

Hydroponic Green House Business Development Strategy Using Business Model Canvas (BMC)

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Abstract

Tangerang City, located in the Banten Province of Indonesia, covers an area of approximately 164.55 km² and holds significant potential in agribusiness, particularly in the production of vegetables and fruits using hydroponic urban farming methods. In 2022, the vegetable harvest reached 411 hectares with a yield of around 36,547 quintals. The results of the SWOT analysis indicate that product farmers in Tangerang City are currently experiencing strong growth, with opportunities and strengths supporting the expansion of their product businesses. The Women Farmers Group (WFG) in Tangerang City faces challenges in formulating effective business strategies, despite playing a crucial role in the local economy. The SWOT evaluation of the elements within WFG's Business Model Canvas in Tangerang City has generated eight alternative strategies, including market expansion, optimization of marketing partners, increased marketing and promotional efforts, enhanced production, human resource development, product innovation, and utilization of e-commerce. The highest-priority strategy is product innovation, which is a key factor in maintaining competitiveness and adapting to market changes. Innovation is a crucial element in strategic planning to sustain competitive advantages and meet evolving market demands.

Keywords: *Business Model Canvas, Hidroponik, Business Strategy.*

INTRODUCTION

Business competition is getting tougher in the future, every company must formulate an effective strategy to face the challenges of a competitive business environment (Andiman et al, 2023). This strategy has a significant impact on business performance (Supriadi & Arieftiara, 2022). and the business objectives that have been set must be followed by the development of a business strategy to ensure business success and sustainability (Supriadi, et al, 2022; Supriadi, et al, 2020). Corporate strategy development has an important role in strengthening the company's potential and gaining profits through the business model it adopts (Andiman, et al, 2023). In the view of Khamdi, et al, (2021), business models can be measured through strategic tools such as the Business Model Canvas, which helps to accurately describe business models for current and future business conditions.

In the wake of the COVID-19 pandemic, the threat of food insecurity around the world has worsened, especially in the wake of conflict and geopolitical instability. This leads to

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uncertainties in food supply chains (Kariyasa, 2023; Sharma et al., 2022). This insecurity affects global food security by exacerbating food insecurity situations (Klassen & Murphy, 2020; Niles et al., 2020). In Indonesia, the agricultural sector faces similar challenges, despite successfully contributing to national economic growth towards Indonesia's GDP experiencing a growth of 16.24 percent in the second quarter of 2020 (Kariyasa, 2023).

Anticipating the food crisis in Indonesia, the Indonesian Ministry of Agriculture has taken steps to develop alternative food ecosystems with a sustainable agriculture approach (Kariyasa, 2023; Sufiyanto et al., 2021; Susanto, Taufiq, Gunawan, & Sholeh, 2022; Tando, 2019). In this context, the development of hydroponic farming shows good potential, especially in the horticulture subsector, which plays an important role in increasing agricultural productivity through the use of home yard land (Shamshiri et al., 2018). Increased public awareness of the importance of healthy food and the environment is also driving demand for hydroponic products, opening up future development opportunities (Nasution, 2018). However, technical and management challenges still exist, including suboptimal marketing (Stemmler & Meemken, 2023; Tando, 2019). Therefore, hydroponic farming faces challenges in its business development that may affect its business sustainability (Al-Naemi & Al-Otoom, 2023; Nasution, 2018; Supriadi & Ariefiara, 2022). The management of hydroponic farming businesses often experiences obstacles related to the quality of human resources in processing agricultural technology and the lack of motivation of group members to develop farming businesses. Marketing still relies on traditional patterns such as direct sales or through oral communication, which results in the marketing process only depending on consumer orders. Therefore, a strategy is needed to measure the level of achievement of the business objectives that have been set (Gunawan, 2019). In addition, there is no strategy designed to develop innovative business models that can innovatively increase competitiveness and productivity (Supriadi & Ariefiara, 2022).

The hydroponic agribusiness that is being developed by the Women Farmers Group (WFG) in Tangerang City, Banten Province, Indonesia, needs continuous attention and development so that farmers can maximize the benefits of this activity. However, based on production fluctuations and previous research, it appears that efforts to improve hydroponic agribusiness in Tangerang City are still limited. Therefore, Business Model Canvas can be used as a method to develop hydroponic agribusiness in this region, helping to formulate better planning and strategies to achieve sustainable development goals. To overcome these challenges, careful analysis and formulation of business development strategies are required. The approach used involves Business Model Canvas and SWOT analysis (Mustaniroh, et al, 2020). The Business Model Canvas provides a structured view of the business model with a focus on the key elements of the business model (Khamdi et al., 2021). On the other hand, the SWOT analysis (strengths, weaknesses, opportunities, and threats) provides a comprehensive overview of the internal and external conditions of this business (Supriandi & Iskandar, 2022). By integrating information from these two approaches, it is expected that the company can design effective strategic measures to sustainably develop its business in the future, this research aims to assess and prioritize various business development strategies. Thus, the main objective is to be able to design the most effective and appropriate strategic measures to improve business performance sustainably in the future.

LITERATURE REVIEW

2.1 Business Strategy

According to business strategy Latifah, (2020) The importance of business strategies that can be applied in various industries and types of organizations is vital for competitive advantage in the business world. The main focus of this business strategy is on speed,

customer service, and flexibility, and is often the best choice for businesses. Business strategy is a comprehensive and integrated plan designed to ensure the achievement of the main objectives of an organization or business through proper implementation. which claims that the performance of a company is influenced by business strategy, and that companies that achieve high work performance usually have strategies that can lead to variations in company performance (Supriandi & Iskandar, 2022). This method of measuring business strategy is because the suggested classification of business strategies is in line with others and Miles and Snow's measurements can be made using archival data rather than personal interviews or surveys of company officials. This method results in replicable measurements and can be used in different types of companies and industries. In addition, this method also provides a representation that can be used as a reference for business strategy (Kong & Liu, 2020). There are six factors to measure a company's strategy, including how much money is invested in research and development, the number of employees compared to sales, changes in total revenue, marketing costs compared to sales, employee fluctuations, and how much capital is used (Bentley, et al, 2013).

