



Zakat-based urban farming: A tool for poverty alleviation, community empowerment, financial inclusion, and food security

Kinan Salim¹, Baharom Abdul Hamid², Ziyaad Mahomed³, Wiaam Hassan⁴

^{1,2,3,4}INCEIF University, Jalan Tun Ismail, Kuala Lumpur, 50480, Malaysia

¹Oxford Centre for Islamic Studies, Oxford, OX3 0EE, United Kingdom

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Corresponding author:

Kinan Salim
kinan@inceif.edu.my

Author's email:

baharom@inceif.org
ziyaad@inceif.org
wiaam@inceif.org

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Center for Islamic Economics Studies and Development, Faculty of Business and Economics, Universitas Islam Indonesia

Abstract

Purpose – This study introduces a zakat-based model aimed at poverty reduction and enhancing food security in urban settings. Drawing upon the principles of Islamic social finance, the model integrates urban farming with the utilization of zakat, charity, and corporate social responsibility funds, offering sustainable financial avenues for disadvantaged individuals and social enterprises. The primary objective of this research is to design and pilot test a practical model that not only generates consistent financial income, but also bolsters food security and advances financial inclusion.

Methodology – This study reviews various models that have used Zakat funds for economic empowerment, conduct interviews, and hold focus group discussions. It proposes a zakat-based urban farming model for poverty alleviation and community empowerment using the theory of change. In collaboration with a leading Islamic bank in Malaysia, the model was pilot tested across selected residential communities in Malaysia.

Finding – The research findings demonstrated positive impacts both at the individual participant level and within the broader community. Serving as a replicable blueprint, this project envisions the transformation of urban spaces into productive landscapes, thereby ensuring sustainable livelihood, amplifying food security, and promoting financial inclusion.

Implication – Through this Zakat-based approach, the research underscores the profound impact of urban farming in catalyzing socio-economic change and advancing efforts towards poverty alleviation.

Originality – No previous research has introduced and pilot-tested Zakat-based urban farming solutions for Islamic financial institutions as a tool for Poverty Alleviation and financial inclusion.

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Introduction

Urban areas, often perceived as hubs of prosperity and economic growth, paradoxically harbor significant pockets of poverty. Rapid urbanization, while bringing opportunities, has also led to the emergence of informal settlements, overcrowded living conditions, and limited access to basic services for a substantial segment of the urban population. These challenges, exacerbated by limited employment opportunities and wage disparities, have entrenched poverty as a persistent urban phenomenon affecting millions worldwide (Muggah, 2012). Recent years have witnessed increasing urban inequalities and stagnating consumption shares of lower-percentile households (Mathur,

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2013). Financial instability in an urban setting is a multifaceted challenge. The high cost of living (Muggah, 2012), coupled with irregular income patterns, often leaves urban dwellers vulnerable to economic shocks (Drobniak, 2012). Additionally, many urban residents lack access to formal financial services, which makes it difficult for them to save, invest, or access credit (Koomson et al., 2020). The absence of a financial safety net further exacerbates their vulnerability, leading to a cycle of debt and financial insecurity (Tacoli et al., 2015), which hinders their ability to plan for the future or cope with unexpected expenses.

Faced with these challenges, there is a pressing need for innovative solutions to provide additional income streams for urban residents. Diversifying income sources not only offers a buffer against economic downturns, but also empowers individuals to invest in their futures, such as education, health, and housing. By enhancing their financial situation, individuals can break free from the constraints of poverty, paving the way for improved well-being, increased economic mobility, and a better quality of life. While the need for financial stability is evident, the traditional methods to achieve this have often fallen short. The conventional understanding of financial inclusion, primarily centered on integrating individuals into the banking system, needs a fresh perspective. Historically, financial inclusion has been approached with the aim of integrating the financially marginalized into the formal banking system; for example, The World Bank (2014) has defined financial inclusion as the share of households and firms that use financial services. This often involved the provision of basic banking services such as savings accounts and small-scale loans. However, while these initiatives have expanded access to financial services, they have not always translated into genuine financial empowerment (Korth et al., 2012). Despite having access to banking, many of the impoverished remain vulnerable due to high interest rates, hidden fees, and inflexible loan terms. Moreover, without proper financial literacy and support, many find themselves unable to navigate the complexities of the financial world, leading to further marginalization.

As we reimagine financial inclusion, it becomes imperative to shift focus from mere access to financial services to the creation of tangible value for impoverished communities. Financial inclusion should not just be about providing the tools, but also ensuring that these tools genuinely uplift individuals. Instead of pushing loans that could lead to spiralling debts, the emphasis should be on initiatives that create sustainable income streams such as skill development, micro-enterprises, and community-based projects. By fostering avenues that generate consistent income, we can empower communities to not just survive but also thrive, ensuring that financial inclusion translates into real-world economic progress and well-being.

Islamic financial institutions offer a unique avenue for addressing urban poverty through their commitment to socio-economic justice and welfare by channelling Zakat and Corporate Social Responsibility (CSR) funds to redistribute wealth within the community and assist those in need. Together, Zakat and CSR funds represent significant reservoirs of resources that can be harnessed to uplift impoverished communities. However, the mere presence of such funds is insufficient. The key lies in their effective channelling towards initiatives that create sustainable impacts. For instance, urban farming can serve as an avenue in which these funds are invested to provide training, resources, and infrastructure to the urban poor, enabling them to cultivate and benefit from their produce. By focusing on projects that not only provide immediate relief but also empower individuals with skills and opportunities, Zakat and CSR funds can elevate the poor to the next level of financial stability and independence (Bahri et al., 2022).

Urban farming is a promising avenue for effectively channelling these funds. This practice, which involves cultivating, processing, and distributing food within urban areas, has emerged as a beacon of hope for many city residents. In addition to its role in food production, urban farming offers opportunities for employment, environmental sustainability, and community engagement. It provides a tangible means for impoverished urban residents to enhance their financial situation, reconnect with the land, and contribute positively to their communities (Rogerson, 1998).

