can build resilience and protect its interests.

Table 2:

TOWS Matrix Technique

SO Strategies	WO Strategies
SO1. To increase coverage of SMART SBB implementation to reach the self-sufficiency level (SSL) for rice at 75 per cent by 2025 (S4, S5, S9, O2)	WO1. To increase cooperation with strategic partners within the ministry in order to tackle the food security issue (W1, O1, O2)
SO2. To increase participation of organization and individuals under the MYSaveFood partners on food wastage through programs under the Stability and Sustainability Cluster (S1, S3, S6,	WO2. To increase collaborative network with private agencies and NGOs to ensure the objectives of the Food Security Program are achieved (W3, O1, O2, O3)
	WO3. To revisit and realign the objective of programs

O5) SO3. To rejuvenate the external system facility for the usage of the public (S10, O6) SO4. To ensure the availability of accurate and verified national agro-food data (S3, S4, S5, O2, O6) SO5. To collaborate with KPDNHEP on a price control mechanism on any price hike related to the sustainability of food production for the country (S3, S6, O4)	under the Food Security Fund to increase the domestic productivity (W3, O1, O3, O4) WO4. To increase MAFS presence through social media (W7, O3, O4, O5, O6) WO5. To increase understanding of project participants on project implementations objectives and milestones (W3, W4, W5, O2, O3)
ST Strategies ST1. To establish government and state intervention in lengthening the period for the temporary occupation lease (TOL) from one year to a minimum of 10 years on agricultural land for reasonable investment returns (S1, S3, S4, S6, T1, T4, T5, T6) ST2. To expand courses/programs that would encourage the younger generation's participation in the agricultural sector (S1, S8, T7, T8) ST3. To increase free training (long and short courses) for the target group (S1, S7, S8, T6) ST4. To encourage universities and research institutes to come up with solution on the sustainability of agricultural produce that are resistant to climate change (S6, T6, T3, T7, T9) ST5. To collaborate with a private entity in addressing the issue of idle agricultural land by developing the land with technology adoption and automation (S1, S2, S5, T5, T4, T5, T6)	WT Strategies WT1. To strengthen the monitoring system of each program under the food security program to avoid mismanagement and ensure the objectives are achieved. (W3, W4, W5, W6, W7, T4, T5) WT2. To increase domestic agricultural production through improvement of market linkages (W3, W4, T1, T5, T9) WT3. To improve the food stock capacity in the country to meet the needs of the Malaysian population (W3, W4, T3, T5) WT4. To attract and retain the local labour force in the agricultural sector (W7, T6) WT5. To facilitate the exchange of knowledge and promote the adoption of sustainable and climate-resilient practices in the agricultural sector (W3, W7, T5, T6, T8)

Source: Developed by Authors

Identifying Strategy Attractiveness

Subsequently, the paper adopts the Comparative Table of Strategies Attractiveness approach to determine the most suitable strategy. This table draws inspiration from the Blue Ocean Strategy (BOS) framework, featuring three crucial components: low in cost, high impact and fast execution (Kim & Mauborgne, 2014). The focus of BOS analysis is to determine how the government can create public value to the public without utilizing too many resources. The target is to pursue a high income nation and greater well-being and driven by creativity and innovation in the strategy formulation. In the public sector, moves are made to lower cost through unlocking underutilized resources between public agencies and higher value can be delivered by creatively deploying the available resources to areas in need.

For the SO quadrant, strategy number four has been selected for implementation based on BOS framework. For MAFS, ensuring the availability of accurate and verified national agro-food data emerges as the top choice for leveraging internal strengths and capitalizing on external opportunities. By prioritizing reliable data management, expertise, and technology, MAFS can enhance program effectiveness, decision-making processes, transparency, and accountability. This strategy aligns with external requirements, utilizes technological advancements, and supports evidence-based advocacy for agricultural and food security issues.