2.2 Hydroponics

According to Sumarni, et al, (2023) Hydroponic technology with drip irrigation is an economical option for growing in the midlands. Drip irrigation is an economical watering and nutrient delivery technique in hydroponic systems. Previous research shows that it produces high yields for a variety of crops. Water and nutrients are delivered in droplets that are customized to the needs of the plants. It is efficient in water use and allows plants to absorb nutrients with hydroponic methods to increase yield and quality in the midlands. This is important for maintaining viability and conservation of resources and increasing agricultural yields (Bentley et al., 2013).

2.3 SWOT Analysis

According to Souopgui et al., (2020); Zafriana & Prihono, (2023) SWOT analysis is a strategic management tool for identifying internal and external factors that are important to the achievement of company goals. The process involves an assessment of strengths, weaknesses, opportunities, and threats, followed by the development of SO (Strengths-Opportunities), WO (Weaknesses-Opportunities), ST (Strengths-Threats), and WT (Weaknesses-Threats) strategies based on a comparison of relevant criteria. While useful in business partner selection, there are two main problems with SWOT analysis: the lack of prioritization of strategies and the large number of strategies generated (Supriandi & Iskandar, 2022).

2.4 Business Model Canvas

According to Marfuah, et al, (2019) Business Model Canvas (BMC) is a tool that presents the secret puzzle of a successful business. It is like unpacking a magic chest, consisting of nine components that reveal the tricks of how companies create, deliver, and achieve value: Preferred Customers: The people or organizations that are the stars of the show. Magical Offerings: Products and services that bring enchantment to customers. Secret Path: Shortcuts that lead a company to a customer's heart. Special Relationship: The type of relationship that entices customers to keep coming back. Source of Wealth: The place where revenue streams flow from each customer segment. Weapons of Excellence: The essential tools needed to keep a business strong. Key Moves: The key actions that are the foundation of success. Powerful Partnerships: Partners who are like allies in a business adventure. Key Structures: The costly parts that keep the wheels of a business turning smoothly.

2.5 Quantitative Strategic Planning Matrix (QSPM)

According to Barak & Javanmard, (2020) QSPM with Gap analysis is used as an integrated technique to determine the weight of criteria. The results highlight the most

significant criteria in the selection of strategic alliances. These results are used as data in the MCDM method to scientifically decide and rank candidate partners. According to David, (2016) Quantitative Strategic Planning Matrix, is a tool that helps in developing strategies. This is done by evaluating strategy alternatives based on previously identified internal and external success factors. The best thing about QSPM is its ability to evaluate many strategies simultaneously with no limit to the number of strategies evaluated (Supriandi & Iskandar, 2022).

METHODOLOGY

This research uses qualitative research methods with a focus on describing research objects, phenomena, or social settings (Anderson, 2014) SWOT analysis is used to analyze how internal factors (strengths and weaknesses) collaborate with external factors opportunities and threats (Souopgui et al., 2020) Data collection methods include interviews, observations, and literature review. The next step is to model your company using the Business Model Canvas (BMC). BMC is a framework that discusses business models by presenting them in a visual form in the form of a canvas painting so that they can be easily understood and understood. (Sovia, 2018). Nine parts, namely: client segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partners, and cost structure. The data used are primary data and secondary data. The research subject is the CEO or leader of the Women Farmers Group (WFG), and the research object is in Tangerang City, Banten Indonesia. The results of the SWOT analysis were used to identify nine elements in the Business Model Canvas (BMC) that will form the basis of the future business model design. The purposive sampling technique was used to select respondents based on certain considerations (Supriandi & Iskandar, 2022).

RESULTS AND DISCUSSION

4.1 Overview

Agricultural development in Tangerang City involves crop diversification, technology application, farmer education, infrastructure development, cooperation with the government, changes in consumption patterns, and urban farming. Tangerang City, which has an area of 164.55 km² and borders DKI Jakarta Province, is very suitable for implementing the concept of urban agribusiness or urban farming. In 2022, the harvest of vegetable crops reached 411 hectares with a yield of approximately 36,547 quintals according to data from BPS Tangerang City (Badan Pusat Statistik & Tangerang, 2023).

The Women Farmers Group (WFG), established in 2012, has made significant contributions to individuals, the environment, and the region. WFG has improved the economic welfare of residents, greened and cleaned the environment, and become a national example in environmental management. Many WFGs have also started to process food with raw materials from their farms, encouraging variety in local food consumption. By the end of 2017, 53 WFGs had been formed, with the largest ones located in several urban villages. The Tangerang Berkebun program has spread to 102 locations. However, Tangerang City's strategic food production capacity, such as rice, soybean and chili, is still very low, only reaching less than 1% to 4% of the population's needs each year. Especially for vegetable and fruit commodities such as spinach and papaya, the production capacity is also still below 4% in 2022. This shows that there is still great potential to increase food production in Tangerang City to meet the needs of the population.

4.2 Business Model Identification

This research focuses on WFG Tangerang City, which is then analyzed using BMC (Business Model Canvas). The BMC includes customer segments, value proposition, distribution channels, customer relationships, revenue streams, key resources, key activities, and cost structure. These nine elements act as a guide in this research, with data obtained through interviews with various informants.

