International Journal of Innovation and Industrial Revolution
EISSN: 2637-0972
IJIREV
Volume 8 Issue 24 (March 2026) PP. 189-205

INTERNATIONAL JOURNAL OF INNOVATION AND INDUSTRIAL REVOLUTION (IJIREV)
www.gaexcellence.com/ijirev

GLOBAL ACADEMIC EXCELLENCE

BEHAVIOURAL DETERMINANTS OF URBAN FARMING ADOPTION IN MALAYSIA: A QUALITATIVE STUDY USING THE THEORY OF PLANNED BEHAVIOUR

Hamed Faghiri[1]*, Zulkornain Yusop[2]

[1]PhD Management, Putra Business School (PBS), Malaysia
pbs20104143@grad.putrabs.edu.my https://orcid.org/0000-0002-1143-9583
[2]Professor, Putra Business School (PBS), Malaysia
zolyus@gmail.com https://orcid.org/0000-0003-0578-3174
*Corresponding Author

Article Info:

Article history:
Received date: 19.11.2025
Revised date: 07.12.2025
Accepted date: 15.01.2026
Published date: 18.03.2026

To cite this document:

Faghiri, H., & Yusop, Z. (2026). Behavioural Determinants of Urban Farming Adoption in Malaysia: A Qualitative Study Using the Theory of Planned Behaviour. *International Journal of Innovation and Industrial Revolution, 8* (24), 189-205.

DOI: 10.35631/IJIREV.824012

Abstract:

This study examines the behavioural intentions of urban citizens in Malaysia towards urban farming. The research uses the Theory of Planned Behaviour (TPB) as a framework. A qualitative approach was applied, involving semi-structured interviews with 50 participants from major urban centres in Peninsular Malaysia. The study aims to understand how attitudes, subjective norms, and perceived behavioural control influence the intention to adopt urban farming. Thematic analysis, performed with NVivo 14, found that positive attitudes, such as valuing food freshness, health benefits, and environmental impact, strongly motivate people to participate. Subjective norms are shaped by family support, community inspiration, and the growing visibility of urban farming. Perceived behavioural control depends on factors like space, time, and access to knowledge and technology. Participants with higher self-efficacy and greater community involvement are more willing to engage in urban farming. The findings support the TPB framework as a useful tool for understanding behavioural intentions in Malaysia's urban farming context. They also offer a theoretical basis for developing effective awareness campaigns, training programmes, and policies to encourage sustainable urban agriculture.

Keyword:

Behavioural Intention, Food Security, Qualitative Thematic Analysis, Sustainable Agriculture, Malaysia, Theory of Planned Behaviour (TPB), Urban Agriculture, Urban Farming

International Journal of Innovation and Industrial Revolution
IJIREV
EISSN: 2637-0972
Volume 8 Issue 24 (March 2026) PP. 189-205

Introduction

Rapid urbanization, climate variability, and increasing food demand have intensified global concerns surrounding the stability and sustainability of food systems, particularly in developing and middle-income nations where population growth and environmental stress place greater pressure on agricultural resources (FAO, 2017; Rahman, Rana, & Khanam, 2022; Sansika, et al., 2023). Conventional agriculture is increasingly challenged by land scarcity, soil degradation, ecological disruption, and volatile supply chains, reinforcing the need for localized, resilient, and sustainable food production strategies (Haberman, et al., 2014; Verdoliva, Gwyn-Jones, Detheridge, & Robson, 2021). Urban agriculture has consequently emerged as an innovative approach capable of enhancing food access, supporting environmental stewardship, and strengthening community participation (Croft, Hallet, & Marshall, 2017; Rezai, Shamsudin, & Mohamed, 2016).

Malaysia is among the most rapidly urbanizing countries in Southeast Asia, with an estimated 80% of its population projected to reside in urban areas by 2030 (World Bank, 2021). This demographic shift has increased dependence on imported produce and heightened vulnerability to global market fluctuations, as reflected in low vegetable self-sufficiency ratios, rising prices, and inconsistent supply (CodeBlue, 2025; DOSM, 2025a). Nutritional gaps among urban households, including inadequate fruit and vegetable intake, have further underscored systemic fragilities (Sulaiman, Yeatman, Russell, & Law, 2021; Tan, Chen, Liew, & Kamarudin, 2023). These trends signal the urgent need for urban-based food solutions that improve affordability, accessibility, and dietary quality.

Despite its potential advantages, urban farming in Malaysia remains fragmented, underdeveloped, and marginally integrated into mainstream food systems (Hashim, Hussain, & Ismail, 2020; Mohamad & Hashim, 2022). Participation rates are low, management practices vary widely, and initiative continuity is often challenged by limited institutional support (Murdad, et al., 2022). Importantly, technical feasibility alone cannot explain this limited adoption; behavioural and perceptual factors also play a critical role. Ajzen's Theory of Planned Behaviour (1991) provides a useful framework to examine how attitudes, subjective norms, and perceived behavioural control shape citizens' willingness to engage in urban farming, with an aspect insufficiently addressed in Malaysian literature to date (Tiraieyari & Krauss, 2018; Yusuf, et al., 2024).

Understanding these behavioural determinants is timely, as Malaysia advances policies aligned with the Sustainable Development Goals and the National Agro-Food Policy 2.0 (United Nations, 2025a; Ministry of Agriculture, 2025). By examining public motivations, perceived benefits, and adoption barriers through qualitative inquiry, this study contributes empirical insights relevant to policymakers, community organizations, and urban planners. The findings

support the development of practical strategies to strengthen urban food ecosystems and promote long-term national resilience.