In the WO quadrant, strategy number one has been chosen for implementation. The most effective approach for MAFS to address weaknesses and optimize potential is to increase cooperation with strategic partners within the ministry. By leveraging collective strengths, optimizing resource allocation, coordinating policies, sharing knowledge, and involving a wider range of stakeholders, this cooperative strategy efficiently tackles the complex issue of food security in a thorough and long-lasting manner. As for ST quadrant, strategy number three was selected where a highly effective strategy for MAFS to capitalize on strengths and mitigate threats is to establish courses that encourage the involvement of the younger generation in the agricultural sector. This approach harnesses youth potential, bridges the knowledge gap, promotes entrepreneurship and technology adoption, addresses workforce challenges, creates advocates, and enhances sustainability. By countering risks linked to an aging workforce, declining interest, and changing agricultural practices, this plan effectively leverages the capabilities of the next generation.

Finally, in the WT quadrant, strategy number one has been chosen whereby MAFS views strengthening the monitoring system for each food security program as a top strategy to mitigate weaknesses and threats. This approach enhances program efficiency and effectiveness by proactively identifying and addressing potential issues and deviations from objectives. With a thorough monitoring system in place, MAFS can intervene swiftly, make necessary adjustments, and ensure programs stay on track, fulfilling their goals and producing expected results. Ultimately, an improved monitoring system enhances MAFS's capacity to ensure food security, promote sustainable agriculture, and improve the well-being of the population. Based on the analysis of the attractiveness of the strategies built upon BOS analysis technique, this paper proposed several key strategic thrust that MAGS can acted upon based on our thorough analysis as discussed in the previous sections.

Strategic Thrust 1: Ensuring Availability of Accurate and Verified National Agro-Food Data

The availability of accurate and verified national agro-food data can significantly contribute to rejuvenating the agro sector and enhancing food security in Malaysia. Such data provides valuable insights and information that can be leveraged to make informed decisions and implement effective strategies at various levels of the agro-food system. There are four initiatives identified under the strategic thrust to achieve the said goal.

The first initiative is to gather data from relevant agencies under MAFS and other relevant bodies. The relevant agencies within MAFS, including the Department of Agriculture, Department of Fisheries, and Department of Veterinary Services, possess a wealth of data related to crop production, livestock, fisheries, and other aspects of the agricultural sector. Collecting data from these agencies provides a comprehensive overview of the agro-food sector, covering various subsectors and activities. Moreover, incorporating data from other state authority agencies further enhances the availability of accurate and verified national agro-food data.

Directly collecting data from these agencies increases the likelihood of accuracy and verification, as they are responsible for managing data in their respective areas of expertise. This approach improves the quality and reliability of information while reducing the risk of errors or inconsistencies. Collaboration and data sharing between MAFS and other state authority agencies enable the integration of data sets from multiple sources, leading to a more holistic view of the agro-food system. By combining data from various agencies, interdependencies, correlations, and causal relationships can be identified, providing valuable insights not apparent when considering data from individual agencies in isolation. The gathering of data from relevant agencies is planned for year 1 of the strategy implementation through census and meetings.

The second initiatives is conducting workshops with the relevant agency to verify the data gathered during the implementation of the first initiatives. The workshops offer a platform for data verification, cross-validation, and knowledge exchange among representatives from relevant agencies. Participants can identify discrepancies, share best practices, and standardize data collection processes. The

workshops are also aimed to clarify methodologies and definitions to ensure consistency and accuracy in data representation. Two workshops are planned, one in year 1 and another in year 2 with multiple agencies involvement.

The third initiatives involve liaising with the land authority or the state authority on the statistics of agricultural land in their respective area. Collaboration with land authorities provides access to detailed and current data on land usage, particularly agricultural land. This information is crucial for understanding spatial distribution, land use trends, and potential agricultural development. Working with land authorities aligns agro-food data with land use planning initiatives, ensuring appropriate designation, protection, and management of agricultural land. The collaboration also helps identify and delineate specific agricultural zones, enabling focused efforts and investments in areas dedicated to agriculture. Discussions with state authorities are scheduled at least 3 times per year, starting in year 2 and 3 of the strategy implementation.