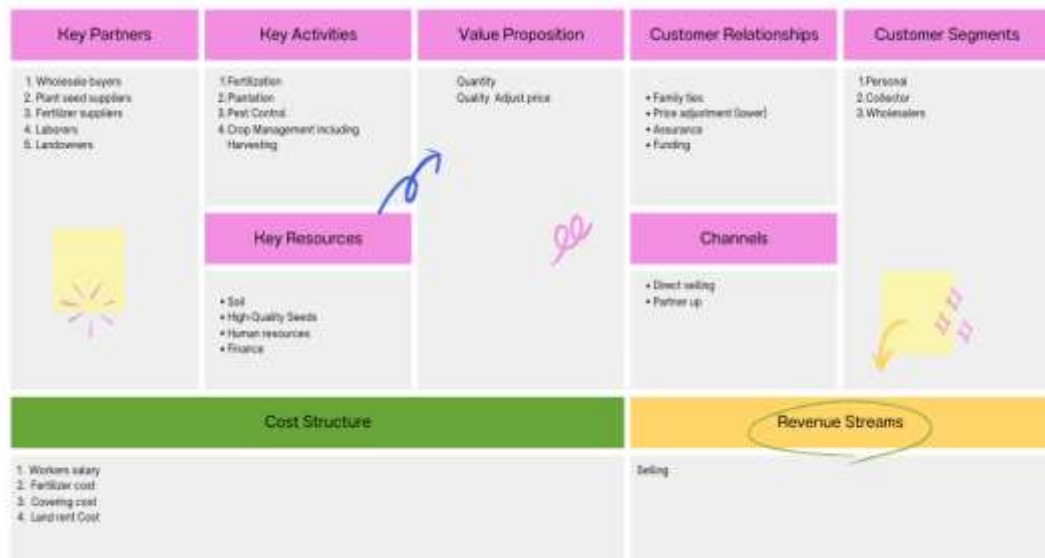


Figure 1. Business Model Canvas

4.3 SWOT and BMC identification

After identifying the BMC elements in WFG Kota Tangerang and verified with WFG Kota Tangerang, then BMC evaluation with SWOT is conducted to evaluate and understand the internal and external factors of each BMC element, the evaluation results will be used as an alternative strategy in formulating and developing a new business model in WFG Kota Tangerang. Provide the most effective way to uncover the BMC components in more detail to find new ways to model a company's business with a combination of SWOT and BMC.

Table 1. Identification of SWOT and BMC

Internal factors identification	
Strength (S)	Weakness (W)
a. Agricultural infrastructure is adequate. b. Large vegetable production. c. Good customer relations. d. Natural resource potential for agriculture. e. Detailed market segmentation enables efficient targeting. f. Easy maintenance of fruit and vegetable crops. g. WFG business activities. h. Active extension activities.	a. Dependence on wholesalers. b. The need to improve farmers' skills. c. Traditional farming equipment. d. Limited capital for business development. e. Lack of support in business development. f. Limited experience in agriculture. g. Lack of focus on a specific type of business. h. Limited market for marketing business products.
Opportunity (O)	Threat (T)
a. Harvest period management. b. Classification of crop quality. c. Processed products from the harvest are still limited. d. Utilization of information technology.	a. The price set by the trader. b. Plant pests and diseases. c. Consumers may turn away. d. Limited supporting institutions for agriculture.

- | | |
|---|--|
| e. Support from government programs | e. No farmer regeneration |
| f. The interest of the surrounding community, especially | f. Crop failure. |
| g. Farming products have the potential to be processed into finished products (added value) | g. High level of competition with other farmer groups. |

4.4 Strategy Formulation Stage

The steps or stages of strategy formulation, there are three stages, namely the first entry stage, the second matching stage, and the decision-making stage with IFES, EFES SWOT, and QSPM matrix analysis. Evaluation of internal process factors that determine the strengths and weaknesses that exist in the company. The process in determining them is called the IFE method.

Table 3 The results obtained are the weights obtained by multiplying the weights by the internal ratings.

Internal Strategic Factors Strengths		Weight	Rating	Score
1	Adequate agricultural infrastructure	0,05	8	0,4
2	Large vegetable production.	0,05	8	0,4
3	Good customer relations.	0,05	8	0,4
4	Natural resource potential for agriculture.	0,04	8	0,32
5	Detailed market segmentation enables efficient targeting.	0,04	7	0,28
6	Easy maintenance of fruit and vegetable crops.	0,03	7	0,21
7	WFG business activities.	0,04	7	0,28
SUM		0,3	53	2,29
Internal Strategic Factors Weaknesses		Weight	Rating	Score
1	Dependence on traders.	0,01	5	0,05
2	The need to improve farmers' skills.	0,02	2	0,04
3	Traditional farming equipment.	0,01	3	0,03
4	Limited capital for business development.	0,02	2	0,04
5	Lack of support in business development.	0,01	3	0,03
6	Limited experience in agriculture.	0,01	4	0,04
7	Lack of focus on a specific type of business.	0,02	2	0,04
SUM		0,1	21	0,27
IFAS		0,4	74	2,56

Based on Table 3, the results of data processing illustrate that the main strengths of WFG in Tangerang City are two factors, namely Adequate agricultural infrastructure, Large vegetable production which received a score of 0.4. Meanwhile, the current weaknesses of WFG in Tangerang City are Dependence on wholesalers which received a score of 0.05. In the IFE matrix, the total internal score obtained by WFG in Tangerang City is 2.56; this indicates and can be interpreted that WFG in Tangerang City can utilize existing strengths and overcome existing weaknesses.