However, while urban farming is a viable solution for poverty alleviation and financial stability, traditional approaches to financial inclusion have limitations. Moreover, the potential of Islamic financial institutions to use Zakat and CSR funds to bolster urban farming initiatives and create additional income streams for impoverished communities remains underexplored. This

study aims to address these gaps by introducing an innovative and sustainable urban farming model that leverages Islamic financial resources.

Given the challenges and opportunities highlighted, this research sets forth the following primary objectives: 1) Develop a comprehensive urban farming model for poor urban areas that integrates best practices in agriculture with the unique socioeconomic dynamics of urban settings. This model should be scalable, adaptable, and focused on generating consistent financial returns for participants. 2) Exploring and integrating the mechanisms through which Islamic financial institutions, especially through the use of Zakat and CSR funds, can support and enhance the proposed urban farming model. 3) Pilot the designed model in select urban communities, gather data, and assess its effectiveness in achieving desired outcomes.

This study aims to address a gap in the existing body of literature by focusing on the role played by Islamic financial institutions and their resources in bolstering urban farming models designed for the dual purpose of poverty alleviation and economic stability. This study reviews various models that utilize zakat funds for economic empowerment, complemented by interviews and focus group discussions. Employing the theory of change as its guiding framework, this study proposed a zakat-based urban farming model intended to alleviate poverty and empower communities. A pilot study was conducted in a controlled environment to assess the feasibility of zakat-based urban farming.

The research findings demonstrate positive impacts, both at the individual participant level and within the broader community. Participants reported a noteworthy increase in supplementary income and significant cost savings in vegetable expenses. Notably, 3% of Asnaf participants successfully transitioned out of the Asnaf category, highlighting the transformative potential of the project. Beyond mere economic metrics, there was a noticeable shift in dietary habits, with an overwhelming majority of participants (95%) reporting an improved intake of high-quality food (halal and *toyyib*). Furthermore, the project's ripple effects extended throughout the community, benefiting a substantial portion (33%) of the registered Asnaf population, either directly or indirectly through the consumption of the project's produce. Beyond its economic implications, the initiative transformed the community's physical landscape by introducing calming and aesthetically pleasing green spaces that provide respite from urban congestion. This transformation fostered a robust sense of community among the participants, allowing them to strengthen social bonds and develop a deeper connection with the broader community. Notably, the initiative also addressed the fundamental concern of food security by ensuring a consistent supply of fresh, nutritious produce to every household.

The rest of the paper is organized as follows: Section 2 reviews the existing literature; Section 3 discusses the methodology used to address the research objectives; Section 4 proposes a zakat-based urban farming model; Section 5 presents the pilot study and its findings; and Section 6 highlights the contributions of the study, makes recommendations, identifies limitations, and suggests potential areas for future research.

Literature Review

Islamic Social Finance Tools, Economic Empowerment, and Poverty Alleviation

This research analyzed a few empowerments, poverty alleviation, and financial inclusion models, with a particular focus on identifying effective Islamic social finance tools. As demonstrated through successful global implementation across diverse organizations in the banking and non-banking sectors, these tools exhibit strong potential for achieving sustainable social objectives. Our aim was not only to recognize impactful applications but also to discern their salient features and unique characteristics. Additionally, we evaluate their applicability to Islamic banks in Malaysia.

Early poverty alleviation models in Muslim societies have promoted self-employment, capacity building, financial literacy, and shifting mindsets from dependency to self-reliance. An exemplary model is illustrated by Prophet Muhammad's encounter with a beggar, as documented in the following hadith.

A man from among the Ansar came to the Prophet (ﷺ) and begged from him. He said, "Do you have anything in your house?" He said: "Yes, a blanket, part of which we cover ourselves with and part we spread beneath us, and a bowl from which we drink water." He said: "Give them to me." So he brought them to him, and the Messenger of Allah (ﷺ) took them in his hand and said, "Who will buy these two things?" A man said: "I will buy them for one Dirham." He said: "Who will offer more than a Dirham?" two or three times. A man said: "I will buy them for two Dirham." So he gave them to him and took the two Dirham, which he gave to the Ansari and said: "Buy food with one of them and give it to your family, and buy an axe with the other and bring it to me." So he did that, and the Messenger of Allah (ﷺ) took it and fixed a handle to it, and said: "Go and gather firewood, and I do not want to see you for fifteen days." So he went and gathered firewood and sold it, then he came back, and he had earned ten Dirham. (The Prophet (ﷺ)) said: "Buy food with some of it and clothes with some." Then he said: "This is better for you than coming with begging (appearing) as a spot on your face on the Day of Resurrection. Begging is only appropriate for one who is extremely poor or who is in severe debt, or one who must pay painful blood money." Sunan Ibn Majah 2198, Book 12, Hadith 62.

Rather than merely providing charity, the prophet assisted the man in selling his possessions for greater profit, advising him to allocate funds towards family nutrition and a productive asset. He also established a timeframe for results, followed up on performance, provided vocational guidance, and encouraged future self-sufficiency over dependency. This exemplifies key features, such as stakeholder participation, preserving dignity, financial education, asset building, skills training, goal setting, and ongoing mentorship. Such principles remain highly relevant to modern social finance tools aimed at sustainably empowering disadvantaged communities.