Finally, all the data collected shall be pooled in a digital platform which shall be utilized by policymakers. The digital data platform serves as a centralized repository for agro-food data, aggregating information from various sources to create a comprehensive database. It provides policymakers easy access to accurate and verified data in real-time, facilitating informed decision-making. Customizable dashboards allow policymakers to focus on specific aspects of the sector, improving efficiency. The platform supports policy monitoring and evaluation by providing performance metrics and progress tracking. Development of the platform will occur in phases, starting in year 1 and fully completed in year 5.

Strategic Thrust 2: Increase the Cooperation With Strategic Partners Within The Ministry to Tackle Food Security Issues In Malaysia

The next strategic thrust would be to increase cooperation with strategic partners within the ministry to tackle food security issues. To increase cooperation among ministries, it needs to develop a shared understanding of the issue and collaborate on a unified plan of action. With a shared knowledge of the issue, the ministries will be able to evaluate which partners can deliver the most effective solutions. They will also be able to develop a cohesive plan of action. This cohesive approach will ensure that all efforts are directed towards food security. Increased communication and collaboration across ministries on policy formation and strategy execution are examples of this. This

strategy is under the second strategy of in the weaknesses and opportunities (WO) quadrant. This strategy was chosen after it was able to fulfil all the BOS elements which are not involved with the high cost, fast execution as well as being able to give high impact. Under this strategy, there are three initiatives that can be carried out within the ministry to tackle food security.

The first initiative would be to establish an interdepartmental task force comprising representatives from different departments within the Ministry of Agriculture that are responsible for food security-related matters to review Dasar Agromakanan Negara 2021-2030 (DAN 2.0) or known as National Agrofood Policy 2.0. This would guarantee that all relevant concerns are considered when creating the policy, and that it is structured to fulfil the requirements of all agricultural stakeholders. It would also allow for open and transparent discussion across departments, which would ensure policy effectiveness and efficiency. Establish an interdepartmental task force comprising representatives from different departments within the Ministry of Agriculture responsible for food security-related matters. This task force would develop a detailed strategy outlining the strategies and activities required to secure national food security. It would also coordinate numerous departmental efforts to put the strategy into action. The task team would be able to monitor the plan's execution and make revisions as needed. Finally, the task group would report on the plan's progress and execution. This task force can meet once to coordinate efforts, share information, and develop a unified plan of action. Their collaboration will ensure that all relevant departments work together towards common objectives. This will be 100% in year 3. The persons in charge will be the Policy and Strategic Planning Division (BDPS), Agricultural Modernization Division (BPP), Food Security Division (BSM), and Food and Agro-Based Development Division (BIMAT) and the Ministry of Agriculture and Food Security. The team will be in charge of devising methods to fulfil the targets outlined in the year 3 plan. They will also seek to ensure that the project money is utilised to its full potential.

The second initiative is to enhance the intercropping program through Malaysian Agricultural Research and Development Institute (MARDI). Intercropping is the growth of two or more crops at once. This programme can boost farmers' production and profitability by lowering crop failure risk. It also contributes to increase soil fertility and reduces the danger of insect infestation. Intercropping also reduces soil erosion and conserves water. Intercropping has the major advantages of increasing crop production,

as well as reducing crop reduction risk. Plants cultivated together can benefit from enhanced fertiliser and water availability, and intercropping takes less space and resources than producing crops individually. Furthermore, it can provide a natural type of pest management since certain plants can function as pest repellents and protect other plants. So, by having this program, MARDI's role in enhancing this intercropping program would involve conducting research to identify suitable plantation crops that complement oil palm growth. MARDI will also advise and assist farmers in optimising the intercropping programme for the optimum outcomes. MARDI might also provide early warning systems to assist farmers in promptly identifying and managing pest infestations. These crops are well-adapted to Malaysia's climate and soil conditions. They can also educate farmers about intercropping benefits and provide technical assistance in implementing these practices on their plantations. The KPI for this initiative will be 10 participants for each year, and the budget is RM5 million for 5 years and is overseen by MARDI and MAFS.

