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Cultivating Desire: Malaysian Urban Citizens' Perspectives on Urban Farming for a Sustainable Future

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Abstract: Malaysia's growing dependence on food imports amidst rising domestic demand highlights the urgent need for sustainable interventions such as urban farming. This study explores the desire for urban farming among Malaysian urban citizens as a strategic response to food security and socio-economic challenges. A qualitative hybrid analytic approach, combining inductive and deductive thematic analysis, was employed to interpret primary data collected through semi-structured, open-ended interviews, guided by a pre-developed interview protocol. A total of 50 participants, aged above 20 years and representing diverse backgrounds including urban farmers, policymakers, researchers, entrepreneurs, environmental activists, and community members from major cities in Peninsular Malaysia, were interviewed. Secondary data sources were utilized for triangulation to enhance the validity of the findings. Theory-driven and data-driven codes were integrated using NVivo 14 software for comprehensive thematic analysis. Results indicate a strong underlying interest in urban farming, motivated by concerns over food security, environmental sustainability, and personal well-being. Nonetheless, barriers such as high start-up costs, space limitations, and low public awareness continue to hinder its widespread adoption. Participants identified government support, structured training programs, and technological advancements as key enablers for the successful mainstreaming of urban farming practices. The study concludes that with strategic collaboration among stakeholders, investment in public education, and the deployment of advanced technologies, urban farming can evolve into a vital component of Malaysia's urban development strategy, contributing significantly to food system resilience, economic diversification, and sustainable urban living.

Keywords: *Urban Farming and Food Security, Sustainable Development, Qualitative Approach (NVivo 14), Thematic Analysis*

1. Introduction

Malaysia, situated in Southeast Asia near the equator, experiences a predominantly tropical and subtropical climate, resulting in consistently warm temperatures throughout the year except during the monsoon season. This climate is well-suited for agriculture and the cultivation of a variety of crops. Despite this advantage, Malaysia is unable to achieve self-sufficiency in food production, as domestic output does not fully satisfy local demand. With steadily increasing consumption, the nation's food supply remains under pressure. While local producers contribute a range of products, these efforts are insufficient to close the gap between supply and demand. Consequently, Malaysia relies heavily on food imports from multiple countries, positioning itself as a net importer. In 2023, Malaysia spent RM 78.79 billion on imported food and beverages, up from RM 75.62 billion in the previous year (Dardak, 2020; DOSM 1, 2025; Siddharta, 2025; Faghiri, Zulkornain, Mohdshahwahid, & Krauss, Structural Analysis of Factors Affecting Dairy Cattle Industry Development in Malaysia, 2019). Malaysia has the potential for urban agriculture, which can support sustainability in cities by enhancing food production, adding greenery, and helping to reduce pollution (Rezai, Shamsudin, & Mohamed, 2016; Tang, Slimani, Al-Ghazal, Talukdar, & Maharjan, 2023). Providing communities with management skills, knowledge, and tools about urban farming will let them cultivate and sustain crop production independently.

This allows a low-income household to access and satisfy its nutritional needs while being a stable food source. As a result, household expenditures on food sources may be reduced, leaving them with extra expenses to spend elsewhere, such as education and household needs (Poulsen, McNab, Clayton, & Neff, 2015; Knößlsdorfer, Sellare, & Qaim, 2021; Salim, Hamid, Mahomed, & Hassan, 2024). Therefore, excess harvest can be utilized as a source of passive income in the community, potentially addressing the cycle of poverty to some extent. However, urban farming has limitations and cannot fully meet the consumption needs of Malaysian citizens. Conventional farming and industrial farming continue to play an essential role in food production and food security. Therefore, this study aims to investigate Malaysian urban citizens' perspectives on urban farming to provide data-driven insights that inform development policies and stakeholder planning.