Islamic social finance tools, such as Zakat, Waqf, Sadaqa, Qard Hasan, Almuasa, and Alaqila, play a vital role in addressing poverty issues within Muslim communities. Zakat, an obligatory form of almsgiving, acts as a redistributive mechanism, collecting wealth from the affluent and distributing it to the needy. Waqf, on the other hand, involves the endowment of assets for charitable purposes and provides a sustainable source of income for various social projects and services, including education and healthcare. Sadaqa, voluntary charitable giving, complements these efforts, allowing individuals to contribute to poverty alleviation initiatives beyond their zakat obligations. Qard Hasan, or interest-free loans, enables individuals to overcome financial challenges without falling into debt traps. Finally, Almuasa and Alaqila, forms of mutual support and cooperation among community members, foster a sense of solidarity and collective responsibility in tackling poverty. Messenger of Allah (ﷺ) said, "When the Ash'ariyun run short of food in the Jihad or when they are at home in Al-Madinah, they collect all the provisions they have in a sheet and then divide it equally among themselves. They are of me and I am of them." Al-Bukhari and Muslim. Together, these Islamic social finance tools serve as a comprehensive framework for addressing poverty by promoting economic equity, social cohesion, and the well-being of vulnerable members of Muslim societies.

To provide a holistic perspective, our benchmarking study was expanded to encompass both banks engaged in social finance initiatives and non-banking entities such as dedicated social finance institutions. This inclusive approach provides a broad spectrum of insights and best practices. From our benchmarking endeavors, the identified social finance facilities can be divided into two primary categories. The first pertains to financing, encompassing mechanisms such as subsidized rates, grants, benevolent financing (Qard Al Hasan), and defaulter coverage. The second category, non-financing, encapsulates support mechanisms and resources, such as training, mentoring, coaching, technology platforms (SAAS), and Takaful coverage. These classifications serve as testaments to the multifaceted nature of social finance tools, highlighting their versatility in addressing diverse needs and challenges.

Modern initiatives to alleviate poverty are implemented using Islamic social finance tools, such as the deployment of Zakat by the Selangor Zakat Board (SZB) in Malaysia. SZB pioneered several entrepreneurial programs aimed at elevating the economic standing of zakat recipients, transforming them from aid beneficiaries to self-sufficient entrepreneurs. For instance, the "Mobile Entrepreneur" initiative offers eligible business-savvy participants a specially modified lorry to sell food and necessary working capital. A similar endeavor is the LPG cooking gas distribution

program, in which beneficiaries are provided a lorry and a supply of LPG gas. Notably, this requires an investment of RM 50,000 per recipient. Another program, "My Burger Stall," equips participants with a complete burger stall setup, including equipment, raw materials, and essential training, at a cost of RM 9,000. However, its success rate is only 50% because the viability of such businesses is heavily dependent on location (Hassan & Noor, 2015).

Unique facets of SZB's programs include transferring lorry ownership to the participant after three years to discourage selling, a compulsory savings system where participants save a stipulated amount monthly for three years, encouraging financial discipline, and fostering future business growth. Collaboration with external entities such as local councils and government agencies has further streamlined the execution of these programs by offering expertise in SZB areas. Khamis et al. (2021) investigate the key factors leading to the success of Asnaf entrepreneurs, particularly how they transition from beneficiaries to Zakat contributors within the Asnaf entrepreneurship program. Their findings indicated that both advisory services and capital assistance play crucial roles in this success. The study recommends a more structured approach to advisory services, advocating for comprehensive business guidance that encompasses marketing, finance, production, and other relevant areas. Furthermore, it highlights that capital assistance should extend beyond mere financial support to include the provision of essential equipment and broaden the scope of assistance to meet the diverse needs of Asnaf entrepreneurs. However, challenges persist: SZB grapples with administrative issues owing to staff shortages and prolonged approval processes. Additionally, participants' reluctance to accurately declare their earnings, stemming from a fear of losing further SZB assistance, underscores the deep-rooted challenges in changing perceptions of poverty and self-reliance (Hassan & Noor, 2015).

Modern applications of waqf have been harnessed to alleviate poverty, as exemplified by the myWakaf Initiative in Malaysia. This initiative represents a collaborative effort between Islamic banks in Malaysia, the Malaysian Waqf Foundation, and State Islamic Religious Councils. For instance, an Islamic bank launched a boat waqf to enhance the livelihood and economic status of fishermen in Perak. Proceeds from this waqf are channelled towards procuring boats and related equipment, which are then rented out to fishermen at reasonable rates. The rental fees subsequently cover the maintenance expenses for boats and equipment. The MyWakaf Initiative stands out because it entrusts the management of waqf funds to reputable and experienced banks. This approach introduces a level of corporate governance and investment acumen not seen in previous practices, where the State Islamic Religious Council (SIRC) of each state solely manages waqf funds. This change facilitated a smoother process for bank customers (waqf contributors) to allocate their donations to preferred projects with greater ease. Contributors have the flexibility to make waqf contributions either by visiting any of the over 500 authorized MyWakaf bank branches or through online banking services.

Despite the promise of such projects, myWakaf ventures have not experienced substantial growth. The MyWakaf collection has shown variability, with its proceeds and overall progress falling short of funding large-scale projects. Several factors can be pinpointed as constraints on the success of MyWakaf's endeavors. First, there is a notable deficiency in the marketing efforts for both waqf projects and the platform, with participating banks not fully leveraging their websites, social media, or other channels for promotion. Second, there is a general lack of awareness among societal stakeholders regarding the concept of waqf, particularly cash waqf. Third, banks often give precedence to other projects or products that are perceived as more profitable and familiar, relegating waqf projects to lower priority in terms of time and resource investment. Fourth, there are no adequate incentives for bank staff to engage with and advocate waqf projects, making it more appealing for them to focus on other products and projects. Fifth, engagement from Islamic businesses and institutions in waqf initiatives has been unsatisfactory. Lastly, relative inexperience among banks and their personnel in handling waqf projects may also play a part in limiting their effectiveness and impact.

Recently, a prevalent approach to addressing poverty has been through microfinance, which originated with the establishment of the Grameen Bank in Bangladesh during the 1970s. This model garnered substantial backing from international organizations such as the World Bank, IMF, and

United Nations. Subsequently, a Shariah-compliant variant of this model has emerged, adopted by a handful of organizations and integrated with additional Islamic social finance tools.