Moreover, the last initiatives are to collaborate with the Agricultural Modernization Division on high-rise building crop management ('Grow Your Own' program). The program will focus on producing crops in a sustainable and efficient way, utilizing the latest technology and techniques. We believe this program will be a great opportunity to increase the food security of the city and provide a source of fresh produce for citizens. Collaborating with the Agricultural Modernization Division on high-rise buildings crop management involves implementing innovative techniques and technologies to grow crops in vertical structures. Through this approach, urban agriculture will be sustainable, limited space will be maximized, and the carbon footprint of food production will be reduced. Indoor vertical farming systems include aquaponics, aeroponics, and hydroponics. These technologies utilise less water and fewer pesticides than traditional farming methods while providing a larger crop yield in less time. Furthermore, they may be adjusted to a community's individual needs, making them easily adaptable to any location. All of them use soilless cultivation methods to provide healthy nutrition for plants. It's not just about utilizing underutilized spaces, but also increasing access to food and creating jobs and skills for the residents. The KPI for the program is resident that live in a flat in PPR in Malaysia to participate in the program. For year one, it expected 36 PPR to participate in the program. For year two, the participation will increase to 72 PPR and year three, will be 108 PPR. Thus, for year four to year five, the number of PPR is 146 to 182 targets of the KPI. The Agricultural Modernization Division (BPP) and MAFS will handle this task. The

programme will also promote sustainable urban life and build resilience in rural areas. A training programme for local farmers will be part of the implementation to guarantee that the best practises are implemented. A monitoring mechanism will also be implemented to guarantee that the project objectives are accomplished.

Strategic Thrust 3: Expanding Courses/Programs That Would Encourage the Participation of Younger Generations in the Agricultural Sector

For the Strength and Threat (ST) quadrant, there is only one strategy that fulfils the element of Blue Ocean Strategy, which is low cost, fast execution and high impact, and the strategy is to collaborate with private entity in addressing the issue of idle agricultural land by developing the land with technology adoption and automation (S1, S2, S5, T5, T4, T5, T6). However collectively we have decided to focus on other strategy in this ST Quadrant, which is to expand courses / programmes that would encourage the younger generation's participation in the agricultural sector (S1, S8, T7, T8) because of its higher impact in the future in rejuvenating the agriculture sector in Malaysia. Therefore, under this strategy, five initiatives are suggested, which will be explained accordingly.

The first initiative that was proposed under the Strategic Thrust to expand courses/programmes that would encourage the younger generation's participation in the agricultural sector is through technology and innovation workshops, by organizing workshops and training sessions that showcase the latest technologies and innovations in agriculture as one of the programs under MAHA Expo (Malaysia Agriculture, Horticulture, and Agrotourism Exhibition). MAHA Expo is a prominent agricultural exhibition held in Malaysia to showcase the latest advancements, technologies, products, and practices in the agriculture, horticulture, and agrotourism sectors. The expo provides a platform for farmers, agribusinesses, researchers, policymakers, and the public to gather, exchange knowledge, explore business opportunities, and promote sustainable agricultural development in Malaysia. MAHA Expo typically features various exhibitions, forums, conferences, demonstrations, and activities related to agriculture, horticulture, livestock, aquaculture, agro-based industries, and eco-tourism. The aim of this initiative is to organize workshops and training sessions that showcase the latest technologies and innovations in agriculture, such as precision farming, smart farming systems, drone applications, and digital agriculture. These programs can

highlight the role of technology in making agriculture more efficient and appealing to tech-savvy youth.

The second initiative under the third strategic thrust is to offer scholarships, grants, and financial incentives specifically targeted at young people pursuing agricultural studies or planning to start their own agricultural businesses. This program reduces barriers to entry, making agriculture a more viable career option for youth. The benefits of this initiative are numerous. Firstly, financial support makes agricultural education and entrepreneurship more accessible and affordable for aspiring individuals. It also serves as a motivation for young people to develop expertise in agriculture. Moreover, scholarships and grants encourage innovation and entrepreneurship in agriculture by focusing on specific criteria and areas of interest. Additionally, these programs provide mentorship and networking opportunities, enabling young participants to learn from experienced professionals and expand their industry connections. By retaining talented individuals in agriculture, the sector can address the skills gap and ensure sustainable development.