External factor evaluation is the process of determining the company's main opportunities and main threats. This process is carried out using EFE (External Factor Evaluation). The result of EFE processing is a score, which is the multiplication of external weights and ratings.

Table 4. External Factor Evaluation Results

External Strategic Factors Opportunities		Weight	Rating	Score
1	Harvest period management.	0,07	7	0,49
2	Classification of crop quality.	0,07	6	0,42
3	Processed products from the harvest are still limited.	0,06	6	0,36
4	Utilization of information technology.	0,07	7	0,49
5	Support from government programs	0,07	6	0,42
6	The interest of the surrounding community, especially	0,06	6	0,36
7	Farming products have the potential to be processed into finished products (added value)	0,06	6	0,36
SUM		0,46	44	2,9
External Strategic Factors Threats		Weight	Rating	Score
1	Prices set by wholesalers.	0,07	2	0,14
2	Plant pests and diseases.	0,07	1	0,07
3	Consumers may turn away.	0,07	3	0,21
4	Limited supporting institutions for agriculture.	0,07	2	0,14
5	No farmer regeneration	0,05	3	0,15
6	Crop failure.	0,05	3	0,15
7	High level of competition with other farmer groups.	0,02	2	0,04
SUM		0,4	16	0,9
		0,86	60	3,8

Based on the data in Table 4, the total score of external factors for the Women Farmers Group (WFG) in Kota Tangerang is 3.8. The main opportunity that can be utilized by WFG in Tangerang City is the utilization of information technology, with a score of 0.49. On the other hand, the threat that WFG needs to be aware of is the possibility of consumers switching to other alternatives, with a score of 0.21.

4.5 Results of Internal and External Matrix (IE) of WFG in Tangerang City

The IE matrix is the result of combining the assessment of the company's internal and external factors. This matrix helps in evaluating the condition of the company and identifying suitable strategies. Below is the IE Matrix used to assess the situation of the Women Farmers Group (WFG) in Tangerang City. Based on the results of the internal and external analysis in the table above, we need to confirm the position of the company in a Cartesian diagram. This diagram considers the company's internal strength and weakness factors and external opportunities and challenges, all depicted in positive and negative lines. To determine the coordinates in this diagram, we can perform the following calculation:

- a. Internal coordinate analysis, the total score of the company's strengths and weaknesses is divided by 2, resulting in a figure of 1.01 from the calculation $(2.29 - 2.5) / 2$.
- b. For the external coordinate analysis, the total opportunity score is divided by 2 as well, resulting in a figure of 2.45 from the calculation $(3.696 - 2.512) / 2$.

With the results of these calculations, we can determine that the coordinate point of the company is located at position 1.01 : 2.45 in the Cartesian diagram.

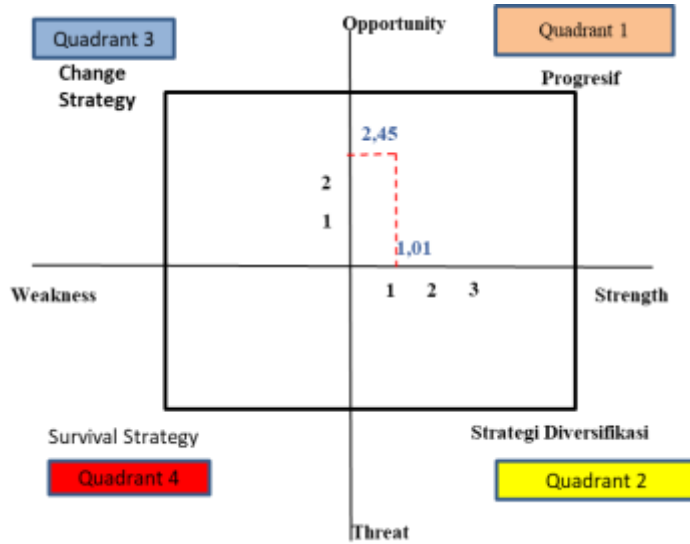


Figure 2. SWOT Diagram

WFG in Tangerang City is in quadrant 1 (Maintain & Keep). The appropriate strategies are market penetration and product development. They should maximize strengths and opportunities, improve weaknesses, and deal with threats. WFG Tangerang City understands the growth conditions and has opportunities and strengths that support the growth of fruit and vegetable production.

4.6 Results of SWOT Matrix of WFG in Tangerang City

Furthermore, the mapping of strengths, weaknesses, threats, and opportunities of the BMC block is used to determine the current condition of the BMC block. The results of the SWOT identification of the BMC block are as follows, based on the results of interviews and questionnaires.

IFAS	<u>Strength (S)</u>	<u>Weakness (W)</u>
	1 The availability of agricultural infrastructure refers to the existence of facilities and amenities that support agricultural activities.	1 Dependence on Wholesalers: Farmers tend to rely heavily on wholesalers for marketing their farm produce, which can reduce profits.
	2 High production numbers indicate that large amounts of agricultural produce are being produced.	2 Lack of Human Resource Improvement: Improving farmers' skills and knowledge in crop cultivation and mastery of information technology is required to improve efficiency.
	3 Good relationships with partners and consumers indicate that there is a positive and strong relationship between farmers and their business partners and consumers.	3 Simple Farm Equipment: The use of simple farming equipment can limit productivity and production efficiency.
	4 Natural resources refer	4 Price Drops During

		to the potential of nature that can be utilized in agricultural activities.	Harvest Season: Prices of agricultural produce often drop sharply during the harvest season, resulting in a drop in farmers' income.
	5	Detailed market segmentation illustrates that the market has been divided into detailed segments, enabling efficient targeting.	5 Limited Capital: Limited capital makes it difficult to develop agricultural enterprises, resulting in dependence on limited resources.
EFAS	6	The ease of plant maintenance indicates that plants can be cared for easily and efficiently.	6 Limited Access to Training: Farmers have limited access to training and education that can help them adopt more modern and effective farming practices.
	7	WFG Activity Expansion (WFG Business Activities): It is necessary to develop and expand the types of business activities carried out by the Women Farmers Group (WFG) to increase income and the variety of products produced.	7 Lack of Focus on Specific Businesses: More focus is needed on specific or specialized businesses that can enable WFG to produce products that are superior and highly competitive in the market.

