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Research Article

Urban Farming as a Solution for Food Independence and New Job Opportunities in Bangka Belitung: A Case Study of Pangkalpinang City

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Abstract: This study, titled *"Urban Farming as a Solution for Food Self-Sufficiency and New Employment Opportunities in Bangka Belitung: A Case Study of Pangkalpinang City,"* investigates the implementation of urban farming as an adaptive strategy to address food insecurity and unemployment in urban areas with limited agricultural land. Pangkalpinang City faces increasing challenges related to urbanization, including declining agricultural land, high dependence on external food supplies, and limited job opportunities for residents. The purpose of this research is to analyze how urban farming contributes to food self-sufficiency, the creation of new employment opportunities, and community participation in sustainable urban agriculture. Using a qualitative case study approach, data were collected through participatory observation, in-depth interviews, and documentation studies, and analyzed thematically and through SWOT analysis to identify internal and external factors influencing urban farming development. The findings reveal that urban farming in Parit Lalang, Pangkalpinang, is predominantly conducted on small home gardens and vacant lots using hydroponic and traditional methods, with participants mainly consisting of productive-age residents and housewives. The practice has enhanced household food availability, reduced living costs, and generated additional income, thereby improving local economic resilience. However, several challenges persist, such as limited technical skills, financial constraints, and inconsistent government support. The study concludes that strengthening training programs, improving financial access, and developing pilot projects in each subdistrict are essential to optimize the sustainability of urban farming as a strategy for food security and community empowerment in urban settings.

Keywords: Urban farming; food security; food self-sufficiency; employment creation; hydroponics.

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1. Introduction

The increasingly limited land availability in urban areas is driving some people to migrate to cities. This situation gives rise to various problems, such as limited food availability and sufficiency for households, shrinking agricultural land, rising unemployment, and various other social issues (Aprilani, 2024).

The Bangka Belitung Islands Province is one of the regions facing similar challenges, particularly in meeting food needs and providing employment. High dependence on food supplies from outside the region and limited fertile agricultural land are key issues requiring immediate attention (Central Statistics Agency, 2023). This situation forces urban communities to seek alternative solutions that can meet food needs and improve well-being. One strategic approach to providing sustainable food in urban areas is the development of urban farming (Rosmiati et al., 2023).

The main advantage of urban farming is its flexibility, which can be implemented even with limited land, and can be done by anyone at a relatively affordable cost (Wijaya et al., 2020). Urban farming also contributes to maintaining a clean urban environment by utilizing

organic waste as natural compost, supporting the 3R (Reduce, Reuse, Recycle) practices, and creating green spaces that absorb carbon and produce oxygen (Permana, 2012).

Several previous studies have examined the effectiveness of urban farming using various approaches. (Pratiwi et al., 2021) examined the implementation of urban farming in Bekasi through a food security outreach program, while (Khairiyakh et al., 2022) developed a hydroponic training model that improved the skills of urban communities. (Sudjawoto, 2022) and (Sari et al., 2024) emphasized the importance of synergy between the community, government, and universities in expanding the scale of urban farming implementation. While these results demonstrate success in certain areas, most research remains conceptual, with little research examining the effectiveness of urban farming in a local context like Pangkalpinang City. The advantages of the training and outreach approach lie in increasing community awareness and technical knowledge, but its weaknesses include limited reach, sustainability, and suboptimal economic productivity.

The main problem in this research is how urban farming can serve as a sustainable strategy to strengthen food self-sufficiency and create new job opportunities in Pangkalpinang City, which has limited land. This research proposes a qualitative approach using a case study method to understand urban farming practices in depth, complemented by a SWOT analysis to identify strengths, weaknesses, opportunities, and threats in its implementation.

The contributions of this research include: 1) Providing an empirical analysis of urban farming practices in a small urban area like Pangkalpinang, 2) Developing an urban farming development strategy based on the results of the SWOT analysis, 3) Offering policy recommendations for local governments to support sustainable food security programs, and 4) Expanding academic research on the relationship between urban farming, food self-sufficiency, and urban community well-being.

2. Preliminaries or Related Work or Literature Review

Urban farming has become an innovative approach to addressing the challenges of urbanization, limited land, and dependence on external food supplies. This concept integrates food production activities within urban ecosystems by utilizing limited spaces such as yards, rooftops, and vertical gardens (Pratio et al., 2024).

Previous Research on Urban Farming

Several previous studies have examined the implementation of urban farming from various perspectives. (Pratiwi et al, 2021) demonstrated that a socialization and training program in Bekasi City was able to increase public awareness of household food security. (Khairiyakh et al, 2022) developed a hydroponic training model that successfully improved urban residents' technical skills and household-scale vegetable production. Research by (Rahmawati et al, 2024) found that community participation in an urban farming program in Central Jakarta reached 78%, with the highest level of involvement during the implementation phase but relatively low during the evaluation phase.