The third initiative under the third strategic thrust is to offer courses that combine agriculture and entrepreneurship, emphasizing the importance of personal branding and creating a unique identity in the digital realm. Participants can learn to build their own agricultural brand, develop business strategies, and effectively market products to the youth demographic. Agropreneurship, a blend of agriculture and entrepreneurship, empowers young individuals to create businesses and generate income. Encouraging youth to become agripreneurs showcases the sector's potential for economic growth, job creation, and wealth generation. Strong agricultural branding attracts youth by creating a positive image and promoting Malaysian agricultural products' unique qualities. Market access and promotion of local produce motivate young individuals to engage in agriculture, seeing market success and recognition. Agripreneurship nurtures an innovative mindset, fostering unique solutions to agricultural challenges and driving the sector forward. Youth actively participate in knowledge sharing platforms and industry networks, fostering growth and a supportive community.

The fourth initiative under the third strategic thrust is to conduct courses that teach young individuals how to create visually appealing content related to agriculture. This can include photography skills, video editing, and graphic design techniques.

Participants can learn how to produce engaging content that resonates with the younger generation on social media platforms. Content creation and photography allow for the portrayal of modern agriculture in a visually appealing and engaging manner. By capturing images and videos of advanced farming practices, innovative technologies, and sustainable production methods, the younger generation can see agriculture as a dynamic and forward-thinking industry. High-quality visuals have the potential to spark interest and curiosity among the younger generation. Eye-catching images and captivating videos can add to their interest in the agricultural sector, encouraging them to explore further and learn about the diverse career opportunities available. Besides, social media platforms provide a powerful medium for sharing visual content and reaching a wide audience, particularly among the younger generation. By utilizing platforms like Instagram, YouTube, and TikTok, agricultural content creators can engage with and inspire young individuals who are active on these platforms.

The last initiative proposed under the third strategic thrust is introducing the “AgriVenture Challenge: Cultivating the Future”. It is a competition-based TV programme where the contestants (which are youth) will be given problems in agriculture, and they will compete to give the best solutions on how to solve them. Whoever wins will be rewarded with a grant to start a business in agriculture sector. The program name "AgriVenture Challenge" reflects the contest setting and the adventure-like spirit of entrepreneurship and innovation in agriculture. The word "Agri" emphasizes the agricultural focus of the program. "Venture" suggests the idea of embarking on a new business journey. "Challenge" signifies the competitive nature of the program and the opportunities it presents. The tagline "Cultivating the Future" highlights the program's aim to encourage young participants to cultivate their ideas, solutions, and businesses within the agriculture sector. It conveys the importance of youth involvement in shaping the future of agriculture in Malaysia. By combining an appealing program name with a grant as the prize, the AgriVenture Challenge can attract young individuals, showcase their talents, and provide them with the necessary support to kickstart their entrepreneurial journey in the agriculture sector.

Strategic Thrust 4: Strengthening the Monitoring System for Each Program Under Food Security Programs to Avoid Mismanagement and Ensure the Objectives are Achieved

Among the five strategies that were proposed in the WT quadrant, only the first strategy to strengthen the monitoring system of each program under the food security

program to avoid mismanagement and ensure the objectives are achieved that match the criteria of the three elements of BOS. The strategy considered as low cost since it does not involve much budget as well can be fast execute and produce high impact. In order to create Malaysia's monitoring system for food security efforts, it will be necessary to establish comprehensive and precise objectives for each program. Using clear goals as a starting point, it is possible to monitor and evaluate the program's development and success. Each organization concerned in this food security issue needs to pay close attention to each guideline and carry out each task as prescribed. Therefore, under this strategy, there are three initiatives suggested and will be explained in following paragraph.