	<i>Oppurtunity (O)</i>	<i>W-O Strategy</i>	<i>S-O Strategy</i>
1	Regular harvesting: Scheduling regular harvesting is done to increase vegetable and fruit production.	1 Build and integrate a modern farming information system that includes farm monitoring, inventory management, and yield reporting. This will help in optimizing the farming process	1 Using innovative marketing by utilizing social media. This involves using platforms such as Facebook, Instagram, Twitter and others to promote products or services. The weaknesses that need to be addressed here may be related to old or less effective marketing methods, but there are significant opportunities to reach a wider market through social media.
2	Quality Classification of Vegetables and Fruits: Improvement in classifying the quality of fruits and vegetables to meet higher standards in product quality.	2 Increase the use of available land and improve soil quality to increase production. This includes proper crop selection and careful maintenance.	2 It is important to improve the quality of human resources in crop cultivation during the growing period and also in using information

- 3 Market Expansion: Efforts to expand market share to increase sales of agricultural products.
- 3 Explore new, unexplored markets and develop refined products to meet the needs of these market segments.
- 3 Maximize the yield of the main harvest by producing better processed products. This could mean developing processed products from fruits and vegetables produced during the main harvest season. This strategy can help in maximizing income during the main harvest period.
- 4 Information Technology Utilization: Increase the use of information technology in farming practices, including inventory management, crop monitoring, and product marketing through online platforms.
- 4 Maintain and increase the capital required for agriculture by establishing good relationships with business partners and consumers. This could include greater access to capital sources
- 4 Provide training to farmers to help them utilize existing infrastructure, improve access to capital (funds), and increase production of fruits and vegetables. This is a holistic strategy that covers various aspects to improve agricultural enterprises. By improving farmers' knowledge and skills in this regard, farming can become more productive and sustainable.
- 5 Government Program Support: Take advantage of various programs and incentives provided by the government for the agricultural sector, such as farmer training, fertilizer subsidies, or infrastructure assistance.
- 6 Local Community Interest in particular: Increase awareness and participation

of local communities, especially local consumers, in supporting local agricultural products.

7 **Finished Product Potential (Added Value):** Identify opportunities to process agricultural products into finished or processed products that have higher added value, such as processed foods or more complex agriculture-based products.

	<u>Threat (T)</u>	<u>S-T Strategy</u>	<u>W-T Strategy</u>
1	Build stronger partnerships with wholesalers to understand price dynamics and ensure more favorable prices for farmers.	1 Improve agricultural infrastructure and ensure product quality is maintained and Conduct regular maintenance on agricultural facilities and equipment.	1 Establish farmer groups or associations to enhance cooperation and shared knowledge and ensure that farmers have an understanding of skills in utilizing information technology (IT) for agriculture, such as data management and online marketing.
2	Conduct routine monitoring and control of pests and plant diseases using appropriate technology.	2 Strengthen cooperative relationships with business partners and wholesalers as well as positive interaction and communication with consumers to build loyalty.	2 Provide direct training and guidance to farmers through guidance clinics and Improve farmers' knowledge and skills in agricultural cultivation and management.
3	Improve product quality and sorting processes to meet higher standards.	3 Identify opportunities in different market segments, such as direct-to-consumer sales or local markets and reach potential customers in broader market segments.	3 Increase the capital or financial resources available to maintain and increase the production of processed agricultural products and Ensure the availability of sufficient funds to develop the business and increase the production of processed products.
4	Collaborate with local government or agricultural organizations to improve access to education, training, and resources for farmers.	4 Establish farmer groups or associations to provide training and guidance to farmers and These points reflect strategies that can help in the development of agricultural enterprises	
5	Initiate agricultural training and education programs for the younger generation to be		

	interested in joining the agricultural business
6	Diversify crop types or consider cultivation with methods that are more resistant to risk factors
7	Focus on competitive advantages that differentiate from other farmer groups, such as product quality or innovation in cultivation.

Figure 3. The SWOT Matrix of Alternative Strategy Formula

4.7 Alternative Strategy on Business Model Canvas Fruit and vegetable farmers

After the SWOT analysis, the next step is to implement alternative strategies in redesigning the business model canvas. This involves using Strengthening Strategies (SO), Opportunity Utilization Strategies (WO), Defensive Strategies (ST), and Weakness Overcoming Strategies (WT) as described below:

4.7.1 Customer Segment

- SO-3 and ST-3: Expansion of customer segments with segmentation evaluation to add new markets.
- WO-1, WO-2, and WT-1: Increase consumer segment with online marketing and formation of farmer groups to control production and marketing.

4.7.2 Value Proposition

- SO-2, SO-3 and WO-3: Classification of Fruit and vegetable qualities into super and standard for different markets, and processing of standardized Fruit and vegetable products.