Meanwhile, (Sudjawoto, 2022) introduced the "Tish Urfarm" model in Malang City, demonstrating that structured urban farming assistance can increase household income while reducing food expenditure. (Sari et al, 2024) emphasized the importance of collaboration between local governments, universities, and communities in expanding the scale and sustainability of urban farming programs. Globally, (Weidlich et al, 2021) and Pratio et al, 2024) emphasized that urban agriculture plays a crucial role in reducing carbon emissions from the food supply chain while strengthening local economic resilience.

While these studies make important contributions, most remain limited to training, outreach, or concept development approaches without in-depth evaluation of their socioeconomic impacts and sustainability. Furthermore, empirical studies in a small city like Pangkalpinang are still limited, despite its unique geographic characteristics of limited land and high dependence on external food supplies. This research seeks to fill this gap by analyzing the socioeconomic dimensions of urban farming through a case study approach complemented by a SWOT analysis.

Research Gaps

Although extensive research on urban farming has been conducted, several key gaps remain. First, most studies focus on training and outreach without assessing the long-term impact on community economic well-being. Second, there is limited empirical research

examining local contexts like Pangkalpinang, where land constraints and food dependence are critical issues. Third, strategic analysis approaches such as SWOT analysis are rarely used systematically to identify internal and external factors influencing urban farming success.

This research contributes to filling this gap by using a qualitative case study approach combined with a SWOT analysis to analyze how urban farming can strengthen food self-sufficiency and create new jobs in Pangkalpinang City. The results are expected to serve as a basis for developing sustainable urban farming models in small and medium-sized cities in Indonesia.

3. Research Methods

Research Approach

This research employed a qualitative approach with a case study method. This qualitative approach was used to deeply understand the phenomenon of urban farming within the social and economic context of the Pangkalpinang City community. The case study method was chosen because it allows researchers to holistically explore various aspects of urban farming implementation in a real-world setting (Yin, 2018).

According to Moleong (2017), a qualitative approach aims to understand social phenomena from the perspective of participants through direct interactions between researchers and informants. This research not only examines urban farming practices but also assesses their contribution to food self-sufficiency and new job creation.

Location and Time of Research

This research was conducted in Pangkalpinang City, the capital of the Bangka Belitung Islands Province. This strategic location was chosen because the city is beginning to develop the concept of urban farming to support local food security and strengthen the urban economy. The research period was four months, encompassing the preparation, implementation, and reporting stages. Research activities will begin in July 2025 and end in November 2025.

Data Types and Sources

Data Types

This study uses qualitative data. Qualitative data is a type of descriptive data that is not numerical. This data provides a general overview of the research location and describes existing problems, including the environmental and social conditions of the community in Parit Lalang Village, Rangkui District, Pangkalpinang City. This study uses primary data as a data source. Primary data is data obtained directly from primary sources through interviews and questionnaires distributed to a predetermined population sample.

Population and Sample

The informants in this study were selected from a population comprising all individuals involved in urban farming activities throughout Pangkalpinang City, with a total of 20 respondents. The sample was a subset of that population using purposive sampling, which involves the deliberate selection of informants based on their involvement in urban farming activities. The informant criteria included:

Urban farming actors (individuals, communities, or urban farmer groups).

Representatives of the Pangkalpinang City Agriculture and Food Security Office.

Local communities directly affected by the project.

Academics or practitioners familiar with food security and urban farming issues.

Private sector or NGOs involved in urban farming programs.

According to Sugiyono (2019), purposive sampling is a sampling technique based on specific considerations to obtain relevant and in-depth data.

Data Collection Techniques

Data collection techniques in this study included:

Participatory Observation

Researchers conducted direct observations of urban farming activities, recording the planting, management, and distribution of harvests. This observation enabled researchers to more accurately capture the social context and field dynamics (Spradley, 2007).

In-Depth Interviews

Semi-structured interviews were conducted to elicit information from key informants. This technique provided space for informants to express their views freely and in-depth (Creswell, 2016).

Documentation Study

Documentation study was conducted by reviewing activity reports, local statistical data, local government policies, and other documents relevant to the topic of urban farming in Pangkalpinang.