Literature Review

Urban farming has gained prominence as a multidimensional approach to address food insecurity, environmental pressure, and socio-economic vulnerability in rapidly urbanizing nations. Malaysia's accelerated urban population growth has intensified dependence on external food supply chains, increasing household exposure to price shocks and nutrition gaps. Urban agriculture offers improvements in local food availability, affordability, and nutritional access while reducing reliance on rural logistics and long-distance transportation (Chandra & Diehl, 2019; Akintuyi, 2024). Its proximity to consumers reduces spoilage, transportation costs, and storage losses, reinforcing its importance as a localized resilience strategy.

Rapid urbanization in Malaysia has expanded significantly, with an estimated 76% of the national population living in densely populated cities such as Kuala Lumpur and Selangor (Statista, 2025). This urban shift increases pressure on land and food systems. The country's vegetable self-sufficiency ratio (SSR) remains low at 45.4%, making Malaysia highly dependent on imports and vulnerable to external fluctuations (CodeBlue, 2025). Import dependency diminishes food security stability, exposing consumers to market volatility and currency risks, particularly among low-income groups (Abd Rahman, Yasid,, bin Alias, & Hamid, 2025). These conditions reinforce the urgency for supplementary urban production.

The Malaysian government has responded with structured agricultural strategies. National frameworks such as the National Agrofood Policy 2.0 (NAP 2.0) 2021–2030 and the National Food Security Policy Action Plan 2021–2025 promote technology adoption, city-based farming integration, and community garden expansion (Ministry of Agriculture, 2025). Complementary programs, including the Urban Community Agriculture initiative (UCF) and the All-Party Parliamentary Group Malaysia on Sustainable Development Goals (APPGM-SDG), have launched thousands of community projects, increasing public awareness and participatory interest (Chong, Nawawi, Ali, Ahmad, & Juhari, 2024). The Department of Agriculture Malaysia further targets 8,800 metric tons of urban agricultural output by 2025, underscoring institutional commitment to city-based food supply systems (DOSM, 2025b).

Urban agriculture also supports social equity. Lower-income households typically allocate higher proportions of income to food purchases; thus, localized production can substantially ease financial burden (Orsini, Womdim, Kahane, & Gianquinto, 2013). Urban farming can reduce waste, improve air quality, and diversify urban ecosystems, leading to ecological benefits such as reduced carbon emissions associated with transport (Steenkamp, Cilliers, Cilliers, & Lategan, 2021; Toromade, Soyombo, Kupa, & Ijomah, 2024). Community-based risk management has also been shown to strengthen accessibility during supply disruptions, highlighting the importance of structured stakeholder collaboration (Alam, Siwar, Wahid, & Talib, 2016; Sari, Muslim, & Ameliana, 2024).

Despite these advantages, multiple barriers hinder broad adoption. Previous studies emphasize insufficient technical knowledge, ambiguous regulations, cultural stigma, and high initial investment costs as limiting factors for adoption (Hussain, Yusoff, Tukiman, & Samah, 2019; Mohamad & Hashim, 2022). Conventional soil-based agriculture struggles with drainage issues, soil-borne disease, and pests, necessitating technological modernization to enhance

productivity (Khan, 2023; Limpamont, Kittipanya-ngam, Chindasombatcharoen, & Cavite, 2024). Therefore, urban farming requires not only physical space and capital but also specialized horticultural skills and community support systems.

Malaysia's urban agricultural ecosystem remains fragmented, often driven by short-term donor initiatives or hobby-level experimentation without long-term governance structures (Salim, et al., 2019; FAO, 2022). The absence of standardized operating models hampers scalability and replication across states. Consequently, urban farms frequently face discontinuity due to organizational and financial gaps rather than a lack of interest. Addressing these systemic constraints aligns with Malaysia's Twelfth Plan (2021–2025), which prioritizes smart agriculture, climate adaptation, and food sovereignty (RMKE12, 2025).

Behavioural perspectives play an equally critical role. Participation in urban farming is influenced not only by structural constraints but also by psychological readiness. Youth involvement in agricultural innovation is influenced by role models, experiential exposure, and the reframing of agriculture as a modern, technology-supported profession (Saili, Safari'ee, Saili, & Hamzah, 2018). Government support packages, providing financial incentives, technical guidance, and marketing advice with the aim of transforming the perception of agriculture into a viable enterprise (Dardak, Haimid, & Masdek, 2020).

To analyse adoption behaviour, this research employs the Theory of Planned Behaviour (TPB). TPB posits that attitudes toward a behaviour, subjective norms, and perceived behavioural control jointly predict behavioural intentions (Ajzen, 1991). This framework has been widely applied to sustainability contexts, including green purchasing and sustainable consumption behaviours, demonstrating strong explanatory strength (Han & Hyun, 2017; Yadav & Pathak, 2016). In Malaysia, however, TPB has been underutilized in urban farming studies, which primarily focus on technical or infrastructural aspects rather than psychological determinants (Tiraieyari & Krauss, 2018; Yusuf, et al., 2024).

Several researchers have emphasized that successful urban farming requires enabling ecosystems comprising education, space accessibility, financing, and policy support (Hussain, Yusoff, Tukiman, & Samah, 2019; Mohamad & Hashim, 2022). Without these enablers, the intention-to-behaviour gap widens, resulting in inconsistent engagement. The COVID-19 pandemic illustrated this gap clearly, with urban vegetable prices rising by 30–40% due to labour shortages and import disruptions (Tan, 2022). B40 households and student populations experienced disproportionately severe food insecurity (Sulaiman, Yeatman, Russell, & Law, 2021), highlighting the value of self-production capacity.