Islami Bank Bangladesh Limited (IBBL) pioneered Islamic banking and microfinance in Bangladesh through initiatives like the Rural Development Scheme (RDS). Rather than direct lending, RDS provides productive assets and goods to members through *mudarabah* profit-sharing arrangements, ensuring that lending is invested in income-generating activities. Groups of five villagers participated in an eight-week observation and training program before the selection. Members also have to open a *Mudaraba* savings account that promotes financial inclusion and participate in the *Qard El Hasan* fund to sustain the extremely poor who are unable to repay. Members of the group provide personal guarantees to each other and bear joint liability for payback. Initial investments of approximately 10,000 taka (approximately \$145 USD) can increase by 2,000-5,000 taka based on the repayment history and sector. The profit-sharing rate of return is set at 12.5%, but timely repayments are incentivized by a 2.5% rebate, meaning successful members end up paying 10% of their profit back to Islami Bank. As beneficiaries outgrew the 50,000 taka limit, IBBL launched the Micro Enterprise Investment Scheme under the RDS, raising the ceiling to 300,000 taka. This accommodated the growing needs of small entrepreneurs, largely women, and expanded their SMEs (United Nations Development Programme, 2017). The target beneficiaries were unemployed women and youth within 10 km of branches. Through RDS microfinance, the IBBL seeks to reduce poverty, empower women, and boost financial inclusion.

Islam (2021) assessed the role of the IBBL and found that earning members engaged in income-generating activities significantly increased their monthly income, alongside notable increases in health and education spending among the respondents. However, Rahman et al. (2008) identified several challenges borrowers face, including issues with the size of investments. Borrowers reported that the funds received from micro-investment providers were insufficient for smooth operation of their income-generating activities. Additionally, a notable gap was the lack of training facilities to enhance students' skills and knowledge. Delays in receiving investment payments have been highlighted as a concern, complicating the initiation of projects. Furthermore, the repayment terms were often too swift, with some borrowers needing to commence repayments before they could utilize the investment funds.

Emerging from Indonesia, Baitul Maal at Tamwil (BMT) serves as a pioneering model in Islamic social finance, functioning as an Islamic cooperative that seamlessly integrates Islamic social finance with its commercial counterparts. The cooperative is bifurcated into two divisions: the Baitul Maal, responsible for managing a plethora of Islamic charitable funds such as *Zakah*, *infaq*, *sadaqah*, and *cash waqf*, and the Baitul Tamwil, which offers a spectrum of non-commercial financing solutions: *qard hasan* (interest-free loans), microfinance, *microtakaful*, fund transfers, bill payments, ATM and mobile services, and internet banking (Wulandari, 2019; Anwar et al., 2023). A symbiotic relationship exists between these divisions, with Baitul Maal's accumulated *cash waqf* being strategically channelled into Baitul Tamwil for diverse financial endeavors, both non-profit and profit generation. To mitigate risks, funds are safeguarded through *microtakaful* and profits from *cash waqf* are judiciously allocated to social programs and reinvestments. This innovative model primarily targets the underserved, focusing on the micro- and small-business sectors, ensuring financial inclusion for the most vulnerable segments of society. Adnan and Ajija (2015) found that BMT financing is effective in reducing poverty. Most of the respondents in their sample of the clients of BMT MMU Sidogiri (located at East Java Province) was able to increase their income after receiving BMT financing.

The distinct features of financing within BMT (Baitul Maal wat Tamwil) not only involve the provision of capital but also encompass the establishment of infrastructure and the delivery of training programs to benefit the economically disadvantaged. Collateral financing is mandatory, or prospective borrowers may opt for joint liability financing arrangements. Furthermore, if borrowers from low-income backgrounds are unable to repay their loans, endowments originating from charitable sources play a critical role in covering defaults in financing. Lastly, BMTs also offer religious capacity building as an integral component of their risk-management framework (Wulandari & Kassim, 2016). However, Anwar et al. (2023) identified several challenges faced by

BMTs, including limited capital and minimal public engagement. Additionally, regulatory constraints, the nascent state of BMTs, underdeveloped entrepreneurial skills among members, an insufficient sense of ownership towards BMTs, and suboptimal management and implementation techniques are noted as significant issues.

Akhuwat, headquartered in Pakistan, is recognized as one of the world's most prominent non-profit Islamic microfinance institutions. Its primary objective is to alleviate poverty by fostering solidarity between economically diverse segments of society, with the aim of transforming borrowers into donors. The organization's operational approach involves collecting donations, including zakat, sadqah, and funds from both international and local philanthropic sources. Akhuwat provides guidance to beneficiaries regarding potential investment opportunities, ensuring a comprehensive understanding of their financial endeavors. The loan disbursement process involves thorough social and business assessments with borrowers presenting guarantors. Continuous oversight and advisory support are provided to ensure business sustainability. As these enterprises generate revenue, beneficiaries have the option of repaying a portion of their loans. Akhuwat's model is designed to assist those in poverty by offering them interest-free loans to facilitate economic self-reliance. Farooq, Waqas, and Kunwal (2019) indicate that not all respondents used the loan properly, and many of them did not invest in business.

The aforementioned examples demonstrate several best practices that could be applied to other social finance and microfinance programs. First, it shows the value of integrating financial services, such as savings accounts, rather than simply providing credit to build beneficiaries' financial capabilities. Second, the gradual increase in loan size based on repayment performance helps ensure responsible lending. Third, providing assets and goods rather than direct cash prevents fund misuse. Fourth, the joint liability lending model incentivizes collective accountability. Finally, designing specialized schemes such as MEIS to serve more mature clients allows for the growth of enterprises. In summary, the key lessons include promoting financial inclusion, responsible lending, accountability, and a tiered approach to meet the needs of enterprises at different growth stages. Applying these practices can strengthen the impact of social finance on sustainable poverty alleviation.