Data Analysis Techniques

Data analysis techniques are a crucial stage in research, processing raw data into more meaningful information. Through the analysis process, collected data is not only presented as is but also interpreted to address the focus and objectives of the research. Data analysis helps researchers identify patterns, relationships, and specific meanings within the data, resulting in more focused and relevant information (Sofwatillah et al., 2024). This analysis aims to identify the problem formulation, namely:

Descriptive Analysis

Descriptive analysis is a research method that aims to understand the existence of a variable independently, whether one or more variables, without having to connect it through comparison or correlation with other variables. In this study, the researchers used descriptive analysis to describe the characteristics of urban farming in Parit Lalang Village. With this approach, the research can explain the phenomenon of urban farming based on five indicators that have been established as research criteria (Pramesti et al., 2024). Thus, this study is able to describe the urban farming phenomenon through seven main criteria used as research indicators, namely:

1). Actors

The actors in urban farming consist of several sub-indicators, namely the community, farmer groups, and the government. Data collection on actors was conducted through field observations and interviews with residents involved in urban farming practices in Pangkalpinang City.

2). Location

Urban farming sites are generally located in home yards, vacant land, and underutilized community-owned land or village facilities.

3). Technique

Urban farming techniques are small-scale agricultural management methods that utilize simple equipment to modern techniques such as vertical cultivation and hydroponics.

4). Results

Urban farming products generally include vegetables, herbs, and ornamental plants, produced on a household or group scale.

5). Objectives

The objectives of urban farming can be categorized into several aspects, such as meeting consumption needs, recreational activities, improving family income, education, research, and commercial activities.

6). Marketing of Products

Marketing of urban farming products includes use for personal consumption and limited sales.

7). Support and Constraints

This includes support from the government, sub-district, and community, as well as obstacles such as limited facilities and capital.

SWOT Analysis

A SWOT analysis is divided into two main parts: internal analysis and external analysis. The internal analysis includes an assessment of strengths and weaknesses, while the external analysis focuses on opportunities and threats (Amirullah, 2002).

4. Results and Discussion

Geographical Location

Pangkalpinang, as the capital of the Bangka Belitung Islands Province, plays a strategic role in government, economics, and trade. Geographically, this area is dominated by densely populated residential areas with relatively limited agricultural land, making large-scale conventional agricultural development less feasible. However, these limitations actually open up opportunities for urban farming, which utilizes limited land in urban areas for productive agricultural activities. This concept is considered capable of strengthening household food self-sufficiency while creating new job opportunities in urban areas.

Administrative Area

The administrative area code (Ministry of Home Affairs) for Parit Lalang Village is 19.71.04.1008. It is part of Rangkui District, Pangkalpinang City, Bangka Belitung Islands Province. It covers an area of 90.1 hectares (0.901 km2), all of which is land. Parit Lalang Village has three neighborhood associations (RW) and nine neighborhood associations (RT). The coordinates of Parit Lalang Village are 106°6'34.28089"E.

Demographics

The population of Parit Lalang Village, Pangkal Pinang City, in 2024, based on projections from the 2024 Population Census, is 7,796 people, consisting of 3,904 males and 3,892 females, with a sex ratio of 102.17. The dependency ratio is 45.53 percent, indicating a predominance of the working-age population. The proportion of the population aged 0-14 years decreased from 25.19 percent to 25.00 percent, the working-age population aged 15-64 years decreased from 68.83 percent to 68.71 percent, and the population aged 65 years and over increased from 5.98 percent to 6.29 percent.

Basic Physical Aspects

Topography and Soil Type

The topography of Pangkalpinang City is generally undulating and hilly, with elevations ranging from 20–50 meters above sea level and slopes of 0–25%. Morphologically, this area is basin-shaped, with the city center located in the lowlands, while hilly areas are concentrated in the western and southern parts of the city.

The dominant soil types in this area have an average pH below 5 and consist of red-yellow podzolic, regosol, gleisol, and organosol, which originate from the weathering of parent rock. In a small portion of the swampy area, alluvial-hydromorphic soil, glayhumus, and light gray regosol, resulting from sand and clay deposits, are found. These soil conditions are less suitable for rice cultivation, but can still be used for growing secondary crops.

Climatology

Pangkalpinang City has a type A humid tropical climate. Rainfall in this region in 2003 ranged from 56.2 to 337.9 mm per month, with an average of 16 rainy days per month. August was recorded as the driest month. The region's climate is influenced by maritime factors, both

in terms of wind direction and humidity levels. Air temperatures during 2003 were recorded in the range of 23.3–32.4°C, while humidity ranged from 76 to 88 percent.

Hydrology

Pangkalpinang City is home to several small rivers, most of which flow into the Rangkui River. The main source of clean water comes from groundwater, as well as from Kolong Kacang Pedang and Kolong Kace. Morphologically, the city is basin-shaped, with the city center located on lower ground. This condition makes it vulnerable to flooding, especially during the rainy season and due to the ebb and flow of seawater entering through the Rangkui River, which divides Pangkalpinang City.