Urban farming also aligns with broader environmental, social, and governance (ESG) aspirations. It can reduce agricultural carbon emissions, support national climate adaptation strategies, and enable investors to participate in sustainability-aligned ventures (Xi, Zhang, Zhang, Lew, & Lam, 2021; Haque, Santos, & Chiang, 2021). Community empowerment through training and guidelines tailored to tropical climates further strengthens resilience and knowledge transfer.

Despite increasing attention, substantial gaps remain. There is still limited investigation into the degree of desire among urban citizens to adopt urban farming and the nuanced factors shaping that desire. Existing studies do not capture comprehensive motivational landscapes

across Malaysian urban populations. Additionally, no standardized model exists to guide sustainable implementation across city structures (Salim, et al., 2019; FAO, 2022).

Prior studies on urban farming in Malaysia have predominantly concentrated on technical, infrastructural, or policy dimensions, often employing quantitative approaches that overlook the nuanced motivations and psychological factors influencing citizen participation. There is a marked lack of in-depth qualitative research that systematically explores urban residents' intentions and decision-making processes through the lens of the Theory of Planned Behaviour (TPB). As a result, the literature fails to capture the complex interplay between attitudes, perceived norms, and behavioural control that underpins urban farming adoption, leaving significant gaps in understanding the drivers and barriers from the perspective of those most affected.

Methodology

This study employed a qualitative research design to explore Malaysian urban citizens' perceptions, motivations, and challenges related to urban farming. Qualitative inquiry enabled the capture of rich and contextualized insights that cannot be obtained through quantitative instruments alone. Guided by the Theory of Planned Behaviour (TPB), the investigation centred on how attitudes, subjective norms, and perceived behavioural control shape citizens' desire and willingness to participate in urban agriculture.

A purposive snowball sampling strategy was adopted to identify individuals who possessed relevant awareness and experiential knowledge. This approach is commonly applied when populations are dispersed and when the depth of perspective outweighs statistical representativeness (Bryman, 2001; Latham, 2013). Eligible participants were required to reside in major urban centres within Peninsular Malaysia, be at least 20 years of age, and be capable of articulating opinions concerning food production, agriculture, or urban sustainability. This threshold was selected because individuals above 20 typically transition into economic independence and decision-making roles (Elder, 1998; Twenge, 2017; Arnett, 2000). A total of 50 semi-structured interviews were conducted across Kuala Lumpur, Petaling Jaya, Shah Alam, Johor Bahru, Seremban, Ipoh, Subang Jaya, and Klang. Fieldwork continued until data saturation was reached, defined as the point where additional interviews produced no substantially new insights (Baker & Edwards, 2012). This number was found appropriate based on the researcher's experience during fieldwork and by referring to Creswell and Poth (2018), who suggest that qualitative exploratory studies usually include between 30 to 50 participants when dealing with diverse populations. The sample size provided a good balance between diversity and manageability, allowing the researcher to collect rich and meaningful information while maintaining analytical depth.

Semi-structured, open-ended interviews were used as the primary data collection method, providing flexibility while maintaining thematic focus (Noble & Smith, 2015). Interviews were conducted in accessible public locations, and informed consent was obtained before the sessions. Participants were assured of confidentiality and their right to withdraw at any time. Voice recordings and verbatim notetaking were employed to enhance accuracy, reduce interviewer burden, and sustain conversational flow (Levitt, et al., 2018). Supplementary materials, including news reports, documents, and previous studies, were also reviewed to support triangulation and contextual interpretation.

International Journal of Innovation and Industrial Revolution
IJIREV
EISSN: 2637-0972
Volume 8 Issue 24 (March 2026) PP. 189-205

Interview guidelines were developed using insights from existing studies on Malaysian food insecurity, urban agriculture literature, regional research keywords, and constructs derived from TPB. The guideline ensured consistency, comprehensive thematic coverage, and manageable interview duration (Sandy & Dumay, 2011). Early interviews prompted iterative refinement of questions, allowing emergent concepts to be incorporated into subsequent sessions.

Qualitative data were analysed using thematic analysis guided by the six-phase framework proposed by Braun and Clarke (2006). Interview audio files were transcribed verbatim and repeatedly reviewed to achieve familiarization. A hybrid inductive–deductive coding approach was used: deductive codes were informed by TPB constructs, while inductive codes emerged organically from participant narratives. Open coding identified meaningful units of information, which were subsequently collated into broader categories through iterative comparison (Gentles, Charles, Ploeg, & McKibbon, 2015). Themes were reviewed, refined, and clearly defined with attention to conceptual meaning rather than surface content (Vaismoradi, Jones, Turunen, & Snelgrove, 2016).

NVivo 14 (64-bit Windows) was utilized to support systematic organization, clustering, and comparison of qualitative data. The reason to use this software is because it accommodates rich-text and multimedia formats and enables the visualization of relationships across coded nodes, strengthening analytical rigor and enhancing traceability of thematic development (Edhlund & McDougall, 2019; An, 2012).

Multiple strategies were employed to enhance the trustworthiness of findings. Credibility was strengthened through peer debriefing, during which colleagues reviewed methodological decisions and thematic interpretation to minimize bias (Abu Bakar & Ali, 2017). Triangulation was achieved by correlating findings with literature, secondary data, and relevant past studies, increasing reliability and consistency (Hays & McKibben, 2021). Dependability was supported by maintaining an audit trail of coding decisions, analytical notes, and thematic revisions, allowing external scrutiny of research logic. Confirmability was addressed through reflexive journaling to document the researcher's assumptions and mitigate interpretive bias. Transferability was enhanced by recruiting participants from multiple urban regions with diverse socio-demographic backgrounds, increasing the applicability of insights to other Malaysian urban contexts.