First initiative is to implement robust data collection system 'Real time dashboard'. A real time dashboard can help to centralized information gather about the programs covered by the National Food Security Policy Action Plan from multiple sources. It combines data from several programs, organizations, and departments to give a complete picture of the overall development and performance. Information will be providing in a way that is both visually appealing and straightforward to understand, allowing stakeholders to rapidly understand the status and trends of each program. The dashboard presents real-time updates on important performance indicators, milestones, and targets using charts, graphs, maps and other visual representations. Stakeholders are given the ability to make data-driven decisions through the real-time dashboard. The person in charge will be the IT Division MAFS to ensure the smoothness of the working system and data collection. KPI set for 100% data gathered are seems possible to be achieve as long the interface of the dashboard are user friendly and government delivery in promoting this initiative to helps providing current information. Every year milestone settings are gradually increasing which shows the optimism by the government action can influence toward the success of this program.

Second initiative is to organize the Stakeholder Engagement and Feedback Program Participating in this program requires proactively involving all relevant parties, including beneficiaries, local communities, government officials, NGOs and other groups directly or indirectly involved in the food security programs. It is ensured that a thorough grasp of the program's issues, dynamics, and potential areas of mismanagement by identifying and consulting a varied set of stakeholders. Stakeholders are made to feel valued and responsible for the program's outcomes when their opinions and feedback are actively sought after. This culture of trust and ownership is created.

Stakeholders are brought into the monitoring process on a regular basis through consultations and participation. They share their knowledge, viewpoints and practical expertise in order to help us understand the development and efficacy of the program in a more complex way. Stakeholders can easily report any poor management or departures from the program's goals by setting up easily accessible and efficient feedback channels such as surveys, focus groups, suggestion boxes, internet platforms or community gatherings. Corporate and Communication Division is set to be in charged.

Finally, the third initiative is to organize Collaborative Skills Enhancement Program (CSEP) where the aim of this program to support cross-training and the development of capacity among public servants of several agencies and federal ministries. The program focuses on enhancing communication, teamwork, and collaboration to overcome problems with overlapping functions and improve overall efficiency and effectiveness in accomplishing food security goals. Main components or activity in this program include cross-training workshops. The ministry can schedule workshops and training sessions where staff members from various federal departments and agencies engage in skill-building activities unique to their individual fields of expertise. This promotes improved comprehension and collaboration by enabling participants to obtain insights into each other's roles and responsibilities. Besides that, enhancing mentoring and coaching programs. Establish mentorship and coaching programs that pair staff members from several departments or agencies. As a result, collaboration is encouraged, and more efficient workflows are made possible. This also allows for the sharing of knowledge, experience, and best practices. Together, the Human Resource Department of MAFS and Human Resource from inter-agencies within MAFS are working on this project to make it happen. This program has a limited number of participants and is conducted at least once a year. Therefore, giving each employee a chance to participate in this program will help them boost confidence and become more prepared to handle every task and responsibility given to them.

CONCLUSION AND FUTURE DIRECTIONS

The implementation of the Plan of Action for rejuvenating the agro-sector and food security in Malaysia spans five years (2021-2025), but the process of improvement is a long-term endeavour. Revitalizing the agro sector involves making significant

structural changes in farming practices, technology adoption, market access, and value chain integration. These changes take time to implement, monitor, and evaluate their impact. Agricultural lifecycles, including crop planting and harvesting, cannot be rushed and necessitate careful planning and implementation. Rejuvenation also requires substantial investments in infrastructure, research, technology, and capacity building, which demand long-term commitment. Promoting sustainable practices, adapting to climate change challenges, and addressing socio-economic aspects all require ongoing efforts and sustained planning. Overall, rejuvenating the agro-sector and ensuring food security requires a long-term commitment to achieve lasting, positive impacts on the nation's economy and well-being.

We have identified key areas for long-term improvement to rejuvenate the agro-sector and enhance food security in Malaysia. These include promoting technological adoption, investing in research and development, strengthening farmer education and training, encouraging agripreneurship and youth involvement, improving market access and value chain integration, enhancing food safety and quality assurance, fostering sustainable practices and environmental conservation, enhancing collaboration and partnerships, and establishing a robust monitoring and evaluation system. By focusing on these areas, we aim to enhance productivity, sustainability, and competitiveness in the agricultural sector, ensuring a resilient and secure food supply for our nation's future.

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