However, these models have certain limitations. First, reliance on joint liability lending can unduly pressure group members if some cannot repay loans. Second, scaling significantly beyond current operations may prove challenging and threaten long-term sustainability if grants and subsidies decline. Third, profit-sharing arrangements may seem less beneficial than direct cash loans for some borrowers. Fourth, weekly repayment schedules could be burdensome for those with unstable incomes. Finally, inadequate screening and monitoring of risks are overdebted. Although the models have achieved major progress, exploring the mitigation of these weaknesses could provide valuable insights. As others seek to replicate similar successes, striking an optimal balance between scale, flexibility, oversight, and beneficiary experience is key to ensuring both sustainability and social impact.

Within the context of these models, there is significant emphasis on poverty alleviation. However, these models tend to neglect the challenges associated with low wages and part-time employment, which are situations in which individuals may need an auxiliary source of income. In urban settings characterized by poverty, numerous individuals already have a primary source of income, although this is often insufficient. Hence, it is crucial to devise solutions that provide supplementary income without requiring significant time, effort, or expertise. With this in mind, this study investigates the potential of urban farming as an alternative income avenue for economically disadvantaged B40 and Asian populations in urban areas.

Urban Farming

A substantial body of scholarly research has emerged on strategies aimed at mitigating urban poverty. This underscores the significance of implementing a comprehensive array of programs designed to tackle urban poverty by bolstering the assets of economically disadvantaged individuals. Such asset enhancement strategies encompass improvements in human capital, reinforcement of social capital, strengthening of productive assets and household relationships, and optimization of

labor utilization among the impoverished (Rogerson, 1998). In pursuit of these objectives, there has been growing international emphasis on the potential role of urban agriculture in poverty alleviation. Urban agriculture is seen as a means to enhance the nutritional and health well-being of impoverished urban populations, contributing to their economic stability by reducing expenditure on food, facilitating the generation of additional income, and providing employment opportunities. Furthermore, it offers the potential to utilize vacant and underutilized land resources in urban areas (Rogerson, 1998).

There are a few forms of urban farming, such as community gardens, private gardens, easement gardens, rooftop gardens, and school farms. Among these, the concept of community gardening has gained popularity. Community gardening involves the collaborative cultivation of plants, with its specific manifestations adapting to local circumstances and reflecting the preferences and needs of gardening spaces and the local population (McGuire et al. 2022). This encompasses joint gardening endeavors pursued for multiple purposes, including community development, food production, promotion of health, horticultural therapy, collective action, fostering a sense of social interconnectedness, and dissemination of environmental and permaculture education (Nettle, 2016). Community gardens serve as spaces that facilitate the restoration of individual agency, construction of new knowledge forms and participation, and revitalization of introspective and proactive communities, offering broader insights for the cultivation of more progressive urban initiatives (Cumbers et al., 2018). Furthermore, community gardens represent arenas of sociability that yield significant social outcomes, including the promotion of social cohesion, community building, community resilience, accumulation of social capital, and facilitation of social interaction (Glover, 2021).

Doyle (2022) delineated essential prerequisites for community groups to effectively initiate and maintain community gardens in Ireland. These prerequisites encompass the engagement of individuals possessing diverse skill sets, involvement in accommodating community entities and government agencies, and access to essential resources, notably land. Nevertheless, several challenges exist in the establishment of community gardens, including issues such as suboptimal soil quality, acquisition of suitable land, absence of experienced horticulturists, reluctance to foster positive social interaction, lack of expertise in establishing an efficient governance system, insufficient financial support, scarcity of support organizations, and identification of capable leadership (Doyle, 2022).

Urban farming initiatives have been implemented in various countries, including the United States, South Africa, Iran, Indonesia, and Malaysia. In Malaysia, the Green Earth Campaign was initiated in 2006 under the auspices of the Prime Minister's office, with the primary objective of addressing food security concerns. This campaign aimed to encourage urban residents to embrace urban farming practices and cultivate their own produce. Subsequently, in 2013, the Department of Agriculture established the Urban Farming Division, demonstrating the government's commitment to promoting urban agriculture. To raise awareness of urban farming among local urbanites, the government launched several programs. The significance of urban farming gained particular prominence during the Covid-19 pandemic, as Malaysians became more cognizant of the importance of self-sufficiency in food production. In response, the government introduced the Urban Community Farm Program, which sought to motivate urban communities to engage in food production, especially during times of crises. Various forms of urban farming have been implemented in Malaysia, including community gardens, privately owned gardens, easement gardens, rooftop gardens, and school farms (Murdad et al., 2022).

Several studies have explored urban farming in Malaysia and its associated impacts. Hussain et al. (2019) reported a positive perception of urban farming practices among the urban population. Furthermore, their findings suggest that engaging in agricultural activities helps reduce the costs and expenses associated with the purchase of vegetables, fruits, and flowers. Ngahdiman et al. (2017) conducted a survey in Kuala Lumpur and Putrajaya, revealing favorable attitudes among respondents toward urban agriculture. The majority of the surveyed individuals expressed intentions to incorporate urban farming into their future activities (Yusuf et al., 2022).

In a different vein, Ibrahim and Salim (2020) investigated urban farming practices aimed at enhancing the quality of life of B40 groups in Malaysia. Their research approach encompassed structured literature reviews involving an analysis of 88 research papers on urban farming in Southeast Asia. Additionally, they conducted interviews and surveys with individuals engaged in urban farming across various sites in Malaysia. As a result of their study, they formulated a comprehensive framework for assessing the quality of life in the context of urban farming. This framework comprises four key dimensions: 1) individual factors, encompassing intention, capital, knowledge, and skills; 2) internal factors, including the types of plants cultivated, ecosystem considerations such as farm structure and planting space, technological approaches such as traditional planting, hydroponics, vertical farming, and aquaponics, as well as various methods and techniques; 3) external factors, which encompass the market, resource availability, funding opportunities, and government support; and 4) the ultimate quality of life dimensions, consisting of health, social well-being, lifestyle, and economic factors (Ibrahim & Salim, 2020).