Overall, this methodology provided a robust foundation for identifying behavioural determinants of urban farming adoption. Through purposive sampling, semi-structured interviews, NVivo-assisted thematic analysis, and trustworthiness safeguards, the qualitative procedures captured nuanced perspectives necessary for understanding the complexity of citizen participation in urban agriculture within Malaysia’s evolving urban environment.

Findings

This section presents the qualitative findings derived from semi-structured interviews with 50 urban citizens residing across major cities in Peninsular Malaysia. Using a hybrid inductive–deductive thematic approach supported by NVivo 14, several interconnected themes were identified. Consistent with the Theory of Planned Behavior (TPB), the thematic structure emphasizes Attitudes, Subjective Norms, and Perceived Behavioral Control. Additional themes

relating to awareness, interest, monetary and non-monetary benefits, and perceived barriers further enrich the behavioural interpretation.

Attitudes Toward Urban Farming

Attitudes captured participants' evaluative judgments regarding the desirability of urban farming. The majority expressed favorable sentiment, primarily linked to concerns over food quality, freshness, affordability, and environmental impact. Participants believed that homegrown vegetables were safer and tastier due to reduced chemical exposure. Concerns about pesticide residues in supermarkets produce strengthened positive attitudes toward domestic cultivation:

"If I grow it myself, at least I know what goes into it. Supermarket veggies sometimes don't taste fresh anymore." (Participant 12)
Environmental considerations also emerged. Participants perceived urban farming as a meaningful contribution toward urban greening and climate mitigation:

"Cities are so hot now. Having greener around us should be part of the solution." (Participant 28)
Increased food prices served as a practical motivator:
"The price of salad leaves went up so much lately. It makes sense to grow some at home." (Participant 9)
Collectively, attitudes emerged as a strong positive determinant of behavioral intention, aligning closely with TPB assumptions.

Subjective Norms

Subjective norms reflect social influences, cultural expectations, and perceived approval from peers, family, and community groups. Many participants reported having seen friends and relatives share urban farming activities on social media, which normalized participation and encouraged imitation:

"I see many people posting their homegrown lettuce on Instagram. It encourages me to try it." (Participant 36)
Community gardens also functioned as social cues, demonstrating feasibility and fostering curiosity:
"Near my apartment, residents started a small garden. When I saw others doing it, I thought—why not?" (Participant 22)
Family encouragement, particularly from older generations familiar with traditional home gardening, further reinforced the intention:

"My parents always tell me to plant something at home. They think it's better than buying everything." (Participant 7)
These findings reflect Malaysia's collectivist cultural tendencies, where social endorsement plays a meaningful role in shaping behavior.

International Journal of Innovation and Industrial Revolution
IJIREV
EISSN: 2637-0972
Volume 8 Issue 24 (March 2026) PP. 189-205

Perceived Behavioural Control

Perceived behavioural control reflected participants' assessment of their ability to adopt and sustain urban farming practices. Several practical constraints were consistently identified. Space limitations were the most frequently mentioned barrier, especially among apartment dwellers:

"I live in an apartment. Where am I supposed to plant anything?" (Participant 4)
Time constraints associated with work commitments also undermined willingness:
"My job hours are irregular. I worry that my plants will die when I'm not home." (Participant 31)
Limited technical knowledge created uncertainty and fear of failure:
"I don't know how to start. It feels confusing, especially with pests." (Participant 14)
However, participants expressed confidence when technology was involved. Automated systems, particularly those offering monitoring or alerts, improved perceived feasibility:
"If there's an automated system with alerts, I'd be happy to try." (Participant 43)

These insights highlight the role of perceived capacity, a key construct of TPB, in shaping adoption intention.

Awareness

General awareness of national food security challenges emerged as a relevant motivator. Participants expressed growing concern about Malaysia's low vegetable self-sufficiency ratio, import dependency, and vulnerability to supply disruptions:
"We import too much food. One day, if the supply stops, we're in trouble." (Participant 3)
Media narratives and pandemic-era shortages amplified this awareness, further reinforcing interest in self-production.

Interest and Lifestyle Appeal

Urban farming was also described as a lifestyle choice that supports personal well-being and aligns with growing interest in sustainable living. Participants frequently associated gardening activities with mental relaxation, stress reduction, and emotional reward:
"When I see the plants grow, it reduces stress. It's therapeutic." (Participant 19)
Thus, interest extended beyond food production to holistic wellness.

Monetary Benefits

While financial motivation was not the dominant driver, some participants recognized potential economic value in cultivating additional produce for small-scale sales or household cost reduction:

"Maybe I can sell extra herbs to neighbors. Healthy food is in demand." (Participant 44)
This was particularly appealing among younger respondents and flexible gig-economy workers seeking supplementary income streams.

International Journal of Innovation and Industrial Revolution
IJIREV
EISSN: 2637-0972
Volume 8 Issue 24 (March 2026) PP. 189-205

Non-Monetary Benefits

Non-monetary benefits emerged as one of the most influential predictors of willingness to adopt urban farming. Participants highlighted:

- Stress relief,
- Access to healthier meals,
- Parenting and educational values,
- Environmental responsibility, and
- Community support.

"Doing this with my kids helps them learn where food really comes from." (Participant 2)
These intrinsic rewards often outweighed financial considerations.

Barriers and Challenges

Despite strong interest, several recurring barriers emerged:

- Limited space,
- Lack of knowledge,
- Perceived complexity,
- Heat and humidity management,
- Pest control difficulties, and
- High upfront technology costs.