Background of Study

The agricultural sector is essential for food security, economic development, and poverty reduction. Despite decades of policy support, challenges such as ineffective management and overreliance on foreign technology persist, contributing to food insecurity even among middle-income households (Stewart, et al., 2013; Dardak, 2022; Albab, 2022). Urban farming has become a global solution to address urban challenges such as food security, environmental sustainability, and the rising cost of living. In Malaysia, the concept of urban farming has yet to achieve widespread popularity and practical adoption despite its recognized benefits (Yapp, Jamil, Lee, Chooi, & Chen, 2025; Suhaidi & Adi Maimun, 2023). The success of urban farming initiatives depends on public support and active participation, since urban citizens are both potential farmers and primary consumers of the produce (Rabu & Muhammad, 2015; Albab, 2022). Public involvement is essential for urban farming projects to sustain and meet their objectives.

Despite growing awareness, participation rates among Malaysian urban residents remain low due to factors such as limited knowledge about urban farming techniques, lack of resources, space constraints, and insufficient institutional support (Ali & Vaiappuri, 2022; Khan, 2023). While many studies have evaluated technical aspects of urban agriculture, such as hydroponics and vertical farming, few have explored the motivational drivers and psychological barriers that influence urban dwellers' willingness to engage in these practices (Tiraieyari & Krauss, 2018; Yusuf, et al., 2024). Understanding the community's motivations, perceived benefits, and deterrents is crucial for crafting effective strategies and interventions to foster greater adoption of urban farming.

Another key consideration for sustainable urban farming management in Malaysia is aligning crop selection with the public's dietary preferences. National dietary studies indicate that the ten most consumed foods in Malaysia include white rice, sugar, green leafy vegetables, marine fish, sweetened condensed milk, powdered milk, bread, biscuits, traditional delicacies, and hen eggs (Institute for Public Health, 2014; Kasim, et al., 2018; Worldbank, 2025; Data Commons, 2025). Among these, green leafy vegetables, herbs, and summer crops suit urban farming and modern agricultural technologies like hydroponics and vertical farming (Melegrito, 2022; Science Daily, 2022). Identifying which agricultural products Malaysians prefer to produce and consume through urban farming initiatives ensures market relevance and economic viability. As Malaysia continues to urbanize rapidly, concerns over food supply sufficiency, reliance on imported foods, and environmental degradation have intensified. Urban agriculture offers a way to localize food production, reduce carbon emissions associated with food transportation, and promote healthier, self-sufficient urban communities (Suhaidi & Adi Maimun, 2023; Yapp, Jamil, Lee, Chooi, & Chen, 2025).

Based on the aforementioned information, there is a gap in understanding the actual desires of Malaysian urban citizens regarding urban agriculture. Therefore. This study aims to explore the aspirations of Malaysian urban residents regarding urban farming initiatives. It seeks to understand their perspectives on how these activities can contribute to enhancing food security, creating employment opportunities, promoting sustainable lifestyles, and fostering community development. By analyzing these desires, the study intends to offer comprehensive guidance and establish clear objectives for stakeholders. These insights will help stakeholders formulate effective strategies and development plans, ensuring that urban farming practices are aligned with the needs and expectations of urban communities in Malaysia. Such targeted planning and implementation have the potential to make urban agriculture a vital component of food security and socio-economic resilience in the country.

2. Research Methodology

This study uses a qualitative approach, analyzing non-numerical data from semi-structured interviews through thematic analysis and triangulation. These methods help identify patterns in participant responses by repeatedly reviewing the data and categorizing them into themes (Fereday & Cochrane, 2006). In this analysis, the latent variables are considered as the manifest variables to categorize the data. (Vaismoradi, Jones, Turunen, & Snelgrove, 2016). Therefore, the main results of the analysis are the eventually accepted themes (Green, 2007; Krauss, 2005; Vaismoradi, Jones, Turunen, & Snelgrove, 2016; Faghiri, Zulkornain, Mohdshahwahid, & Krauss, 2019).

Snowball purposive sampling is implemented for this qualitative approach. (Bryman, 2001; Latham, 2013). The sampling procedure started with the researcher arranging a meeting with the selected convenient participants and getting an appointment with them for the interview sessions in each city. Since snowball sampling applies in this study, the participants could introduce other interviewees in their area for further data collection. The sampling and data collection (interviews) were continued until achieving the mentioned three conditions (1- resource exhaustion; 2- regularities emergency; and 3- overextension) for stopping sampling in the qualitative study (Faghiri, Zulkornain, Mohdshahwahid, & Krauss, 2019). The 50 participants living in major cities in Peninsular Malaysia were chosen for the semi-structured open-ended interviews. A novel interview guide was developed based on the literature and observations, and it was continuously improved during the data collection based on participant responses. The final version of the qualitative interview guide for this study is in the appendix.