Characteristics of urban farming in Parit Lalang Village, Pangkalpinang City.

The characteristics of urban farming in this study are examined through respondent profiles, which display demographic characteristics such as gender, age, and employment status. This demographic information is used to better understand and describe the characteristics of urban farmers in Pangkalpinang Cit.

Table 1. Characteristics of Urban Farming in Parit LSSalang Village, Pangkalpinang City.

Code	Gender	Age	Employment Status	Community Groups	Urban Farming Place	Urban Farming Techniques	Urban Farming Results
Respondent 1	P	41	Private employees	Community	Home page	Hydroponics	Horticulture
Respondent 2	L	46	Daily Laborer	Community	Home page	Hydroponics	Horticulture
Respondent 3	L	39	Security	Community	Home page	Hydroponics	Horticulture
Respondent 4	P	33	IRT	Community	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 5	L	39	Private employees	Community	**Home yard**	**Hydroponics**	**Crops**
Respondent 6	L	35	Private employees	Community	**Home yard**	**Hydroponics**	**Horticulture**
Respodent 7	P	46	IRT	Community	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 8	P	47	IRT	Community	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 9	L	42	Private employees	Community	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 10	P	23	IRT	Community	**Home yard**	**Hydroponics**	**Horticulture**
Respodent 11	L	40	Farmer	Farmers	**Garden**	**Hydroponics**	**Horticulture**
Respondent 12	P	54	IRT	Farmers	**Garden**	**Traditional**	**Crops**

Respondent 13	L	64	Self-employed	Farmers	**Garden**	**Traditional**	**Crops**
Respondent 14	P	37	IRT	Farmers	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 15	L	40	Self-employed	Farmers	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 16	L	48	Private employees	Farmers	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 17	L	32	Private employees	Farmers	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 18	P	55	Ward	Government	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 19	P	42	RT	Government	**Home yard**	**Hydroponics**	**Horticulture**
Respondent 20	L	53	RT	Government	**Home yard**	**Hydroponics**	**Crops**

Source: 2025 Analysis Results

Gender

Based on Table 4.1 above, it can be seen that the number of male respondents (11) outnumbers the number of female respondents (9). This indicates that men are more dominantly involved in urban farming activities in Pangkalpinang City. However, women's participation is also quite significant, particularly in family-based urban farming management, such as utilizing home gardens. This situation illustrates that urban farming activities can be participated in by various groups, both men and women, who both play important roles in supporting the sustainability of urban agriculture.

Age

Based on the table above, the majority of urban farmers in Pangkalpinang City are between the ages of 20 and 45, totaling 12 individuals. This indicates that people of productive age play a dominant role in developing urban farming activities, both individually, as families, and in groups. In the 46 to 65 age group, there were eight respondents who generally use urban farming as a means of supplementing family income and maintaining household food security.

Employment Status

Based on the table above, it can be seen that urban farmers in Pangkalpinang City have diverse occupational backgrounds. The majority of respondents were housewives and private sector employees. This indicates that independent entrepreneurs tend to view urban farming as an additional opportunity to support their income and businesses.

Six respondents were housewives. Their involvement in urban farming is generally driven by family food needs and a desire to reduce household expenses by utilizing their yard space. Furthermore, urban farming for housewives also serves as a productive activity in between domestic activities.

Meanwhile, six respondents were private sector employees. They typically pursue urban farming as a side activity outside of work hours, either as a hobby, recreational activity, or a small supplement to their daily food needs.

Based on the respondent profile data, this study can describe the characteristics of urban farming activities in Pangkalpinang City. Within these characteristics, seven main aspects serve as indicators for a more in-depth look at urban farming practices carried out by the community.

Urban Farmers

Pangkalpinang City, the capital of the Bangka Belitung Islands Province, is one of the urban areas that has begun developing urban farming activities. This activity stems from public awareness of the importance of utilizing limited urban land to support household food self-sufficiency.

The research results indicate that urban farmers in Pangkalpinang can be categorized into community groups, government agencies, and farmer groups. However, not many people are interested in urban farming. Many engage in this activity solely as a hobby or to meet daily needs, without developing it into a sustainable business.

In this study, the number of respondents was set at 20. Respondents were selected using a non-probability sampling technique using a saturated sampling method, where the entire population meeting the research criteria was sampled. The respondents were those actively involved in urban farming activities, including community groups, government agencies, and farmer groups in Parit Lalang Village, Pangkalpinang City.

1) Community

The number of urban farmers in the community category in Parit Lalang Village, Pangkalpinang City, is 10. This category consists of residents who carry out farming activities independently, without involvement in farmer groups or formal communities. Their activities are primarily carried out within their households, utilizing the limited available land.