4.7.3 Channels

- Weakness in Channel Aspect: Still focusing on direct sales and one-on-one communication, and social media marketing has not been optimized.
- Strategy (SO-4): By maintaining harmony with partners and customers, farmers can overcome weaknesses in the channel.
- WO-1 (Strength-Opportunity 1) and WO-2 (Strength-Opportunity 2) strategies: These include optimizing the use of technology and information in marketing activities, especially through online media with the support of human resources and technology. This includes online sales through IT and sales managed by marketing staff.

4.7.4 Customer Relationship

- Weaknesses in Customer Relations: Dependent on wholesalers and price drops during harvest.
- Strategy (SO-4): By continuously maintaining harmony with partners and customers, farmers can overcome weaknesses in customer relations.
- ST-4 (Strength-Threat 4), WO-2 (Weakness-Opportunity 2), and WT-1 (Weakness-Threat 1) strategies: These include the addition of human resources, especially in marketing, to increase sales tasks, both with partners and customers.

4.7.5 Revenue Streams

- Strategy (SO-2, SO-3, WO-3): Farmers should classify quality into two categories: super quality for wholesalers and modern markets, and standard quality for collectors, middle traders, and processed products.

4.7.6 Key Resources

- Natural Resources: Make optimal use of existing land (S2).
- Human Resources: Add human resources with a focus on marketing (S6).
- Financial Resources: Seek capital assistance from the government and companies (O1).

4.7.7 Key Activities

- Weakness (Lack of Regeneration): Farmers need to improve human resources by adding and fulfilling human resources (WO-2, ST-4, WT-2) to ensure long-term business continuity.

4.7.8 Key Partnerships

- The Importance of Relationships: An overview of the importance of maintaining strong relationships between farmers and partners for smooth business operations.
- Strategy (SO-4, ST-4, SO-3): Maintain harmonious relationships with existing partners and customers, which can help identify new market segments. Focus on improving harmonious relationships with partners and customers to ensure business continuity.

4.7.9 Cost Structure

No new funds have been allocated for this aspect, but demand will grow as farmers improve their operations and management to increase production, pest control, irrigation systems, and organize the harvest season and processing of vegetables.

4.7.10 BMC Projection

The mapping of alternative strategies implemented in the new Business Model Canvas for Fruit and Vegetable farmers can be seen in Figure 4.

4.8 Decision Stage in WFG Tangerang City

The matrix used in this decision-making stage is the QSPM (Quantitative Strategic Planning Matrix) matrix. This technique will show which alternative strategies are the best and most relevant for a company to choose. The QSPM matrix is the final stage in the strategy formulation analysis that provides a choice of the company's priority strategies that are most suitable for running.

Table 5. QSPM Results. Assessment Matrix

No.	Strategy	Value	Rating
1	Market Segment Expansion	6,07	VI
2	Optimize marketing partners and seek potential partners.	4,67	VIII
3	Optimizing marketing and promotional activities to gain new customers	6,31	V
4	Optimize product production and distribution.	4,68	VII
5	Optimize product production and distribution.	6,43	IV
6	Make the latest innovations to add products and develop existing products.	8,08	I
7	Increase company revenue through online marketing activities.	6,81	III

The results of the calculation based on the above values help in determining the most appropriate strategy in accordance with the prioritized strategic factors. that the main strategy that should be immediately adopted by WFG in Tangerang City is to innovate products and develop existing products. This strategy is very suitable with the current situation.

4.9 Recommended Business Model Update for WFG in Tangerang City

For a more in-depth explanation of the Recommended Business Model, please see the figure below which illustrates the alternative strategies applied in the new Business Model Canvas for WFG in Tangerang City.