As one participant noted:
"Hydroponics setups are expensive at the beginning. Not everyone can afford that." (Participant 41)
Although interest is rising, many believe such challenges could impede adoption without institutional support.

Emerging Theme: Technology Acceptance

Technology acceptance surfaced as an important new theme. Participants expressed enthusiasm for sensor-driven systems, mobile applications, and automated irrigation, provided costs are reasonable and support is available:
"Something smart and easy, I would join immediately." (Participant 27)
This aligns with Malaysia's increasing orientation toward smart-city innovation and digital sustainability.

Overall Patterns

Three overarching patterns emerged across the dataset:

- **Desire for participation is increasing**, largely driven by sustainability awareness, rising food costs, and aspirations for healthier living.
- **Non-monetary benefits are more influential** than financial incentives, indicating alignment with lifestyle values rather than profit motives.
- **Barriers are predominantly practical**, not motivational, suggesting that policy, technology, and advisory interventions have strong potential to improve adoption at scale.

International Journal of Innovation and Industrial Revolution
EISSN: 2637-0972 IJIREV
Volume 8 Issue 24 (March 2026) PP. 189-205

The findings reveal growing interest in urban farming among Malaysian urban citizens, driven by positive attitudes toward freshness, health, and environmental benefits. Social influence reinforces intention, while perceived behavioral control, particularly space, time, and knowledge, modulates feasibility. These qualitative insights provide a foundation for designing targeted interventions and inform the development of sustainable urban farming management strategies tailored to Malaysia's evolving urban landscape.

Discussion

The qualitative findings of this study provide important insights into the behavioural determinants influencing Malaysian urban citizens' intention to adopt urban farming. Interpreted through the lens of the Theory of Planned Behaviour (TPB), the results demonstrate how attitudes, subjective norms, and perceived behavioural control collectively shape willingness to participate in urban agriculture. These findings align with existing scholarship while expanding current understanding within Malaysia's evolving food security landscape.

Positive attitudes toward urban farming emerged as one of the strongest predictors of behavioural intention. Participants associated homegrown produce with improved freshness, reduced exposure to chemicals, and greater confidence in food quality. This aligns with previous research highlighting the nutritional benefits of localized agriculture and reduced reliance on long supply chains (Stewart, et al., 2013; Poulsen, McNab, Clayton, & Neff, 2015). The recent escalation in food prices further enhanced the appeal of household cultivation, reflecting broader concerns about affordability and import dependency. Such findings support the TPB proposition that favourable attitudes significantly strengthen intention (Ajzen, 1991). Subjective norms also played a meaningful role, particularly within Malaysia's collectivist sociocultural context. Participants described being motivated by friends' social media posts, neighbourhood community gardens, and family encouragement. These sources of influence served as social proof that urban farming is both desirable and attainable, consistent with studies emphasizing the role of group perception and community expectations in determining sustainability behaviours (Rabu & Muhammad, 2015; Albab, 2025). Interestingly, intergenerational knowledge transfer, especially from parents familiar with gardening, provided emotional validation and reinforced environmental responsibility.

Despite strong attitudinal and social support, perceived behavioural control moderated feasibility. Participants frequently described space limitations, irregular work schedules, and uncertainty surrounding technical skills. These barriers are consistent with evidence indicating that Malaysian participation in urban agriculture remains constrained by resource scarcity and insufficient institutional support (Ali & Vaiappuri, 2022a; Khan, 2023; Yusuf, et al., 2024). Perceived difficulty in managing pests and the challenges of tropical humidity further diminished self-efficacy. However, participants suggested that simplified, automated, or guided systems would enhance confidence, underscoring the potential role of technological integration in reducing operational complexity within urban farming models.

Beyond TPB constructs, additional themes surfaced that offer deeper interpretive insight. Awareness of Malaysia's low vegetable self-sufficiency ratio and dependency on imported food heightened the motivation to contribute to national resilience. Participants framed urban farming not simply as a hobby but as a responsible civic action, aligning with government priorities outlined in national food security strategies (Dardak, Haimid, & Masdek, 2020;

DOSM, 2025a). As awareness increases, urban farming benefits may gain broader acceptance within community-based sustainability movements.

Non-monetary benefits emerged as particularly influential. Participants consistently associated urban farming with stress reduction, family bonding, educational value for children, and overall well-being. These findings support research demonstrating the psychosocial impact of household agriculture, which strengthens community cohesion and promotes healthier lifestyles (Steenkamp, Cilliers, Cilliers, & Lategan, 2021; Toromade, Soyombo, Kupa, & Ijomah, 2024). Such intrinsic motivations were found to outweigh purely economic incentives, suggesting that policy interventions emphasizing health and community engagement may be more effective than profit-driven messaging.

Although financial incentives were secondary, monetary interest was still relevant among younger respondents and flexible-income workers, who viewed home cultivation as a potential supplementary revenue stream. This is consistent with initiatives encouraging youth agro-entrepreneurship and innovation (Saili, Safari'ee, Saili, & Hamzah, 2018). However, high initial investment, especially for hydroponic and vertical farming systems, acted as a deterrent, indicating the need for financing models such as grants, subsidies, or rental schemes.

Barriers identified in this study were predominantly structural rather than motivational. Participants described fragmented regulatory support, high setup costs, and limited access to expert guidance. These issues align with the literature, noting that urban agriculture in Malaysia remains insufficiently integrated into broader urban planning systems (Hashim, Hussain, & Ismail, 2020; Murdad, et al., 2022). Importantly, the findings suggest that many citizens are already motivated; they simply lack enabling mechanisms. Addressing these constraints could rapidly translate latent interest into sustained participation.