Farmer Groups

According to Table 4.1, there are seven urban farming groups involved, two of which were used as samples in this study. The following is an explanation of the two farmer groups in Parit Lalang Village, Pangkalpinang City, that we used as samples.

Yuli Farming Farmers Group

The Yuli Farming Farmers Group is the only active farming group. It has 20 members. The members of the Yuli Farming Farmers Group work together to cultivate and market their harvests, selling them to the local community, markets, and shipping them to several areas in Bangka. In addition to selling, the remaining harvest is used by the group members for their own consumption. The Yuli Farming Farmers Group provides vegetables and seeds for sale. The Yuli Farming Farmers Group typically sells 20% of its produce to the local community, 70% to the market, and 10% for the group members' own consumption.

Iin Farming Farmers Group

The Iin Farming Farmers Group itself has an unstable membership, as only a few local residents take turns caring for and watering the plants. The group is currently active. The Iin Farmers Group sells 50% of its urban farming produce to shops in need of garden vegetables, and 50% is for personal consumption, sometimes shared with local residents.

Government

There are three government-based urban farming actors in Parit Lalang Village, Pangkalpinang City. This category includes village officials and neighborhood unit (RT/RW) officials who play a role in supporting, facilitating, and overseeing urban farming activities within the community. Government involvement in urban farming can be seen as a form of

institutional role in encouraging citizen participation. Government officials act not only as policymakers at the local level but also as facilitators of land provision, providing guidance, and bridging collaboration with other relevant parties.

Urban farming sites

Urban farming sites in Parit Lalang Village, Pangkalpinang City, are relatively limited because the area is dominated by densely populated residential areas. This situation requires residents to optimally utilize available land for urban farming activities. Therefore, any open space, whether in home yards or unused vacant land, is used as an alternative location for urban farming in this area.

1) *Home Page*

According to Table 4.1, the most common urban farming location in Pangkalpinang City is yards, with 17 locations. The following is an interview with respondent 1, a resident of Parit Lalang Village, Pangkalpinang City, on Monday, September 8, 2025.

"I only plant in my yard because the land is small, but it's enough to grow vegetables like water spinach and mustard greens. It's difficult to grow outside, and I'm worried about the security …..".

Based on the interview results above, it can be concluded that yards are the primary choice because they are considered the most practical, close to daily activities, and don't require additional costs to rent or buy land. Urban farming in yards is usually done independently or with family, utilizing available open spaces around the residence. Respondents explained that the land used is not always extensive; some even consist of small terraces or narrow areas planted in polybags and pots. Although simple, this method is considered more effective because it is easy to maintain and doesn't disrupt the main activities of the homeowners.

2). Gardens

Table 1 shows three urban farming locations within garden areas. These garden locations are generally utilized by farming groups and communities, utilizing vacant land that previously had no productive use.

The following are the results of an interview with respondent 11 who is a garden owner in Pangkalpinang City on Tuesday, September 9, 2025.

"Our farming group and I are using an empty plot of land behind a resident's house. Previously unused, we're using it to grow vegetables. But this is temporary; if the landowner wants to use it again, we'll stop. …..".

Based on the interview results above, it can be concluded that the land use is temporary, as the ownership status is not permanent land specifically designated for agriculture. The gardens used for urban farming consist of private gardens owned by residents and vacant land that can be used as communal planting areas. These gardens provide more space than home yards, allowing urban farmers to plant larger quantities or experiment with more varied planting techniques.

Urban farming techniques

Urban farming activities in urban areas utilize a variety of specific techniques to adapt to lim ited land conditions. Some commonly practiced techniques include traditional farming, hydroponics, and other simple methods that can be implemented depending on available space.

Traditional

In Parit Lalang Village, two respondents still use traditional techniques in their urban farming practices. This technique involves planting directly in the soil available around their yards. This method is generally chosen because they have limited yards, allowing for traditional farming practices.

The following are the results of an interview with respondent 13, a farmer in Pangkal pinang City, on Tuesday, September 9, 2025.

"I still use the normal method by loosening the soil and applying fertilizer, then planting the seeds. Because it's easier, you don't need to buy equipment like hydroponics …..".

Based on the interview results above, it can be concluded that implementing traditional tech niques in the home garden is relatively simple: manually tilling the soil, planting seeds or seedlings directly, and providing fertilizer and basic maintenance. Although this method doesn't require special technology, it is still considered effective by some people, especially those accustomed to traditional planting patterns.

Figure 1. Traditional Technique.

Hydroponics

In Parit Lalang Village, the majority of urban farmers, with 18 respondents, chose hydroponic techniques. This technique involves growing plants without soil, but in nutrient-enriched water. The following are the results of an interview with 18 respondents who are urban farming farmers in Parit Lalang Village, Pangkalpinang City on Wednesday, September 10, 2025.