Four urban farming technologies—aquaponics, fertigation, hydroponics, and vertical farming—have been commonly used by the urban farming community in Malaysia. Of these, aquaponics have been the most popular because they are the most efficient of all technologies (Muhammad et al., 2020). Aquaponics is an innovative agricultural approach that integrates aquaculture, which involves the farming of fish in aquatic environments, with hydroponics, which involves growing plants using water instead of traditional soil. This integration occurs within a closed-loop system characterized by the recirculation of a nutrient solution, wherein fish waste serves as a natural fertilizer for plant growth (Kozai et al., 2021). In aquaponics, unlike traditional aquaculture, excretions from aquatic animals do not accumulate and do not increase water toxicity. Instead, nitrifying bacteria break down these by-products into nutrients that benefit the cultivated plants in the hydroponic system. Several studies have underscored the significant potential of aquaponics, as it offers the prospect of achieving higher yields of both produce and protein while demanding less labor, reduced land usage, decreased chemical inputs, and a fraction of water consumption when compared to conventional farming practices. Furthermore, the adoption of aquaponics has demonstrated positive effects on community development, dietary improvement, enhanced educational opportunities for youth, increased income levels, and reduced food expenditure (Campanhola & Pandey, 2018; Funmilola Oluwafemi, in Future Foods, 2022).

Aquaponics are particularly suitable for environments characterized by poor soil quality and limited water resources, such as urban areas. However, it is essential to acknowledge that aquaponics combine the inherent risks associated with both aquaculture and hydroponics. As such, expert assessment and consultation are necessary to ensure successful implementation. Some of the primary challenges in adopting aquaponics include high initial capital costs and the need for extensive information and educational resources (Campanhola, & Pandey, 2018). Consequently, operators considering the implementation of aquaponics systems must carefully evaluate several factors, notably the availability and affordability of inputs (e.g., fish feed, building materials, plumbing supplies), cost-effectiveness and reliability of electricity supply, and access to a substantial market willing to pay premium prices for locally produced, pesticide-free vegetables.

Methodology

To evaluate the zakat-based urban farming model, the research methodology employed interviews, focus group discussions, theory of change (ToC), and a logic model were conducted. The ToC is a comprehensive depiction and explanation of how and why a desired change is expected to occur in a particular context. It articulates the logical sequence of events or conditions that are expected to lead to the desired change or outcome, provides the principles that underpin the design and implementation of the intervention, and the assumptions that are believed to be present or necessary for the program to work as intended.

It starts by identifying the desired long-term outcomes and then works backward to determine all the necessary preconditions and actions required to achieve these outcomes. This approach is valuable for planning, implementing, and evaluating the interventions. This requires

stakeholders to articulate underlying assumptions about how changes are expected to occur and the reasons behind the choice of activities. This process ensures that every aspect of an intervention is aligned with its ultimate goal and is based on a logical sequence of changes. The theory of change has been used in various fields of study. Thornton et al. (2017) applied it to agricultural research for development, illustrating its relevance in crafting impactful agricultural strategies. Jackson (2013) and Verrinder et al. (2018) employ this theory to assess the impact of investing initiatives, demonstrating its utility in evaluating financial intervention outcomes. In the realm of microfinance, Maitrot and Niño-Zarazúa (2017) along with Weijermars (2014), leverage the theory of change to elucidate the transformative effects of microfinance interventions on beneficiaries' lives. Joremi et al. (2021) used ToC and a logic model to discuss the enhancement of financial management practices for zakat micro-entrepreneurs.

The logic model is a pictorial representation of this theory. It provides a simplified visual representation of how an intervention contributes to its intended or observed outcomes. It divides the components of a program into inputs, activities, outputs, outcomes, assumptions, and external factors. By clarifying the connections between what a program does and its impacts, logic models serve as vital planning and evaluation tools, helping ensure that the outcomes are directly tied to the program's actions (see Table 1). For instance, if we consider an urban farming initiative for disadvantaged communities, resources/inputs might include funds, farming tools, and expertise. These activities included training sessions and actual farming practices. Outputs might quantify trained individuals and the produce grown, while outcomes would reflect broader impacts, such as increased income or improved nutritional intake.

Furthermore, these models also account for certain foundational beliefs and external factors that might influence a program's effectiveness. For the urban farming example, it could be presumed that participants are motivated to learn that urban farming techniques are adaptable to their living conditions, and that there is a demand for produce in the market. External factors such as economic shifts or climatic changes, which are not controlled by the program, may also impact its success. Overall, this conceptual framework provides a structured lens through which stakeholders can understand, evaluate, and refine their interventions.

A pilot study was conducted to assess the feasibility of zakat-based urban farming in a controlled environment. This pilot study helps refine the ToC model by verifying the assumptions and identifying potential challenges. Specifically, a select group of beneficiaries is engaged in urban farming activities, provided with the necessary resources through Zakat funds, and monitored over a specific period. Feedback from this pilot test, in conjunction with the ToC, provides insights into the effectiveness of the proposed model.

To assess the feasibility and effectiveness of the zakat-based urban farming model, we employed a mixed-method approach that included observations and interviews with beneficiaries engaged in urban farming. This approach was designed to gather comprehensive data on the adequacy of the training and resources provided, changes in income levels, overall satisfaction with the program, and the impact of the model from multiple perspectives. Semi-structured interviews were conducted with the beneficiaries. These interviews allowed for in-depth discussions about their experiences with the urban farming initiative, including the challenges that they faced. This methodology provided a well-rounded evaluation of the pilot test, enabling us to capture not only tangible outcomes but also participants' perspectives and experiences. Data gathered from this pilot study will be crucial for adjusting and refining the implementation strategy for large-scale adoption.