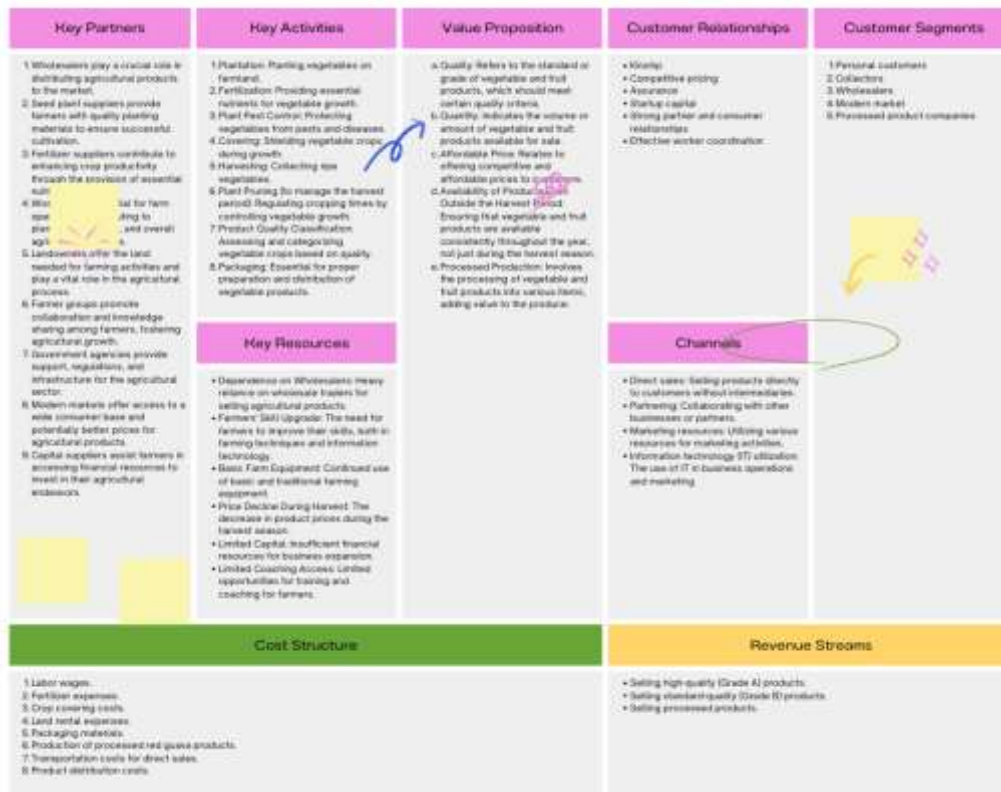


Figure 4. Business Model Canvas Update of WFG in Tangerang City

CONCLUSIONS

Based on the research results, it can be concluded that the identification of the nine elements of BMC is very useful in understanding, analyzing, and planning activities that need to be evaluated and improved by WFG in Tangerang City. One of the interesting things is their courage to try new approaches in agricultural business, such as the formation of farmer groups and the utilization of information technology to improve efficiency. Some important steps to be taken include the formation of farmer groups, improvement of farmers' skills and knowledge in cultivation techniques and information technology, expansion to new market segments, implementation of a quality classification system for vegetable and fruit products, and strengthening of financial capital. In addition, farmers also need guidance and training in more effective harvest period management.

The results of the SWOT analysis of the BMC elements of WFG in Tangerang City resulted in eight alternative strategies that can be taken. These include expansion to a wider market segment, optimization of marketing partners and search for potential partners, increased marketing and promotional efforts to attract new consumers, increased product production and distribution, improvement of human resources through IT education, product innovation, and utilization of e-commerce as a more effective online sales platform. From the Quantitative Strategic Planning Matrix (QSPM) results, the highest priority strategy is to innovate products with the highest Total Attractive Score

(TAS) value. Novelty is an important aspect in strategic planning to maintain competitive advantage and meet the ever-changing market demands.

References

- Al-Naemi, S., & Al-Otoom, A. (2023). Smart sustainable greenhouses utilizing microcontroller and IOT in the GCC countries; energy requirements & economical analyses study for a concept model in the state of Qatar. *Results in Engineering*, 17(December 2022), 100889. <https://doi.org/10.1016/j.rineng.2023.100889>
- Anderson, J. F. H. J. W. C. B. B. J. B. R. E. (2014). *Multivariate Data Analysis (Seventh)*. USA: British Library. <https://doi.org/10.1038/259433b0>
- Badan Pusat Statistik, & Tangerang, K. (2023). *Kota Tangerang Dalam Angka Tahun 2023 (1st ed.)*. Kota Tangerang.
- Barak, S., & Javanmard, S. (2020). Outsourcing modelling using a novel interval-valued fuzzy quantitative strategic planning matrix (QSPM) and multiple criteria decision-making (MCDMs). *International Journal of Production Economics*, 222, 107494. <https://doi.org/https://doi.org/10.1016/j.ijpe.2019.09.015>
- Bentley, K. A., South, N., Omer, T. C., & Texas, A. (2013). Business Strategy , Financial Reporting Irregularities , and Audit Effort *. *Contemporary Accounting Research*, 30(2), 780–817. <https://doi.org/10.1111/j.1911-3846.2012.01174.x>
- David, F. R., & David, F. R. (2016). The quantitative strategic planning matrix (QSPM) applied to a retail computer store. *The Coastal Business Journal*, 8(1), 42.
- Gunawan, H. (2019). Strategi Pengembangan Usaha Kelompok Wanita Tani (WFG)“Karungan Lestari” Kecamatan Tarakan Timur (Universitas Borneo tarakan). Universitas Borneo tarakan. Retrieved from <https://repository.ubt.ac.id/repository/UBT30-05-2022-073305.pdf>
- Kariyasa, I. K. (2023). *Ketangguhan Pertanian Menangkal Krisis Pangan Dunia (Kementerian; M. . Dr. Saefudin, SP, Ed.)*. Jakarta.
- Khamdi, A., Roessali, W., & Mukson. (2021). The Strategy of guava agribusiness development in Kendal Regency using a business model canvas. *IOP Conference Series: Earth and Environmental Science*, 883(1). <https://doi.org/10.1088/1755-1315/883/1/012006>
- Klassen, S., & Murphy, S. (2020). Equity as both a means and an end: Lessons for resilient food systems from COVID-19. *World Development*, 136, 105104. <https://doi.org/10.1016/j.worlddev.2020.105104>
- Kong, D., & Liu, C. (2020). Business strategy and firm efforts on environmental protection : Evidence from China. *Business Strategy an the Enviroment*, 29(June 2019), 445–464. <https://doi.org/10.1002/bse.2376>
- Latifah, L. (2020). Business strategy – MSMEs ’ performance relationship: innovation and accounting information system as mediators. *Journal of Small Business and Enterprise Developmen*. <https://doi.org/10.1108/JSBED-04-2019-0116>
- Marfuah, U., Nopianti, R., & Ambaria. (2019). Business development strategy with business model canvas approach at Pakdhe Mie chicken shop-Cimanggis, Depok. *International Journal of Scientific and Technology Research*, 8(2), 44–49.
- Mustaniroh, S. A., Prabaningias, N., & Citraesmi, A. D. P. (2020). Analysis of Business Development Strategies with Business Model Canvas Approach. *IOP Conference Series: Earth and Environmental Science*, 515(1). <https://doi.org/10.1088/1755-1315/515/1/012075>
- Nasution, M. A. (2018). Strategi Pengembangan Usaha Sayuran Hidroponik di KUT Hidrotani Sejahtera di Desa Suka Maju Kecamatan Sunggal Kabupaten Deli Serdang.
- Niles, M. T., Bertmann, F., Belarmino, E. H., Wentworth, T., Biehl, E., & Neff, R. (2020). The early food insecurity impacts of covid-19. *Nutrients*, 12(7), 1–23. <https://doi.org/10.3390/nu12072096>