The results of this study empirically reaffirm TPB's suitability for examining urban farming adoption. Favourable attitudes, supportive subjective norms, and manageable perceived behavioural control collectively enhance intention. However, the findings also extend TPB by revealing interaction effects not explicitly captured within the original model. For example, awareness amplifies attitudes, technological assistance improves perceived control, and community garden visibility reinforces social norms. These relationships suggest the value of integrated interventions that combine smart farming technologies, community training ecosystems, and accessible infrastructure.

Urban farming also aligns closely with Malaysia's national food security priorities under the National Agro-Food Policy 2.0 (NAP 2.0) and the Sustainable Development Goals (United Nations, 2025a; Ministry of Agriculture, 2025). Participants echoed concerns highlighted in national reports, including low vegetable self-sufficiency ratios, price volatility, and nutritional disparities. This indicates increasing public awareness of systemic vulnerabilities and a willingness to mitigate them through localized participation.

A notable contradiction, however, emerged between intention and action. While the desire to participate is high, actual behavioural engagement remains limited. Participants often expressed uncertainty about how to begin, reflecting a persistent intention-behavior gap frequently recognized within TPB literature. Addressing this gap requires targeted interventions such as structured training programs, advisory support, accessible starter kits, and community demonstration farms.

Overall, five key interpretive insights emerged from the qualitative data: (1) strong attitudinal positivity indicates readiness for expansion; (2) social influence is increasing due to community visibility; (3) perceived behavioural control remains the principal bottleneck; (4) intrinsic benefits outweigh extrinsic ones; and (5) technology and education have strong potential to unlock adoption at scale.

Therefore, the findings demonstrate that Malaysian urban citizens exhibit an increasing desire and willingness to engage in urban farming. Positive attitudes and supportive social environments strongly encourage participation, while practical constraints limit behavioural feasibility. Guided by TPB, the study suggests that targeted interventions addressing knowledge gaps, space limitations, cost barriers, and technological accessibility can transform interest into consistent practice. These insights are crucial for designing integrated urban farming management strategies that contribute to food security, community resilience, and environmental sustainability within Malaysia's rapidly urbanizing landscape.

Conclusion

This study provides a nuanced understanding of the behavioural determinants influencing Malaysian urban citizens' willingness to adopt urban farming. Guided by the Theory of Planned Behaviour, the findings reveal that positive attitudes toward food freshness, health benefits, and environmental contribution serve as strong motivational drivers. Social influences that were reinforced through peer visibility, family encouragement, and community engagement further strengthen intention, reflecting Malaysia's collectivist cultural context. However, perceived behavioural control remains the principal barrier, with space limitations, time constraints, technical uncertainty, and initial investment costs reducing feasibility.

Non-monetary benefits, including stress reduction, family bonding, and educational value, emerged as some of the most compelling incentives, often outweighing financial considerations. Importantly, these barriers were found to be structural rather than motivational, suggesting that citizens are ready to participate if provided with supportive infrastructure, training, policy intervention, and accessible technology. As awareness of food security vulnerabilities increases, urban farming offers a practical, sustainable pathway to enhance community resilience, dietary quality, and environmental stewardship.

Overall, the results of this study underscore the potential for urban farming to transition from a niche lifestyle activity into a strategic component of Malaysia's urban food system. By addressing practical constraints and strengthening enabling mechanisms, policymakers and stakeholders can harness growing public interest and contribute meaningfully to national sustainability goals.

Acknowledgements: The authors would like to express their sincere gratitude to Putra Business School for providing the necessary resources and support throughout the course of this research. Special appreciation is extended to colleagues and peers who contributed valuable insights and constructive feedback, which greatly enhanced the quality of this paper.

Funding Statement:	No Funding
Conflict of Interest Statement:	The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the International Journal of Innovation and Industrial Revolution (IJIREV).
Ethics Statement:	This study did not involve any human participants, animals, or sensitive data requiring ethical approval. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.
Author Contribution Statement:	All authors contributed significantly to the development of this manuscript. Hamed Faghiri was responsible for the conceptualization, methodology, and overall supervision of the study as well as handled data collection, analysis, and interpretation of results. Zulkornain Yusop contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.

International Journal of Innovation and Industrial Revolution
IJIREV
EISSN: 2637-0972
Volume 8 Issue 24 (March 2026) PP. 189-205

References

Abd Rahman, A. A., Y. A., bin Alias, M. S., & Hamid, N. F. (2025). Literature Review on Malaysia National Food Security: Challenge And Strategy in Meeting Population Rise. Journal of Ecohumanism, 4(1), 1876-1893.

Abu Bakar, Z., & Ali, R. (2017). Regulation of Learning: From the Perspective of Male Students in Pakistan. The Qualitative Report, 22, 8, 2196–2205.

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211.

Akintuyi, O. B. (2024). Vertical farming in urban environments: a review of architectural integration and food security. Open Access Research Journal of Biology and Pharmacy, 10(2), 114-126.

Alam, M., Siwar, C., Wahid, A., & Talib, B. (2016). Food Security and Low-Income Households in the Malaysian East Coast Economic Region: An Empirical Analysis. Review of Urban & Regional Development Studies, 2-15.

Albab, A. (2 May, 2025). 20,000 Urban Garden Communities By 2020. Retrieved from My News Hub: https://www.mynewshub.tv/utama-sensasi/20000-komuniti-kebun-bandar-menjelang-2020/

Ali, M., & Vaiappuri, S. (2022a). A study on the benefits and intention to implement urban agriculture among urban dwellers: Case study in Southern Region of Malaysia. IOP Conference Series: Earth and Environmental Science, 1114, 012045.