Thematic analysis is a common and widely used qualitative method for identifying, analyzing, and reporting themes (patterns) in a data set. Braun and Clarke's (2006), suggested a framework with 6 major phases for the thematic analysis: Familiarization with the data: all audio and video files were transferred into transcripts, and the secondary data, such as news and past studies' findings, were uploaded to the NVivo 14 software (64-bit software for Windows) on the same day of each data collection. Then the collected data was reviewed a few times by researchers to get familiar with it before creating the start list of the potential codes (Ritchie & Spencer, 2002). Next, the learning patterns theory was implemented to identify the relevant codes, and deductive prior templates of codes were created based on the research objective and design thinking approach (Abu Bakar & Ali, 2017; Fereday & Cochrane, 2006). Then, the reflexivity journal was prepared and fitted into the prior template, and the open coding methodology was implemented to generate the themes from the prior template (Gentles, Charles, Ploeg, & McKibbon, 2015). The interviews were conducted continuously until a clear pattern emerged that aligned with the research objective (Braun & Clarke, 2006).

The second phase involved data reduction and complication. There are three ways of data reduction being used in this part, namely: 1- Noticing the significant phenomena, 2- Gathering the examples for each phenomenon, and 3- Evaluating the phenomena to find and refine the differences, similarities, underlying structure, and patterns. (Seidel & Klaus, 1995). Following data reduction, decontextualizing and again contextualizing of the data was undertaken to simplify the data (Coffey & Paul, 1996). After finalizing the codes, the third phase is searching for themes. Hence, the initial theme lists among the codes were generated by using the data-driven inductive approach (Boyatzis, 1998). In the fourth phase, the initial themes generated from both deductive and inductive approaches were then reviewed for clarity and relevancy (Braun & Clarke, 2006). In the next phase, each theme was defined, named, and explained in a few sentences. The definition of the theme went beyond the surface meaning of the data, and the real meaning of the data was explained (Braun & Clarke, 2006). The researcher in the last phase again reviewed the themes and the most validated and relevant to the topic of the study, and the questions were chosen (Guest, MacQueen, & Namey, 2012).

The above procedure is also called the peer debriefing technique, whereby at each step of the study, rational decisions were carried out to provide a more reliable and valid final result (Abu Bakar & Ali, 2017). The peer debriefing technique has been implemented in research design, interview guidelines, sampling, data collection, and analysis. The peers checked and controlled the techniques, methods, and progress of the research step by step.

The NVivo 14 (64-bit software for Windows) and open coding methodology were implemented to create the themes. This software can handle both rich text and multimedia data, and it is suitable for both small and large types of data. It is very user-friendly and helps researchers to categorize and evaluate unstructured and non-numeric data. It is capable of sorting, arranging, and classifying the information. It can also test the relationship between the data and combine the evaluation with searching, relating, modeling, and sharing (Edhlund & McDougall, 2019). The different types of data are coded and categorized as free nodes by the software. Then, they are organized and assessed by a specific analytical model based on the free nodes and form the accident causes framework (tree). Therefore, the keywords of data inside the framework are considered as the categorization elements that are used on the tree nodes. Finally, they can be coded and classified for analysis (An, 2012; Hovden, Størseth, & Tinmannsvik, 2011).

3. Data Collection and Analysis

Data Collection Process

Semi-structured open-ended interviews with verbatim notes taken and voice recording were applied in this research. Additionally, the other data collections, such as literature review, observation, and so on, are used for validation of the results of the interview part. Initially, the researcher scheduled a meeting with the eligible participant, provided a brief overview of the study, and obtained consent to record the interview. Then he asked the participant to fill out the form and provide their profile and then started to ask the questions based on the interview guidelines. The information collected is analyzed on the same day to improve the guidelines for the next interview.

