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Realizing food security through the development of urban farming to support the family economy during the Covid-19 pandemic

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ABSTRACT

Food is a basic need for humans. Since March 2020, Covid-19 has been detected in Indonesia, which is feared to have an impact on food availability. Banten is a province that is included in Priority Category 3 in handling food insecurity. Cilegon is one of the cities in the Banten Province that is experiencing shrinkage of agricultural land. The purpose of this research is to formulate an urban farming development strategy in Cilegon. The method used in this research is the survey method. This type of research is descriptive, namely research that interprets the factors with the SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis method to produce strategies that can support the development of urban farming. The number of samples is 22 residents who carry out urban farming in Ramanuju Baru, Cilegon. The results showed that the internal factor that became the strength was the residents having high motivation and initiative in carrying out urban farming, while the internal factor that became the weakness was the limited knowledge of the residents in developing urban farming from an economic perspective. The results of research from external factors that become opportunities are Cilegon Government Policies in realizing food security, while the threats are pests and diseases in urban farming plants that need to be controlled naturally. Based on the analysis of internal and external factors using the SWOT matrix, the strategy to develop urban farming in Cilegon is to collaborate with the government and urban farming experts to provide consistent assistance to make urban farming activities in Cilegon economically valuable. To realize food security in Cilegon, collaboration is needed in aiding the community to manage urban farming professionally, so that it can provide economic value for the community.

I. Introduction

The Food and Agriculture Organization (FAO) states that food security is realized if all people have equal access to high-quality food, to be active and healthy (Zhu, 2016). According to Law 18 of 2012 concerning Food, the State is tasked with realizing food availability, food access, and food stability (Hadi et al., 2020). Food security can be interpreted by not only the availability of food but also the quality of the food so that people can carry out activities actively and live healthy lives.

Economic growth in the community can affect food needs (Rusdiana & Maesya, 2017). At the beginning of 2020, the world was hit by a novel coronavirus called Covid-19 and the majority of countries in the world imposed a lockdown (Inegbedion, 2020). The lockdown has an impact on the limitations of various community activities, including economic activities. The stability of food security for certain regions is also hampered. According to the research of Meuwissen et al., (2021) the impact of Covid-19 on the agricultural sector is that it hampers agricultural production and also the distribution of agricultural products. In a study by Kumar et al., (2021) the authors reached the conclusion that the closures carried out in India caused insufficient food to supply, so food prices rose, which affected the economy of urban residents and the poor. In China the negative impact is felt on agricultural exports for food due to disruptions in the supply chain (Cao et al., 2021). This has an impact on economic stability in China.

This is in line with the research of Stephens et al., (2022) which shows that the Covid-19 pandemic has an impact on the agricultural sector. The first aspect of the agricultural sector that has been affected by the pandemic is the availability of household food for both urban and rural residents, the second is chronic food-related diseases such as diabetes, hypertension, and obesity whose conditions can be fatal if exposed to Covid-19 (Lopez-Ridaura et al., 2021). However, in Turkey, the occurrence of Covid-19 did not have a significant impact on the level of food consumption, except for bread, and increased consumption of multivitamin (Başaran & Pekmezci, 2021). This contrasts with what happened in China and India.

The Food Security and Vulnerability Atlas (FSVA) of Banten Province is in a condition of food security (Priority 5), but when viewed from each indicator there are some areas or households that are still vulnerable. The order of the nine most vulnerable indicators in Banten Province is the percentage of stunting under five, the percentage of under-five malnutrition, the average length of schooling for girls over 15 years, the percentage of households without nutrition access to clean water, the proportion of expenditure on food to total expenditure, life expectancy, the percentage of households without access to electricity, the percentage of the population below the poverty line, and the best indicator is the ratio of population per health worker (Budiawati & Natawidjaja, 2020). In 2016, agricultural land in Cilegon shrank from 2500 hectares to 1600 hectares (Efendi, 2016).

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The mandate of the Cilegon Regional Regulation Number 2 of 2017 concerning Food Administration, contains the government's goal to protect the community from food insecurity. On the Based regulation, the government conducts urban farming counseling and training for residents of Cilegon, including one resident of Ramanuju Baru, Citangkil, Cilegon. However, out of 67 households, only 22 households carry out urban farming on a small scale (private consumption). Economically, urban farming which is managed in a modern way using technology applications can povide additional income because it produces quality plant products and has a specific market (Sedana, 2020).