"Now I grow crops hydroponically in my yard. It's cleaner and easier to maintain, not as dirty as soil. Hydroponics also produces good results, and the vegetables grow quickly. I initially learned online, but eventually I learned to do it myself. …..".

The interview results above indicate that most urban farmers practice hydroponic farming in their yards. This is because the hydroponic method is more efficient in terms of land use, easy to implement in limited spaces, and adaptable to various media such as PVC pipes, plastic bottles, and vertical gardening racks. Besides saving space, hydroponic farming is also considered practical due to its simpler maintenance compared to traditional methods. Farmers don't need to cultivate the soil; they simply regulate nutrient flow and maintain the cleanliness of the growing medium. Another advantage experienced by the community is that hydroponic crops generally grow faster and appear fresher.

Figure 2. Hydroponic Techniques.

Results of urban farming

Urban farming activities carried out by residents of Parit Lalang Village, Pangkalpinang City, have resulted in two main categories: food crops and horticultural crops. The choice of these two categories is heavily influenced by limited land in urban areas, leading residents to grow crops that are practical, easy to care for, and yield results quickly.

Based on the research results, four respondents grew food crops. The types of crops cultivated included chilies, tomatoes, oil palms, and corn on a small scale. Food crops were chosen because they can directly support family kitchen needs, although the number of people growing this category is still relatively small. This is likely due to the need for more space and more intensive care compared to leafy vegetables.

Meanwhile, the other 16 respondents grew more horticultural crops, particularly leafy vegetables such as kale, mustard greens, and spinach. These types of horticultural crops were chosen because they are easier to grow in small yards, using pots, polybags, or hydroponic systems. Their short harvest time and the ability to consume produce almost daily make horticulture a dominant choice in the study area. Some respondents also grew fruit on a household scale, albeit in limited quantities, such as papaya or bananas in their relatively large yards.

Urban farming goals

The implementation of urban farming in Parit Lalang Village, Pangkalpinang City, has various goals for the community. These goals are not only related to meeting daily needs but also relate to food security and the potential for creating new jobs for residents. Some of the goals achieved through urban farming activities in Parit Lalang Village, Pangkalpinang City, include:

1). Own Consumption

One of the primary goals of urban farming in Parit Lalang Village is for home consumption. Interviews revealed that most residents grow various types of vegetables and horticultural crops in their yards so that the harvest can be directly used by their families.

This activity is considered helpful in reducing dependence on the market, as the need for simple food items such as kale, mustard greens, spinach, tomatoes, and chilies can be met through home-grown produce. Thus, urban farming plays a crucial role in reducing household expenses, particularly for daily food needs. Furthermore, using the harvest for home consumption also

provides a sense of security and comfort for the community, as they know firsthand how the crops are grown and cared for.

The following are the results of an interview with respondent 4, who is an urban farming farmer in Parit Lalang Village, Pangkalpinang City on Wednesday, September 10, 2025.

"I grow vegetables in my yard, so I can sell them at the market and eat them myself. So, I don't have to go to the market to cook. It's quite helpful, and I save money on groceries too. …..".

2). Food security

In addition to domestic consumption, urban farming in Parit Lalang Village also aims to strengthen food security at the household and neighborhood levels. Interviews revealed that residents recognize that limited agricultural land in urban areas forces them to seek alternatives to maintain food security. Urban farming is a real solution that can be implemented simply, affordably, and sustainably.

Through urban farming, communities can ensure the availability of certain staple foods, especially fresh vegetables, at all times without having to rely entirely on market supply. This not only helps reduce vulnerability to food price fluctuations but also strengthens family resilience in emergencies, such as price increases or limited food distribution. Urban farming also contributes to food security in the surrounding area, as a portion of the harvest is often shared with neighbors or sold on a small scale. Thus, the benefits of urban farming extend beyond the immediate farmers to the surrounding community.

The following are the results of an interview with 15 respondents who are urban farming farmers in Pangkalpinang City on Thursday, September 11, 2025.

"If we plant our own crops, we know what fertilizers to use, and we don't use chemicals. So it's safer for the family.…..".

3). New Job Opportunities

In addition to self-consumption and supporting food security, urban farming in Parit Lalang Village also aims to create new jobs for the community. Interviews revealed that some residents view urban farming activities not only as a means of meeting household food needs but also as having economic potential that can be developed.

Several respondents stated that urban farming has the potential to become a source of additional income if managed more seriously. For example, by selling harvested vegetables or horticultural crops to local markets, providing plant seeds, or offering processed urban farming products. These activities can ultimately open up new business opportunities, both on a small and medium scale. Furthermore, urban farming is also considered to create alternative employment opportunities, especially for housewives, young people, or those without permanent jobs. With these opportunities, urban farming not only benefits the social and environmental aspects but can also play a role in improving the economy of communities in urban areas.