Profile of Participants

A total of 50 participants were interviewed for this study. The researcher aimed to gather a highly diverse group. The table below shows a snapshot of the participants involved in the qualitative approach and highlights their gender, race, age, education level, and city. In terms of gender distribution, the table reveals a balanced representation with 22 males (44%) and 28 females (56%) participants. Among the 50 participants, there were 33 Malay Bumi Putra, 11 Malaysian Chinese, and 6 Malaysian Indian, reflecting the actual race distribution in Malaysia. This representation is crucial to the robustness and inclusivity of our analysis.

Out of the 50 participants, we observe a diverse range of educational qualifications. There are 9 participants with High School certificates, 3 participants with Certificates in various skills, 4 with Diplomas, 33 with bachelor's degrees, and 1 participant with a master's degree. Additionally, the participants reside in various cities: 8 in Kuala Lumpur, 7 in Petaling Jaya, 7 in Johor Bahru, 6 in Shah Alam, 6 in Seremban, 6 in Ipoh, 5 in Subang Jaya, and 5 in Klang (Table 1).

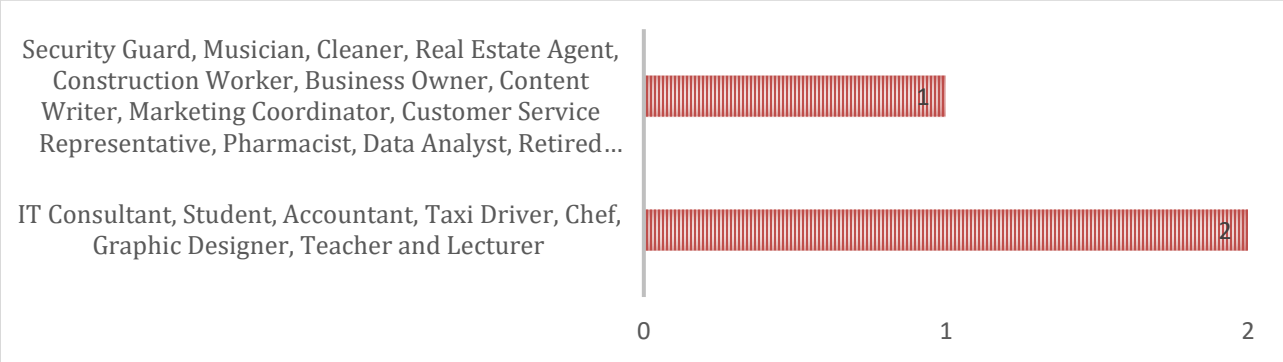
The participants' occupations were equally diverse, ranging from IT consultants, teachers, accountants, engineers, marketing executives, students, taxi drivers, and commercial farm operators (Figure 1). The participant profiles indicate that the study's participants come from various backgrounds, which contributes to the accuracy of the research results.

Table 1: The Qualitative Approach, Participants' Profile

VARIABLES	DESCRIPTIONS	FREQUENCIES	PERCENTAGES
Gender	Male	22	44
	Female	28	56
	Total	50	100
Race	Malay Bumi Putra	33	66
	Malaysian Chinese	11	22
	Malaysian Indian	6	12
	Total	50	100
Age	20-30	18	36
	30-40	16	32
	40-50	10	20
	>50	6	12
	Total	50	100
Education Level	High School	9	18
	Certificate	3	6
	Diploma	4	8
	Bachelor	33	66
	Master	1	2
	Total	50	100
City	Kuala Lumpur	8	16
	Petaling Jaya	7	14
	Johor Bahru	7	14
	Shah Alam	6	12
	Seremban	6	12