Figure 1. Urban Farming in Ramanuju Baru

2. Literature Review

According to Pinstrup & Andersen, national food security is self-reliance in food provision (Devi, Andari, & Wihastuti, 2020). According to the Life Science Research Organization (LSRO), food security is the availability of access to food that at least includes a) the availability of safe and adequate food nutrients, and b) the guaranteed ability to get food (Devi et al., 2020). Urban farming management has various benefits for the community as well as the environment. Some of the benefits of urban farming include economic benefits, health, and environmental benefits (Sedana, 2020). The urban farming program is one of the programs of the Department of Agriculture and Food Security that aims to help the poor in meeting the consumption of nutritious food funds to reduce family expenditure (Junainah, Kanto, & Soenyono, 2016). Urban farming is done by utilizing limited land in urban areas for agricultural activities (Khasanah, 2021).

The use of space or limited land with various urban farming models has been successful in the contribution of family food (Fauzi, Ichniarsyah, & Agustin, 2016). In Makassar, developing urban farming can support the economy in a sustainable manner (Abdullah, DirawKirwanertiwl, 2017). Economically, urban farming, which is managed in a modern way using technology applications, can provide additional income because it produces quality crop products and has a specific market (Sedana, 2020). Sumardjo et al., (2020) research suggests that families that can adjust the market needs to organic urban farming products, by creating innovative products, can increase productivity and develop their businesses.

In research Alynda & Kusuby mo, (2021) women have a high initiative in urban farming to increase agricultural yields within limited land. In Salampua, urban farming is one of the efforts to increase regional income. The results of the study Khasanah, (2021) of strategies to develop urban farming in Salampua include

- Making an appropriate urban farming concept.
- Creating policies governing urban farming.
- The government provides education about urban farming.
- Supporting facilities to carry out urban farming.
- Choosing the right type of seed.
- Taking good care of the trees that have been planted.
- The government also helping market produced by the urban farming process.
- The private sector providing CSR funds for the implementation of urban farming.

3. Methodology

The method used in this study is the survey method. With descriptive research, it is research that interprets strategies used in efforts to realize urban farming to improve the family economy. These factors are studied by SWOT (strengths, weaknesses, opportunities, and threats) analysis methods to produce strategies that can support the family economy through urban farming, especially in the era of the Covid-19 pandemic. This research is funded by the Faculty of Economics, University of Sultan Ageng Tirtayasa. The field survey was carried out in May-June 2022. This research was conducted through interviews, where groups of respondents were interviewed separately about the strengths, weaknesses, opportunities, and perceived threats during urban farming in Ramanuju Village. The population in this study is the residents of Ramanuju Baru, Cilegon as many as 22 families, so all were taken as respondents by census means. 22 representatives of each family are taken based on the number of residents who are actively carrying out urban farming in Ramanuju since 2019. Interview questions are as follows:

- What kind of urban farming concept was developed by the people of Ramanuju?
- What facilities do the community have, at their own expense or with assistance from other parties?
- What kind of help is provided?
- Who is the community supporter in urban farming?
- What kind of support is provided?

SWOT analysis examines an internal and external factors separately, then the next stage of pairwise analysis to produce the strategy. The analysis begins with internal factor analysis summary (IFAS) and external factor analysis summary (EFAS). The next stage is to draw up a table or matrix of IFAS and EFAS to formulate what strategy is most appropriately used. According to Solihin, SWOT analysis is often used in conducting situational analysis in formulating strategies (Yurianto, 2020). The use of SWOT analysis, including analyzing the internal and external conditions of a business, also finding out the ability of a business in running a business faced with competitors (Luthfiyah, Djamhur, Melinda, Rashid, & Putri, 2021).

4. Result and Discussion

Identification of internal factors is done to find out the strengths and weaknesses that are owned. The results of these identifications are:

4.1. Strengths

- 22 families in Ramanuju Baru have carried out urban farming to meet their household needs.
- The Cilegon Government routinely provides counseling on urban farming in Ramanuju Baru.
- Used goods are utilized in carrying out urban farming.
- Seed assistance from both the government and the private sector with its CSR program is provided.
- The residents are in collaboration with several universities including Sultan Ageng Tirtayasa University and Bogor Agricultural Institute in Community Service Program.

4.2. Weaknesses

- There are still about 60% of all Ramanuju residents have not carried out urban farming.
- Urban farming has not been developed as a profitable business

4.3. Opportunities

- Increasingly narrow agricultural land in the Cilegon makes the government focus on urban farming programs to realize food security.
- There is still an opportunity to work with parties who have concerns about food and the environment to collaborate in developing urban farming to a larger scale.
- The society is encouraged to optimize their yards by planting food crops following the policy of the Minister of Agriculture in the face of the Covid-19 pandemic.
- Urban population in Indonesia increases every year. About 55.8% of Indonesia's population was urban in 2019.

4.4. Threats

- The Covid-19 pandemic made the economy and food conditions uncertain due to social restrictions in daily mobility.
- Rapid technological advances discourage young people from being interested in agriculture.