The following are the results of an interview with respondent 17 who is an urban farming farmer in Pangkalpinang City on Monday, September 15, 2025.

"At first, it was just for my own consumption, but over time, I made quite a lot of money. So I sold it to neighbors and coworkers, which was a nice addition to my grocery budget. …..".

Marketing Urban Farming Results

Based on interviews, most residents of Parit Lalang Village reported that urban farming produce is generally used for personal consumption, although a small portion of the harvest is marketed. This marketing strategy is simple and limited, tailored to the scale of household

production. The following is an interview with respondent 14, one of the urban farmers in Parit Lalang Village, Pangkalpinang City, on Monday, September 15, 2025.

"Usually, if I harvest a lot, I offer it to my neighbors. They're happy because the vegetables are fresh and freshly picked, and I usually post the harvest in a women's WhatsApp group. Sometimes, someone orders mustard greens, spinach, and bok choy. If there's a lot, I deliver it directly. If the harvest is larger than usual, I leave it at a shop near my house; I can use the proceeds to buy more seeds …..".

Respondents explained that urban farming products are typically marketed directly to neighbors, relatives, or the surrounding community. This system is considered practical because it requires no additional costs and maintains good social relations between residents. Furthermore, some farmers market their harvests on a small scale through local markets or nearby stalls to supplement their family income.

However, interviews also revealed that most farmers haven't prioritized marketing, due to their limited production scale and focus on meeting their own needs. Nevertheless, the community believes that urban farming has the potential to be developed into a productive economic enterprise if supported by training, market access, and business capital.

Support and constraints of urban farming

The implementation of urban farming in Parit Lalang Village has received support and faced various challenges. In terms of support, the greatest motivation comes from the community's own initiative, which seeks to utilize limited land to meet family food needs, coupled with solidarity among residents who share experiences and harvests. The government has also provided outreach and seed assistance, although this has been limited.

Meanwhile, urban farmers face a wide variety of challenges, ranging from limited land, inadequate fertilizer availability, and a lack of capital and basic equipment to develop modern techniques like hydroponics. Some respondents also assessed that government support remains insufficiently sustainable, leading to urban farming activities tending to operate independently without clear direction. This situation demonstrates that while urban farming has significant potential to support food security, its sustainability depends heavily on closer collaboration between the community and the government.

Urban Farming Development Strategy in Parit Lalang Village, Rangkui District, Pangkalpinang City

Rangkui District is a region that has shown quite rapid development in various sectors, one of which is urban agriculture as a more adaptive alternative. This is evident in the high enthusiasm and interest of the community in implementing and developing urban farming activities because they are considered to provide various benefits, both in terms of food security and the provision of green open spaces in urban areas. The high level of public interest in urban farming activities indicates that Rangkui District has good potential for further development in this sector, including hydroponic cultivation and Sustainable Food Yards (P2L), and is able to increase community participation in the surrounding area. Therefore, the method used to determine the development strategy is a SWOT analysis.

This method includes qualitative stages, which are explained based on actual conditions in the field. Afterward, a strategy formulation process is carried out as a basis for subsequent development. In applying a SWOT analysis to determine an urban farming development strategy in Rangkui District, the following steps can be taken:

Qualitative Stage

The qualitative stage was conducted by analyzing data obtained through observations, supported by information from informants or samples determined according to research criteria. This qualitative stage included an analysis of internal and external environmental factors influencing the development of urban farming in Rangkui District.

Table 2. Results of Qualitative Analysis of Urban Farming in Pangkalpinang City.

Internal	External
Strengths	*Opportunities*
1. Pangkalpinang, as the provincial capital with high food demand, has the potential for urban farming. 2. Modern agricultural facilities and infrastructure (hydroponics and vertical farming) are becoming increasingly popular and can be applied to limited land. 3. Urban farming can help communities obtain fresh food and create new business opportunities. 4. Public enthusiasm (young people and housewives) for trying productive businesses is quite high. 5. Local government support for food security programs and new job opportunities.	1. High dependence on food from outside the region opens up opportunities for substitution with local foods. 2. The market for fresh hydroponic vegetables is increasingly popular among urban communities. 3. Existence of regional and central government programs related to food security and reforestation. 4. Potential collaboration with universities, youth communities, MSMEs, and the private sector.
Weaknesses	*Threats*
1. Public knowledge of modern agricultural techniques is still limited. 2. Initial capital for urban farming installations is still relatively high. 3. Marketing of urban farming products is unorganized and still occurs on a household scale. 4. Some urban farming initiatives are sporadic and lack sustainability.	1. The risk of waste pollution (plastic, hydroponic nutrients) if not managed properly. 2. Pest and plant disease attacks that can reduce productivity. 3. The perception of some people that urban farming is less profitable. 4. Limited urban land competing with commercial development.
SO Strategy	ST Strategy
1. Utilize modern agricultural facilities and government support to reduce dependence on food from outside the region. 2. Involve youth, housewives, and MSMEs in market-based urban farming. 3. Make urban farming part of local food security programs and educational tourism.	1. Develop environmentally friendly agricultural techniques to control pests and maintain product quality. 2. Promote the economic benefits of urban farming to change negative public perceptions. 3. Implement organic waste management and recycling to maintain environmental sustainability.
WO Strategy	WT Strategy
1. Establish collaborations with universities and private institutions for outreach and technical assistance.	1. Develop a promotional program that highlights the social, economic, and environmental benefits of urban farming.