An, Y. (2012). Analysis of qualitative data analysis software NVivo computer. Chin Technol Inf 5, 66–67.

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. American Psychologist, 55 (5), 469–480.

Baker, S. E., & Edwards, R. (2012). How many qualitative interviews is enough. Southampton: NCRM.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3, 2, 77-101.

Bryman, A. (2001). Social Research Methods. Oxford: Oxford University Press.

Chandra, A., & Diehl, J. (2019). Urban agriculture, food security, and development policies in Jakarta: A case study of farming communities at Kalideres – Cengkareng district, West Jakarta. Land Use Policy, 1-12.

Chong, N. O., Nawawi, F. N., Ali, M. M., Ahmad, M. S., & Juhari, S. K. (2024). Urban agriculture activities scenario in relation to food security in Malaysia. Planning Malaysia, 22(31).

CodeBlue. (2 Spetember, 2025). Urban Farming Taking Root In Malaysia. Retrieved from CodeBlue: https://codeblue.galencentre.org/2022/03/31/urban-farming-taking-root-in-malaysia/

Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (4th ed.). SAGE Publications.

Croft, M., Hallet, S., & Marshall, M. (2017). Hydroponic production of vegetable Amaranth (Amaranthus cruentus) for improving nutritional security and economic viability in Kenya. Renewable agriculture and food systems, 552-561.

Dardak, R., Haimid, M., & Masdek, N. (2020). Youth and Agrotechnopreneurship Ecosystem in Malaysia. Policy Articles | Agricultural human resources development, Agribusiness, 1-9.

DOSM. (1 April, 2025a). Supply and utilization account selected agriculture commodities, Malaysia 2019-2023. Retrieved from Department of Statistic Malaysia Official Portal:

https://www.dosm.gov.my/portal-main/release-content/supply-and-utilization-accounts-selected-agricultural-commodities-malaysia-2019-2023-
DOSM. (1 4, 2025b). Selected Agriculture Indicators, Malaysia, 2023. Retrieved from Department of Statistics Malaysia Official Portal: https://www.dosm.gov.my/portal-main/release-content/selected-agricultural-indicators-malaysia-
Edhlund, B., & McDougall, A. (2019). NVivo 12 essentials. Lulu.
Elder, G. H. (1998). The life course as developmental theory. Child Development, 69 (1), 1–12.
FAO. (2017). The future of food and agriculture–Trends and challenges. Rome: FAO.
FAO. (2022). The State of Food Security and Nutrition in the World. Food and Agriculture Organization of the United Nations.
Gentles, S. J., Charles, C., Ploeg, J., & McKibbon, K. (2015). Sampling in qualitative research: Insights from an overview of the methods literature. The Qualitative Report, 20 (11), 1772-1789.
Haberman, D., Gillies, L., Canter, A., Rinner, V., Pancrazi, L., & Martellozzo, F. (2014). The Potential of Urban Agriculture in Montréal: A Quantitative Assessment. ISPRS International Journal of Geo-Information, 3(3, 1101-1117.
Han, H., & Hyun, S. S. (2017). Drivers of customer decision to visit an environmentally responsible museum: Merging the theory of planned behavior and norm activation theory. Journal of Travel & Tourism Marketing, 34(9), 1155–1169.
Haque, M. N., Santos, J. R., & Chiang, Y. H. (2021). A review of urban agriculture as a sustainable solution to food insecurity in developing countries. Journal of Cleaner Production, 292, 125687.
Hashim, N. H., Hussain, N. H., & Ismail, A. (2020). Green Roof Concept Analysis: A comparative Study of Urban Farming Practice in Cities. Malaysian Journal of Sustainable Environment, 7 (1), 115-132.
Hays, D. G., & McKibben, W. B. (2021). Promoting rigorous research: Generalizability and qualitative research. Journal of Counseling & Development, 99(2), 178-188.
Hussain, M., Yusoff, N., Tukiman, I., & Samah, M. (2019). Community perception and participation of urban farming activities. International journal of recent technology and engineering, 341-345.
Khan. (2023). Adoption of smart urban farming to enhance social and economic well-being of the elderly in Malaysia. Food Research, 7(5), 114–118.
Latham, J. R. (2013). A framework for leading the transformation to performance excellence part I: CEO perspectives on forces, facilitators, and strategic leadership systems. Quality Management Journal, 20-22.
Levitt, H. M., Bamberg, M., Creswell, J. W., Frost, D. M., Josselson, R., & Suárez-Orozco, C. (2018). Journal article reporting standards for qualitative primary, qualitative meta-analytic, and mixed methods research in psychology: The APA Publications and Communications Board task force report. American Psychologist, 73(1), 26-46.
Limpamont, A., Kittipanya-ngam, P., Chindasombatcharoen, N., & Cavite, H. J. (2024). Towards agri-food industry sustainability: Addressing agricultural technology adoption challenges through innovation. Business Strategy and the Environment, 33(7), 735.
Ministry of Agriculture. (1 April, 2025). National Food Policy. Retrieved from KPKM: https://www.kpkm.gov.my/en/agro-food-policy/national-agrofood-policy
Mohamad, M., & Hashim, S. A. (2022). Urban farming and its contribution to urban food security in Malaysia: Opportunities and challenges. International Journal of Environmental and Rural Development, 13(2), 194–201.

Murdad, R., Muhiddin, M., Osman, W. H., Tajidin, N. E., Haida, Z., Awang, A., & Jalloh, M. B. (2022). Ensuring Urban Food Security in Malaysia during the COVID-19 Pandemic—Is Urban Farming the Answer? A Review. Sustainability, 14(7), 4155.