Ipoh	6	12
Subang Jaya	5	10
Klang	5	10
Total	50	100

Figure 1: The Qualitative Approach, Participants' Occupation



Participants Narratives

Understanding the perspectives of key stakeholders is essential in examining the development and sustainability of urban farming in Malaysia. This part presents the insights gathered from 50 participants who contributed to this qualitative study. These individuals, representing urban farmers, policymakers, researchers, entrepreneurs, environmental activists, and community members, provided valuable perspectives on the challenges, opportunities, and future potential of urban farming. To understand the participants' narratives and ideas over the interview questions, we categorized the answers based on the group of questions. Awareness and Interest in Urban Farming: Urban farmers are defined as any farming activities in the city, such as home growers, rooftop gardeners, commercial farm operators, and anyone who has some growing activities and hobbies. The participants provided their experiences with urban farming activities during the interview. A teacher (Siti, 30 years old) shared: "Urban farming means using small spaces in cities to grow food, like on rooftops or in community gardens. I helped plant vegetables in a community garden. I think it's a great way to get fresh produce, and it is a great way to save money on groceries."

Preferred Types of Plants and Vegetables: Regardless of the various benefits of urban farming and community farming in the residential areas, the main output should be the agricultural products, unless the activities are considered somehow meaningless. Therefore, we have asked the participants to recommend valuable insights regarding the types of plants they are interested in cultivating on urban farms, which can provide proper guidance for those who want to start the urban farming process in the future. An IT consultant (Ravi, 42 years old) explained: " I'd prefer to grow leafy greens like spinach and kale. Spinach and kale are very nutritious and easy to grow. "

Expected Benefits from Urban Farming (Non-monetary Benefits): Urban farming offers various benefits that are beyond producing agricultural products. Therefore, we asked the participants to share their points of view on the non-monetary benefits of urban farming. A Marketing executive (Aina, 25 years old) explained: "I expect to gain a sense of accomplishment and relaxation. Access to fresh and high-quality food is very important for me. I would value the constant supply because it ensures food security. Gaining knowledge and skills (about urban farming) is very important to me. I think urban farming can help in community gathering and building relationships."

Expected Benefits from Urban Farming (Monetary Benefits): However, urban farming provides plenty of benefits, such as producing agricultural products and different non-monetary benefits; it is still a financial activity and business, and it is important to know about the expected monetary benefits of urban farming from the participants. A Homemaker (Farah, 40 years old) explained: "I hope to save on food costs and sell excess

produce. I want to keep it (urban farm size) manageable and small-scale. I expect significant savings and modest earnings. (It is) Very important, keeping expenses low is key to success."

Desired Benefits at Different Levels: The expected benefits from urban farming can vary based on the level of farming size, technology, and type, such as commercial, community, or hobby farming. Therefore, we asked the participants to share their thoughts and ideas about this matter. An Entrepreneur (Faizal, 29 years old) explained: "I seek to foster a sense of accomplishment and self-sufficiency. Urban farming could reduce stormwater runoff and improve local water quality. Potential benefits include reducing food waste, promoting biodiversity, and mitigating food insecurity. Urban farming at scale could attract investment in sustainable infrastructure and green technologies."

Barriers and Challenges: Of course, there are various challenges and barriers to any activities, specifically urban farming, which is considered a new way of farming and involves many stakeholders, technical matters, and finance. The participants shared their points of view on the barriers and challenges of urban farming activities in Malaysia with us. A taxi driver (Ibrahim, 45 years old) explained: "Limited availability of skilled labor for urban agriculture, vocational training programs, and internship opportunities."

Factors Promoting Sustainable Urban Farming: Urban farming should be promoted like any other activity. There are various methods to promote urban farming, and identifying which ones are acceptable to citizens and encouraging them to engage in urban farming can be challenging. Participants shared their preferences for promotional methods for urban farming during the interviews. A Police Officer (Kumar, 39 years old) explained: "Government Support: Creating urban farming zones within cities with reduced regulations could facilitate easier entry into urban farming. Community Engagement: Organizing urban farming festivals where participants can showcase their produce could create excitement and interest in the community. Technological Innovations: The development of compact composting systems for urban farms could improve soil fertility and sustainability. Public Awareness: Partnering with local schools to incorporate urban farming into the curriculum could educate and inspire the younger generation. Economic Incentives: Offering financial incentives for businesses that source from urban farms could promote a sustainable local economy. Environmental Considerations: Highlighting urban farming's potential to reduce food deserts in cities could be a compelling environmental argument."