2. Raise capital support through cooperatives, CSR programs, or the government for urban farming installations.	2. Encourage the use of local, pest-resistant seeds to minimize losses.
3. Expand marketing through digital platforms and local markets.	3. Create pilot projects for sustainable urban farming in each sub-district.
4. Optimize abandoned land for urban farming activities.	4. Propose local policies that protect and support the sustainability of urban farming in the city.

Source: processed by researchers, 2025

The following is an explanation of strategies that can be implemented in the development of urban farming in Pangkalpinang City based on the results of a SWOT analysis:

1. Strategy SO (Strengths – Opportunities)

This strategy utilizes existing strengths to seize existing opportunities, including:

a. Utilizing modern agricultural facilities and local government support to reduce dependence on food supplies from outside the region.
b. Involving youth, housewives, and MSMEs in market-based urban farming to improve the community's economic well-being.
c. Making urban farming part of a local food security program and educational tourism in Pangkalpinang City.

2. ST Strategy (Strengths – Threats)

This strategy uses strengths to address threats, including:

a. Developing environmentally friendly agricultural techniques to combat pest attacks while maintaining product quality.
b. Socializing the economic benefits of urban farming to change the public's perception that urban farming is less profitable.
c. Implementing organic waste management and recycling systems to maintain urban environmental sustainability.

3. WO (Weaknesses – Opportunities) Strategy

This strategy seeks to minimize weaknesses by exploiting opportunities, namely:

a. Establishing collaborations with universities and private institutions to provide outreach and technical assistance to the community.
b. Raising capital support through cooperatives, corporate social responsibility programs, and government programs to assist with urban farming installations.
c. Expanding marketing networks for urban farming products through digital platforms and local markets.
d. Optimizing abandoned land in urban areas for productive urban farming activities.

4. WT (Weaknesses – Threats) Strategy

This strategy aims to minimize weaknesses and avoid threats, including:

a. Developing promotional programs that highlight the social, economic, and environmental benefits of urban farming.
b. Encouraging the use of local, pest-resistant seeds to reduce the risk of crop failure.
c. Establishing pilot projects for sustainable urban farming that can serve as concrete examples for the community.
d. Propose local policies that support the sustainability of urban farming so that it is not displaced by commercial development.

5. Conclusions

Based on the results of research conducted in Parit Lalang Village, Rangkui District, Pangkalpinang City, Bangka Belitung Islands Province, it can be concluded that urban farming activities play a significant role in supporting household food self-sufficiency, creating new jobs, and improving the welfare of urban communities.

Urban farming in this area is generally implemented on limited land, such as home gardens, using hydroponic and conventional techniques. The majority of residents choose hydroponic techniques because they are more efficient, easy to implement, and suitable for limited land conditions. The most commonly cultivated crops are horticultural vegetables such as kale, mustard greens, and spinach, the produce of which is used for home consumption or for small-scale sales.

The results of the study indicate that enthusiasm among the Parit Lalang community for urban farming is quite high, especially among those of working age and housewives. However, several obstacles remain, such as limited technical knowledge, business capital, and suboptimal government support.

Through a SWOT analysis, the following urban farming development strategies can be identified:

SO Strategy: Leveraging local strengths and government support to expand community- and market-based urban agriculture.

WO Strategy: Increase community capacity through training, technical assistance, and access to capital.

ST Strategy: Develop environmentally friendly agricultural techniques to address pest threats and maintain crop quality.

WT Strategy: Strengthen the promotion of the socio-economic benefits of urban farming and

establish sustainable pilot projects in each sub-district.

With these implementation strategies, it is hoped that urban farming activities in Parit Lalang Sub-district can develop optimally and sustainably, and make a real contribution to food security and economic improvement in Pangkalpinang City.

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