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. Evidence-based nursing, 18(2), 34-35.

Orsini, F., Womdim, R., Kahane, R., & Gianquinto, G. (2013). Urban agriculture in the developing world: A review. Agronomy for Sustainable Development, 695-720.

Poulsen, M., McNab, P., Clayton, M., & Neff, R. (2015). A systematic review of urban agriculture and food security impacts in low-income countries. Food Policy, 131-146.

Rabu, M., & Muhammad, R. (2015). The potential of urban farming technology in Malaysia policy intervention. Economic and Social Science Research Centre, Malaysian Agricultural Research and Development Institute (MARDI), 1-6.

Rahman, M. M., Rana, R., & Khanam, R. (2022). Determinants of life expectancy in most polluted countries: Exploring the effect of environmental degradation. Plos one 17(1).

Rezai, G., Shamsudin, M., & Mohamed, Z. (2016). Urban Agriculture: A Way Forward to Food and Nutrition Security in Malaysia. Procedia, Social and Behavioral Sciences, 39-45. doi:2015.12.006

RMKE12. (19 April, 2025). Twelfth Malaysia Plan (2021-2025). Retrieved from RMKE12: https://rmke12.ekonomi.gov.my/en

Saili, A., Safari'ee, M., Saili, J., & Hamzah, N. (2018). Youth Inclination in Agripreneurship: Strategies of Youth. Sci.Int. (Lahore), 497-500.

Salim, S., Alaa, M., Yusof, Z., Ibraharim, L., Salim, S., & Hashim, F. (2019). Urban Farming Activities in Southeast Asia: A Review and Future Research Direction. MATEC Web of Conferences , 1-5.

Sandy, Q. Q., & Dumay, J. (2011). The qualitative research interview. Research in Accounting & Management, 8 (3), 238-264.

Sansika, N., Sandumini, R., Kariyawasam, C., Bandara, T., Wisenthige, K., & Jayathilaka, R. (2023). Impact of economic globalisation on value-added agriculture, globally. PLoS One, 18(7), e0289128.

Sari, R., Muslim, M., & Ameliana, Y. (2024). Strategies for Improving Local Food Security in Developing Countries. Advances in Community Services Research, 2(2), 98-110.

Statista. (11 April, 2025). Urbanization in Malaysia 2019. Retrieved from Statista: https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=430&bul_id=Szk0WjBlWHVTV2V1cGxqQ1hyVlppZz09&menu_id=L0pheU43NWJwRWVSZklWdzQ4TlhUUT09

Steenkamp, J., Cilliers, E. J., Cilliers, S. S., & Lategan, L. (2021). Food for thought: Addressing urban food security risks through urban agriculture. Sustainability, 13 (3), 1267.

Stewart, R., Korth, M., Langer, L., Rafferty, S., Da Silva, N. R., & van Rooyen, C. (2013). What are the impacts of urban agriculture programs on food security in low and middle-income countries? Environmental Evidence, 2 (1), 1-13.

Sulaiman, N., Yeatman, H., Russell, J., & Law, L. (2021). A Food Insecurity Systematic Review: Experience from Malaysia . Nutrients, 1-39.

Tan. (10 June, 2022). Price hike of vegetables in Malaysia due to weather, labour shortage and production costs, say farmers. Retrieved from CNA: https://www.channelnewsasia.com/asia/malaysia-vegetable-price-hikes-2345001

Tan, L. K., Chen, E. H., Liew, C., & Kamarudin, R. (2023). Predictors of fruits and vegetables intake among Malaysian adults: Findings from the National Health and Morbidity Survey 2019. Nutrients, 15 (24), 5043.

Tiraieyari, N., & Krauss, S. E. (2018). Predicting youth participation in urban agriculture in Malaysia: Insights from the theory of planned behavior and the functional approach to volunteer motivation. Agriculture and Human Values, 35(3), 637-650.

Toromade, A. S., Soyombo, D. A., Kupa, E., & Ijomah, T. I. (2024). Urban farming and food supply: A comparative review of USA and African cities. International Journal of Advanced Economics, 6(7), 275-287.

Twenge, J. M. (2017). iGen: Why today's super-connected kids are growing up less rebellious, more tolerant, less happy—and completely unprepared for adulthood. Atria Books.

United Nations. (1 March, 2025a). Goal 2: Zero Hunger. Retrieved from Sustainable Development goals: https://www.un.org/sustainabledevelopment/hunger/

Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016). Theme development in qualitative content analysis and thematic analysis. Jouranl of Nursing Education and Practice, 6, 5, 100.

Verdoliva, S., Gwyn-Jones, D., Detheridge, A., & Robson, P. (2021). Controlled comparisons between soil and hydroponics system reveal increased water use efficiency and higher lycopene and β-carotene contents in hydroponically grown tomatoes. Scientia Horticulturae, 10896-109896.

World Bank. (2021). Malaysia urbanization review. Washington, DC: World Bank.

Xi, B., Zhang, X., Zhang, Y., Lew, S., & Lam, S. K. (2021). Urban vertical farming for food security and sustainability. Trends in Plant Science, 26 (8), 813–815.

Yadav, R., & Pathak, G. S. (2016). Young consumers' intention towards buying green products in a developing nation: Extending the theory of planned behavior. Journal of Cleaner Production, 135, 732–739.

Yusuf, M. S., Man, N., Haris, N. B., Ismail, I. A., Yee, S. S., & Bakar, T. H. (2024). Improvement model framework of urban agriculture program in Malaysia: PLS-SEM analysis. Sarhad Journal of Agriculture, 40(1), 171–186.