Future Prospects and Suggestions: The final part of the interview was to ask about their Future Prospects and Suggestions about urban farming in Malaysia. The participants provided plenty of valuable information in this part. A Civil Servant (Hadi, 31 years old) explained: "Urban farming in Malaysia is set for growth, particularly as cities seek innovative solutions to food security and environmental challenges. It could become a significant aspect of urban planning and community life. Developing urban farming cooperatives could facilitate knowledge sharing and resource pooling among local growers. Additionally, offering incentives for urban farms that focus on educational outreach could further boost participation."

4. Findings and Discussion

The findings reveal that while there is a moderate but growing desire for urban farming among Malaysian urban citizens, several barriers, such as high costs, space limitations, and lack of awareness, hinder its widespread adoption. However, participants acknowledge the benefits urban farming can bring to individuals, communities, and the broader economy. Government support, training programs, and technological advancements are seen as key enablers for making urban farming a viable and sustainable solution for Malaysian cities. Table 2 lists the summary of the thematic analysis findings. The summary of the participants' answers to the qualitative interviews is illustrated in Table 3.

Table 2: The list of thematic analysis themes and sub-themes

THEMS	
Theme 1	Awareness and Perception of Urban Farming
Sub-Themes 1	General vs. advanced understanding of urban farming The role of media and community exposure in shaping perceptions Differentiation between home gardening and commercial urban farming
Theme 2	**Motivations and Perceived Benefits of Urban Farming**
Sub-Themes 2	Personal Benefits: Health, stress reduction, and food accessibility Community-Level Benefits: Social cohesion and urban beautification Economic & Industrial Benefits: Reducing grocery costs, increasing job opportunities
Theme 3	**Barriers and Challenges Limiting Adoption**
Sub-Themes 3	Spatial Limitations: Lack of available land in urban centers Financial Constraints: High initial investment in farming infrastructure Regulatory Issues: Lack of policies supporting urban farming expansion Knowledge Gaps: Limited training programs and accessibility to technical know-how
Theme 4	**Factors Promoting Sustainable Urban Farming**
Sub-Themes 4	Government Support: Grants, tax incentives, and policy integration Education & Training: Workshops and technical assistance for beginners Community Engagement: Encouraging urban farming in residential areas
Theme 5	**Prospects and Expectations for Urban Farming**
Sub-Themes 5	Integration with Smart Cities: IoT and AI-driven urban farms Economic Growth Potential: Agritech startups and investment opportunities Sustainability & Food Security: Reducing reliance on food imports

Table 3: Summary of the qualitative approach interviews

QUESTION	ANSWER	COMMENTS
Awareness of Urban Farming	Basic Knowledge	Important: the majority had the basic knowledge.
	Participation	Important: the majority had some participation.
Interest and Desire for Urban Farming	Interested in participation	Yes, almost all were interested in participation.
	Willing to learn	Yes, almost all are interested to learn more about it.
	Personal value	Yes, almost all agreed on it.
Preferred Types of Plants and Vegetables	Plant type	Tomatoes, Basil, Spinach, kale, chilies, lemongrass, cucumber, bell peppers, mint, rosemary, carrots, radishes, lettuce, strawberries, green beans, cherry tomatoes, coriander, cabbage, parsley, Swiss chard, oregano, leafy greens, arugula, zucchini, herbs, thyme,
	Reason for plant type	Healthy source of food, and it reduces costs.
Expected Benefits from Urban Farming (Nonmonetary Benefits)	Nonmonetary benefits	Mental health, reduce stress, reduce environmental impact, enjoyable outdoor activity.
	Access to fresh	It is highly important for all participants.
	Constant food supply	Yes, because it ensures food security, reliable sources of food, and consistent access to nutritious and fresh food.
	Important to gain knowledge	Yes, learning new skills and gaining knowledge are important for the participants.
	Community gathering	Yes, almost all agree about it.
Expected Benefits from Urban Farming (Monetary Benefits)	Financial benefits	Only a few of the participants expected significant profit from urban farming, and the majority expected to have some cost reduction and a small side income.