Strategy Formula

A. Input the factor

The first step is to input the factors in the IFAS and EFAS tables. The IFAS matrix is based on internal factors consisting of strengths and weaknesses. The identification was through questionnaires filled out by 22 respondents. The 22 respondents were families who did urban farming in Ramanuju Baru.

After identifying internal factors, the rating is then carried out, and continued with the weighing of each factor by the paired comparison method. Ratings and weights on each factor produce a score that indicates the level of strength and weakness of the internal factors.

Based on the results of Table 1 calculation, the community routinely following counseling on urban farming carried out by the Cilegon City Government is the main factor with the highest score of 0.728. This shows that these factors have a major contribution in realizing food security to improve the economy. While the factor with the main disadvantage is urban farming which is only limited to household needs, it has not been developed larger, with a score of 0.45. Overall, the total internal factor score was 2.76. The score for internal factors was above average at 2.5. This shows that Ramanuju is internally ready in realizing food security to improve the family economy.

Based on the results of table 2 calculations, the increasingly narrow agricultural land in the city of Cilegon making the government focus on urban farming programs to realize food security is the main factor with the highest score of 0.8. While the factor with the main weakness is the Covid-19 pandemic makes the economy and food conditions uncertain due to social restrictions in daily mobility, with a score of 0.8. The overall number of internal factor scores was 3.27. The score for internal factors was above average at 2.5. This shows that Ramanuju has been able to respond well to opportunities, and threats, in order to realize food security to improve the family economy.

B. Matching Steps

Next is the matching steps. The matching steps has the function of blending the strengths and weaknesses of the internal environment with external opportunities and threats, using the SWOT matrix.

Table 1 Matrix Internal Factor Analysis Summary (IFAS)

Internal Factor				
	Strengths	Weight	Rating	Weight x Rating
1	22 families Ramanuju Baru has carried out urban farming to meet their household needs.	0,152	3	0,456
2	The Cilegon Government routinely provides counseling on urban farming in Ramanuju Baru.	0,182	4	0,728
3	Utilizing used goods in carrying out urban farming.	0,156	2	0,312
4	The existence of seed assistance from both the government and the private sector with its CSR program.	0,13	3	0,39
5	The farmers are in collaboration with several universities including Sultan Ageng Tirtayasa University and Bogor Agricultural Institute in Community Service Program.	0,12	2	0,24
Amount		0,74		2,126
	Weakness			
1	There are still about 42 families who have not been moved to carry out urban farming.	0,11	2	0,22
2	Urban farming, which is done only on a small scale for household purposes, has not been developed larger.	0,15	3	0,45
Amount		0,26		0,67
TOTAL		1		2,76

Source: primer data

Table 2 Matrix ExtTable Factor Analysis Summary (EFAS)

Faktor Eksternal			
Opportunity	Bobot	Rating	Bobot x Rating
1 Increasingly narrow agricultural land in the Cilegon makes the government focus on urban farming programs to realize food security.	0,2	4	0,8
2 There is still an opportunity to work with parties who have concerns about food and the environment to collaborate in developing urban farming to a larger scale.	0,15	3	0,45
3 The policy of the Minister of Agriculture in dealing with the covid-19 pandemic by directing for the optimization of yard land by planting food crops.	0,17	3	0,51
4 Urban population in Indonesia increases every year. About 55.8% of Indonesia's population was urban in 2019.	0,13	2	0,26
Amount	0,65		2,02
Threats			
1 The Covid-19 pandemic made the economy and food conditions uncertain due to social restrictions in daily mobility.	0,2	4	0,8
2 Rapid technological advances discourage young people from being interested in agriculture.	0,15	3	0,45
Amount	0,35	7	1,25
TOTAL	1	19	3,27