Zakat-Based Urban Farming Model

Utilizing the Zakat concept to support entrepreneurs has demonstrated successful outcomes in various studies. Hassan and Rom (2016) found that the funds and training provided by Zakat institutions to Asnaf entrepreneurs positively affected their businesses. Hashim et al. (2020) observed an increase in Asnaf entrepreneurs' income after engaging in entrepreneurship activities. Khamis et al. (2021) identified advising and capital assistance as crucial factors that contribute to the success of Asnaf entrepreneurs. Azman et al. (2021) highlighted Zakat's pivotal role in

stabilizing income among microentrepreneurs during the Covid-19 pandemic. Nurzaman et al. (2017) discovered that productive-based zakat programs effectively improved both the material and spiritual welfare of mustahik households.

Table 1. Zakat-Based Urban Farming Logic Model

Component	Description
Inputs	Individual/community: the selected group needs to have the intention and motivation to engage in urban farming CSR & Zakat funds: the source of fund is from the Zakat and CSR of Islamic financial institution. Farming technology and equipment: Aquaponic urban farming kits Expertise and training materials: Provide sufficient training in both farming and business aspects Land or space for urban farming: use empty lot or vacant space as a community garden
Activities	Community selection: based on Infrastructure Availability and demographic composition (Asnaf/B40) Beneficiary selection based on Zakat eligibility criteria, intention and motivation to engage in urban farming Training sessions on urban farming Farming practices
Outputs	Number of trained beneficiaries Quantity of produce grown Established urban farms
Outcomes	Increased income for beneficiaries Improved nutritional intake of community Reducing cost of living through self-consumption Economic empowerment through entrepreneurship
Impact	Economic empowerment of the urban poor through Economic growth and resilience Improved quality of life through additional income and skills Economic growth and resilience Health benefits from consuming fresh produce Social integration and community engagement addressed the concern of food security
Assumptions	Beneficiaries are motivated to learn and engage in farming Urban farming techniques are adaptable to local conditions There is a demand for urban-farmed produce in the market
External Factors	Availability and sourcing of resources Economic shifts affecting produce demand Climatic changes affecting crop yields Governmental support

Source: Table by authors

Specific programs exemplify this success, such as the “Mobile Entrepreneur,” “LPG Cooking Gas Distribution,” “My Burger Stall,” and “Asnaf Market” initiatives, along with “Sewing Class” by Zakat Selangor (Hassan & Noor, 2015; Shiyuti & Al-Habshi, 2018), “Projek Jana Asnaf” by Majlis Agama Islam Johor (Yaacob et al, 2013), the Jayadiri program by Kedah Zakat Authority (Hashim et al., 2020), and the productive-based Zakat program by Baznas (Nurzaman et al., 2017). Furthermore, Bahri and Rosalina (2022) identified numerous Asnaf entrepreneurial programs across various regions, including Catering Asnaf Motion, Stitch Asnaf Motion, Farmer Asnaf Motion, Niaga Asnaf Motion, and Atrium & Café by Zakat Pulau Pinang, Zakat Community Development, Empowerment of Farmers, Micro Financing, and Economic Empowerment by Badan Amil Zakat Nasional, and the Riau Prosperous Program by BAZNAS Prov. Riau, Asnaf & Capital Development by Perbadanan Baitulmal Negeri Sembilan; Economic Empowerment by the Zakat and Sadaqat Foundation; Asnaf Development by Lembaga Zakat Negeri Kedah Darul

Aman; the Leading Independent Program by Baitul Maal Hidayatullah; and Economic Care by DT Peduli.

Drawing on extensive literature spanning both Zakat and the sustainable implications of urban farming, we have intricately woven these concepts together. The amalgamation of Zakat and other Islamic social finance tools with the evolving practices of urban agriculture presents a fresh perspective on community empowerment and sustainable development. Our framework endeavors to encapsulate the transformative power of combining Islamic social finance with grassroots agricultural initiatives, specifically targeting urban populations grappling with economic marginalization. This interplay promises not only to uphold spiritual ethos, but also to address pressing urban challenges. Consequently, guided by the insights and nuances extracted from the literature, we have formulated subsequent frameworks to delineate the mechanics and potential outcomes of a Zakat-based urban farming model.

Pilot Test on Urban Farming at Bandar Rinching, Semenyih, Malaysia

Project overview

The pilot test, titled 'Harnessing Islamic Social Finance Tools to Develop Innovative Islamic Finance Products,' was a pioneering initiative undertaken between 2019 and 2021. This collaboration between INCEIF University and Maybank Islamic aimed to design and develop a proof-of-concept for innovative products that cater to microfinance demands. The overarching goals of this project are to increase inclusiveness, alleviate poverty, and reduce income inequality.

Central to this initiative was the piloting of a practical and viable model that sought to provide supplementary income and address the rising cost of food, termed as 'agflation.' The model was uniquely designed to benefit Asnaf and B40 communities through Urban Farming, leveraging Islamic social finance instruments and CSR funds.

The selection of the right communities and participants was crucial before the implementation of the project. The development and application of the selection criteria for both communities and individual participants were grounded in a comprehensive understanding of the initiative's objectives and the unique challenges faced by targeted beneficiaries. The criteria were determined based on objective alignment, stakeholder consultation, and resource assessment. First, the primary objective was to provide supplementary income and address aggregation through urban farming, benefiting those in the B40 and Asnaf categories. The criteria were developed to align closely with this goal, ensuring that the benefits were directed towards those who needed them the most and who could sustain the initiative's activities. Second, we conducted stakeholder consultation where the input was sought from a broad range of stakeholders, including community leaders, Islamic social finance experts, CSR practitioners, and agricultural specialists. These consultations helped to understand the needs of potential beneficiaries and the practicalities of implementing urban farming projects in various urban settings. Third, we evaluated the available Islamic social finance instruments, CSR funds, and other resources that helped determine the scale of the project and, consequently, the criteria for community and participant selection. This step ensured that the criteria were realistic and matched the project resource capabilities.