	Business scale	Only a few of them were interested in urban farming on a business scale, and most of them preferred individual, family, community, and small scales only.
	Return on investment	Just a few of the participants considered the high return on investment, and the majority did not look at it as a serious business with a significant return on investment.
	Low cost	Low operation costs were important for all participants.
Desired Benefits at Different Levels	Individual Level	Stress relief, mental well-being, and mindfulness, Physical health improvement, learning new skills, Access to fresh, organic produce, environmental conservation, and enjoying physical activity through gardening.
	Neighborhood Level	Access to fresh, organic products promotes environmental sustainability, enhances local food security, encourages healthy lifestyles, improves green spaces, reduces grocery expenses, supports mental well-being, and promotes eco-friendly practices.
	Community Level	Strengthening community bonds through shared activities, improving access to fresh, local food for everyone, promoting environmental awareness and conservation, encouraging shared learning in sustainable agriculture, enhancing public health and well-being, supporting local food systems and reducing reliance on imports, fostering community self-sufficiency and resilience, and creating green spaces that benefit the entire community.

Table 3: Summary of the qualitative approach interviews (Continue)

QUESTION	ANSWER	COMMENTS
	Industrial Level	Reducing food transportation, increasing local food production, promoting sustainable agricultural practices, encouraging innovation in agricultural technology, supporting circular economies and waste reduction, creating green jobs and economic opportunities in urban areas.
Barriers and Challenges	Main challenges or barriers	Limited land and space, lack of knowledge and expertise, and high initial costs and investment
	Solution for the challenges	Using unused spaces such as rooftops, workshops, and training programs, financial support from the government, technical and technological support from experts, and government.
Factors Promoting Sustainable Urban Farming	Factors that can promote	Government Support, Community Engagement, Technological Innovations, Economic Incentives, Environmental Considerations.
	Future of it in Malaysia	Very promising and bright future
	Suggestions to promote	Integrate urban farming into schools and community projects, organize competitions, provide starter kits, and offer financial incentives, promote through media, public-private partnerships, and educational resources, create urban farming zones, community gardens, and public spaces, Support with grants, subsidies, and tax breaks, increase awareness through social media and public campaigns.

	Add on discussion	Urban farming is a vital component of sustainable urban development, offering significant benefits for food security, environmental sustainability, and community resilience. It should be integrated into urban planning, supported by government policies, and promoted through education and public awareness. By fostering collaboration between governments, businesses, and citizens, urban farming can transform urban spaces, enhance food systems, and contribute to greener, more self-sufficient cities. Its potential to address global challenges and improve local environments makes it an essential focus for future initiatives.

As mentioned in Table 3, the qualitative part identified a range of benefits that urban citizens desire from urban farming activities in Malaysia. Primary benefits include access to a healthy, high-quality source of food, which is particularly highlighted by the rising concerns about food safety in Malaysia. For example, Abdullah et al. (2021), highlighted that Malaysians valued urban farming because of providing fresh, high-quality, quality and healthy food sources. Additionally, Tay et al. (2024) studied sustainable agriculture and localized food systems through community-supported farming and found that Community engagement was one of the key benefits, and learning new skills was a significant motivator for farmers. According to Zhou et al. (2022), Urban farming promotes social connections, aligning with its focus on community building; however, the financial benefits, such as potential savings on grocery bills, were noted but generally considered secondary, which is consistent with the study's findings.

The insights from the qualitative approach are well-supported by recent research and highlight various primary desired benefits from urban farming, such as healthy sources of food, gaining knowledge and skills, community engagement, and secondary benefits such as financial benefits. However, the moderate interest displays a gap between awareness and action, possibly due to urbanization challenges and limited exposure to farming practices in Malaysia's large cities like Kuala Lumpur. The first three steps of the Design Thinking approach identified a need for customized urban farming solutions by focusing on a practical, integrated urban farming management module.

5. Research limitations and Conclusion

While this study offers important insights, it has several limitations, such as Sample Representativeness and Data Collection Challenges, which provide direction for future research.