- ra Tari Andiman, Heru Prastawa, S. S. (2023). Business Model Canvas for Business Development Strategy : A Systematic Literature Review. *International Journal of Innovative Science and Research Technology*, 8(6), 754–758.
- Shamshiri, R. R., Kalantari, F., Ting, K. C., Thorp, K. R., Hameed, I. A., Weltzien, C., ... Shad, Z. (2018). Advances in greenhouse automation and controlled environment agriculture: A transition to plant factories and urban agriculture. *International Journal of Agricultural and Biological Engineering*, 11(1), 1–22. <https://doi.org/10.25165/j.ijabe.20181101.3210>
- Sharma, A., Lin, M., Okumus, B., Kesa, H., Jeyakumar, A., & Impellitteri, K. (2022). Adopting a systems view of disrupting crisis-driven food insecurity. *Public Health*, 211, 72–74. <https://doi.org/10.1016/j.puhe.2022.07.007>
- Souopgui, I., D'Addezio, J. M., Rowley, C. D., Smith, S. R., Jacobs, G. A., Helber, R. W., ... Osborne, J. J. (2020). Multi-scale assimilation of simulated SWOT observations. *Ocean Modelling*, 154, 101683. <https://doi.org/https://doi.org/10.1016/j.ocemod.2020.101683>
- Sovia, P. A. (2018). Formulasi Model Bisnis Hostel Di Bandung Dengan Pendekatan Value Chain Dan Business Model Canvas (Studi Kasus: Pinisi Backpacker). *ISEI Business and Management Review*, 2(1), 32–38. <https://doi.org/10.36217/ibmr.v2i1.44>
- Stemmler, H., & Meemken, E. (2023). Greenhouse farming and employment : Evidence from Ecuador ☆. *Food Policy*, 117(March), 102443. <https://doi.org/10.1016/j.foodpol.2023.102443>
- Sufiyanto, S., Andrijono, D., Widayati, S., Anam, M. M., Dzulkarnain, Z., & Yuniarti, S. (2021). Implementasi Sistem Hidroponik untuk Menunjang Program Ketahanan Pangan Pasca Pandemi Covid-19 di Desa Sukowilangun, Kalipare, Kab. Malang. *Jurnal Pengabdian Dharma Wacana*, 2(3), 177–188. <https://doi.org/10.37295/jpdw.v2i3.259>
- Sumarni, E., Batubara, I., Suhardiyanto, H., & Widodo, S. (2023). Application Of Hydroponic Technology To The Yield And Quality Of Purwoceng " Viagra From Asia " Aplikasi Teknologi Hidroponik Pada Yield Dan Kualitas Purwoceng “ Viagra Dari Asia. *INMATEH - Agricultural Engineering*, 69(1), 46–54.
- Supriadi, Y. N., & Arieftiara, D. (2022). Strategi dan Inovasi Model Bisnis Industri Alas Kaki (Z. Rialmi, Ed.). Jakarta: Eureka Media Aksara.
- Supriadi, Y. N., Arieftiara, D., Desmintari, & Jubaedah. (2022). The Role of Digital Innovation on Business Success of SMEs Restaurant Industry in Indonesia: The Mediating Role of Financial Performance. *Quality - Access to Success*, 23(187), 119–124. <https://doi.org/10.47750/QAS/23.187.14>
- Supriadi, Y. N., Eeng, A., Adi, W. L., Chairul, F., & Dodi, S. (2020). Strategic Flexibility In Mediating The Effect Of Entrepreneurial Orientation And Dynamic Environment On Firm Performance. *International Journal Of Scientific & Technology Research*, 1(1), 324. Retrieved from <http://www.ijstr.org/final-print/aug2020/Strategic-Flexibility-In-Mediating-The-Effect-Of-Entrepreneurial-Orientat-And-Dynamic-Environment-On-Firm-Performance.pdf>
- Supriandi, & Iskandar, Y. (2022). Strategic Business Development of Polosan Mas Ibing with the Business Model Canvas Approach. *Proceedings of the International Conference on Economics, Management and Accounting (ICEMAC 2021)*, 207(Icemac 2021), 164–179. <https://doi.org/10.2991/aebmr.k.220204.018>
- Susanto, H., Taufiq, A., Gunawan, A., & Sholeh, M. (2022). Program Pelatihan Berkelanjutan Pengembangan Organic Green House Pada Komoditas Melon Komersial Sebagai Peningkatan Produktivitas Hortikultura Nasional. *SEMANGGI : Jurnal Pengabdian Kepada Masyarakat*, 1(02), 84–94. <https://doi.org/10.38156/sjpm.v1i02.122>
- Tando, E. (2019). Review : Pemanfaatan Teknologi Greenhouse Dan Hidroponik Sebagai Solusi Menghadapi Perubahan Iklim Dalam Budidaya Tanaman Hortikultura. *Buana Sains*, 19(1), 91. <https://doi.org/10.33366/bs.v19i1.1530>
- Zafriana, L., & Prihono. (2023). Business Model Design Based on Blue Ocean Strategy Based for Eco-Friendly Sativa Mouthwash. *Tibuana Journal of Applied Industrial Engineering-University of PGRI Adi Buana*, 6(1), 44–57. <https://doi.org/10.36456/tibuana.6.1.6497.44-57>