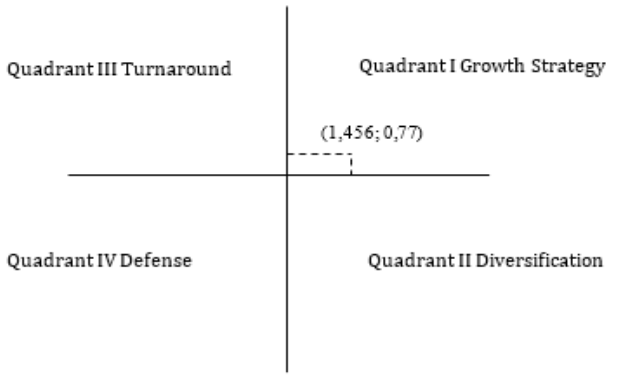
Source: primer data

Table 3. The SWOT matrix

IFAS / EFAS	Strength **a)** 22 families Ramanuju Baru has carried out urban farming to meet their household needs. **b)** The Cilegon Government routinely provides counseling on urban farming in Ramanuju Baru **c)** Utilizing used goods in carrying out urban farming. **d)** The existence of seed assistance from both the government and the private sector with its CSR program. **e)** In collaboration with several universities including Sultan Ageng Tirtayasa University and Bogor Agricultural Institute in Community Service Program.	Weakness **a)** There are still about 42 families who have not been moved to carry out urban farming. **b)** Urban farming, which is done only on a small scale for household purposes, has not been developed larger.
	S-O	W-O
Opportunity **a)** Increasingly narrow agricultural land in the Cilegon makes the government focus on urban farming programs to realize food security. **b)** There is still an opportunity to work with parties who have concerns about food and the environment to collaborate in developing urban farming to a larger scale. **c)** The policy of the Minister of Agriculture in dealing with the Covid-19 pandemic by directing for the optimization of yard land by planting food crops. d) The number of urban population in Indonesia increases every year, in 2019 it was recorded that about 55.8% of Indonesia's population is urban.	The government collaborates with various parties such as universities, private, central government, and the community to increase the production of urban farming products to a larger scale.	Motivate the community through counseling and mentoring to educate higher economic benefits for the community if it increases urban farming production to a larger scale.
	S-T	W-T
Threat **a)** The Covid-19 pandemic made the economy and food conditions uncertain due to social restrictions in daily mobility. b) Rapid technological advances discourage young people from being interested in agriculture.	Include young people in urban farming held by the government.	Educating young people on higher economic benefits to society if they increase urban farming production to a larger scale.

C. Decision-Making action and calculation results of the IFAS and EFAS tables obtained the number of IFAS scores of 2.76 with a strength of 2,126 and weaknesses of 0.67 by a margin of 1.456. While the EFAS score is 3.27 with a chance of 2.02 and the threat of 1.25 the difference is 0.77. Based on the results of IFAS and EFAS analysis, the current urban farming situation can be described as follows:

Figure 3. SWOT Diagram



As seen in the SWOT diagram, the condition of food security in Ramanuju Baru, Cilegon is in quadrant I. This means that the strategy taken is a growth strategy, which maximizes the power to capture opportunities. This strategy supports at aggressive stages to continue to develop all the factors that must capture the opportunities that exist. So, the right strategy is to develop consistent urban farming by collaborating with various parties such as universities, private, central government, and the community to increase the production of urban farming products to a larger scale.

In a previous study conducted by Maharisi et al., (2014)in urban communities in South Tangerang carried out an aggressive strategy to increase the intensity of the implementation of programs and activities as an effort to increase agricultural production. In line with the results of this research, this research also produces an aggressive strategy that needs to be implemented in Cilegon, in an effort to increase urban agricultural output. This is also supported by the results of research by Tittonell et al., (2021) where during times of crisis such as the Covid-19 pandemic, direct adaptation is needed in maintaining local food security, by implementing aggressive strategies including:

- Selling food directly from producer to consumer,
- Cutting the food supply value chain so that it is shorter with the support of local and central governments,
- Support and training programs for sustainable food production for self-consumption or local, rural, urban or suburban trade,
- Food aid and aid initiatives that focus on populations vulnerable to food shortages.

In line with research Pieter et al., (2022), as a strategy for survival, farmers cultivate agroforestry crops, both for their own consumption and for sale.

Rahmadiyanti, (2021) in his research stated that in maintaining food availability during the Covid-19 pandemic, the strategies used were increasing production capacity, facilitating the development of farmers' expertise, and increasing the spirit of entrepreneurship in the agribusiness sector. Likewise the research (Adhila Amalia et al., 2022; Rahayu et al., 2021) reveal that strategies used by farmers during the Covid-19 pandemic are intensive and integrative strategies, which include maintaining product quality and sustainability.

5. Conclusion and recommendations

Realizing food security to improve the family economy with urban farming, especially in Ramanuju Baru, Cilegon can be achieved using growth strategy. The strategy is to develop consistent urban farming by collaborating with various parties such as universities, private sector, central government, and also the community to increase the production of urban farming products to a larger scale. The activities that can be carried out in this collaboration include:

- The government and the university sharing knowledge with the community regarding the economic impact of increasing agricultural output through urban farming, especially during the Covid-19 pandemic.
- The government providing assistance in the form of seed supply.
- The private sector through CSR programs in collaboration with universities providing guidance in the management of urban farming.
- Making plans to further commercialize the results of urban farming.
- The university providing assistance to increase agricultural yields in urban farming through service programs.

Further research should be conducted in a wider radius and supplemented with quantitative data. There needs to be data on plant types developed urban farming by the community, and the average amount of production in a simple table. So, a more in-depth research can be carried out on the amount of production that needs to be increased, so that the welfare of the community is raised through urban farming.

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