The geographic scope of the study, which focuses solely on Peninsular Malaysia, may limit its representativeness. The qualitative component involved 50 urban citizens, all from Peninsular Malaysia. This focus likely excludes East Malaysia, such as Sabah and Sarawak, which have distinct urban dynamics and cultural contexts, potentially skewing the findings. The evidence suggests a need for larger samples to ensure that the findings accurately reflect the experiences of all urban dwellers, particularly considering Malaysia's diverse ethnic and socioeconomic landscape. For example, the study may not capture the perspectives of rural-urban migrants or urban populations in less developed areas, thereby limiting generalizability. Future studies should consider employing stratified sampling techniques to include East Malaysia and ensure representation from various urban areas and demographic segments, thereby enhancing the robustness of the findings.

The study mainly used self-reported data, risking social desirability bias. Participants may have inflated their interest in urban farming due to social expectations, especially in Malaysia's collectivist culture. This could overstate the actual demand for urban farming. Objective measures like behavioral observations or participation rates are needed to complement self-reported data. The cross-sectional design limits establish causality or tracking changes over time. Longitudinal studies could offer better insights into factors affecting urban farming adoption, such as economic conditions, policy changes, and seasonal variations.

Conclusion

This study likely confirms or extends existing theories and research around urban farming activities in

Malaysia. The findings were matched with the theory of Planned Behavior in the context of urban farming in Malaysia. Tiraieyari & Krauss (2018), predicted the youth participation in urban agriculture in Malaysia with the insights from the theory of planned behavior, and they showed that the attitude toward urban agriculture, subjective norms, career motives, and perceived barriers are the key factors for the students to step into urban farming activities in Malaysia. Moreover, the community urban farming offers healthy, high-quality, nutritious, and low-cost fresh source of food. It is considered a mechanism to generate extra income or reduce the living costs of households. However, one of the challenges is to encourage this activity among communities. Muhammad et al. (2021), studied the behavioral factors of farmers' intention to participate in community urban farming activities by using the theory of planned behavior and found that norm and publicity are the strongest factors, followed by farming facilities and costs, and attitude towards community urban farming.

The findings of this study offer actionable insights for stakeholders, focusing on public awareness and community programs, Government policies, technology and innovation, economic incentives, environmental benefits, and food security support. For example, local communities can organize workshops and training sessions to increase awareness and provide practical training in urban farming techniques, focusing on hydroponics and other space-efficient methods. Collaboration between NGOs, educational institutions, and local authorities can assist in spreading awareness and providing resources. Establishing community gardens or shared farming spaces can support social interaction and mutual assistance, which aligns with findings that emphasize community engagement as a key benefit. Schools and educational institutions can include urban farming in their curricula to educate younger generations, promoting long-term adoption. Additionally, the Malaysian government can devise policies to promote urban farming by relaxing zoning regulations to permit agricultural activities within urban areas and offering financial assistance or incentives to individuals or groups pursuing urban farming initiatives. For example, incorporating urban farming into national food security and sustainability strategies can maximize its potential benefits, thereby ensuring a conducive regulatory framework.

Moreover, it is essential to promote the advancement of space-efficient and resource-minimal technologies, such as hydroponics and vertical farming. Facilitating research through grants and collaborations with academic institutions and private enterprises can foster innovation. Showcasing successful implementations, such as community-operated hydroponic systems, can serve as an inspiration for others. Additionally, providing tax breaks, subsidies, or low-interest loans can help make urban farming financially feasible by addressing challenges such as high initial costs. Establishing markets or platforms for urban farmers to sell their produce ensures a stable income stream, improving economic feasibility.

Urban farming can reduce the urban heat island effect, improve air quality, and promote biodiversity. Integrating urban farming into environmental sustainability plans can enhance urban livability, especially in densely populated cities such as Kuala Lumpur. Furthermore, urban farming can increase local food production and reduce dependency on imports in Malaysia, which imports a significant portion of its food. It can contribute to food security by ensuring a stable local food supply during crises. Establishing targets for urban farming's contribution to national food production and monitoring progress can provide a measurable impact.

In conclusion, the study's implications are extensive, presenting a framework for stakeholders to establish a conducive environment for urban farming in Malaysia. By addressing theoretical gaps and offering practical solutions, it sets the foundation for a more sustainable and resilient urban future, improving food security, environmental health, and community cohesion.

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