The criteria for community selection were twofold: 1) Demographic Composition: The majority of the community members had to be from the B40 and/or Asnaf groups. This ensured that the project's benefits were directed towards those who needed them the most. 2) Infrastructure Availability: The selected community needed to have either small land parcels or suitable places for urban farming, ensuring the feasibility of the project's implementation.

Communities interested in participating had to fill in an application, which was then reviewed and approved by both the fund provider and university. Once the community was selected, individual participants were assessed based on the following eligibility criteria: 1) Economic Status: The participant had to be a registered Asnaf or belong to the B40 group. 2) Commitment to the Project: The willingness and commitment of the participants are crucial for the project's success. This was gauged through a simple survey, ensuring that those selected were genuinely interested in and actively participated in the program.

To ensure a structured and effective rollout, the project was segmented into three distinct segments, each catering to specific community needs: Segment 1: @Anjung Murni: This segment was the largest, involving 30 participants in a centralized environment, termed as 'community farming'. Thirty units of urban farming kits were collectively placed, allowing participants to engage in collaborative farming practices. Segment 2: @VETA College: A smaller segment, which involved five participants in what was termed a 'mini centralized environment' or 'mini community farming'. The five units of urban farming kits were placed together, with the participants being low-wage earning employees of VETA, including security guards and general workers. Segment 3: @Participant's Residents: This segment was more decentralized, involving 25 participants from the B40 and registered Asnaf communities. Each participant received an urban farming kit in their respective homes, allowing them to engage in farming within their personal spaces.

The project was generously funded with an initial amount of RM102,370 from the MayBank Islamic Research Project Fund. In addition to this monetary support, the project also received funding in kind, approximately RM 10,000. This in-kind support, as well as the preparation of the necessary infrastructure, was provided by the supporting community group, which included Penolong Amil Qariah, Kelab Rukun Tetangga, Jiran Wanita, and the Mosque Committee. Their contributions were not only financial but also symbolic, showcasing their unwavering support and commitment to the cause.

Project implementation and fund deployment

A foundational aspect of the project's implementation was the training provided to participants. The training program designed for the participants reflected our commitment to bridge the gap between the theoretical understanding and practical application of urban farming and entrepreneurship. The training program was designed with a clear recognition of the knowledge gap among the participants, aiming to elevate their capabilities to a level where they could successfully manage and grow their urban farming ventures. To this end, training was segmented into two primary areas: urban farming and basic entrepreneurship training. This comprehensive approach aimed to empower participants with the knowledge and skills necessary for both immediate success and long-term sustainability in their new ventures. The Urban Farming Kit Training, developed in collaboration with agricultural experts from MARDI and urban kit providers, was structured to be holistic and user friendly. Recognizing the diverse backgrounds of the participants, the curriculum was designed with a focus on hands-on practical learning experiences. In response to the unprecedented challenges posed by the Covid-19 pandemic, including movement restrictions and social distancing measures, our training program was swiftly adapted to a virtual format, utilizing Zoom as the primary platform for delivering comprehensive training sessions. This pivot to online learning was critical in ensuring that the initiative's momentum was not lost, and that participants still received robust support and education promised to them.

The Urban Farming Kit Training was restructured for online delivery with a focus on interactive and engaging content to overcome the limitations of the virtual environment. The use of demonstration videos for kit installation, seed transfer techniques, and maintenance procedures made complex concepts accessible to participants, ensuring that they could effectively replicate these processes independently. The technical part covers the following modules: 1) understanding the functionality of the urban kit, 2) installation of the urban kit, 3) maintenance procedures for the urban kit, 4) techniques for transferring seeds into the tray, and 5) cleaning and maintenance of the pump/urban kit. Additionally, a key module dedicated to the economic analysis of urban farming empowered participants to understand the potential returns from their efforts, fostering a sense of ownership and investment in the success of their projects.

The entrepreneurship training component, led by Professors from INCEIF University and seasoned professionals from Maybank Islamic, was tailored to address the specific needs and challenges faced by emerging entrepreneurs in the urban farming sector. The curriculum was designed to be dynamic and interactive, incorporating a variety of teaching methodologies such as interactive webinars, case studies, and workshops on digital tools. First, sessions were conducted

as interactive webinars where participants could engage with speakers and peers through chat functionalities and Q&A segments. Second, the sessions used case studies to simulate real-world challenges, encouraging participants to think critically and to apply problem-solving skills. Third, workshops on digital tools were conducted to familiarize participants with digital tools for payment and sales, ensuring that they could navigate the modern marketplace effectively. Entrepreneurship training includes the following modules: 1) introduction to entrepreneurship, 2) cultivation of a business mindset, 3) marketing and sales strategies, 4) introduction to banking and financial accounts, 5) basic financial planning and management, and 6) utilization of digital tools for payment and sales.

Upon the successful completion of the training modules, the project moved into its next phase. This involved formal handover of the urban farming kits to the participants across the three segments. The kits were not just handed over but also installed, ensuring that participants could commence their farming activities without hurdles. Subsequently, the participants were provided with seeds and fish to kickstart their urban farming journeys. The seeds were diversified and catered to different dietary preferences and farming conditions. They included the following: a) Leafy Vegetables: Bayam Brazil, Water Spinach, Mustard, Celery, and Kesum. b) Fruity vegetables: Ladyfinger and tomato cherries c) Fishes: Tilapia Merah, Catfish (keli), and Jade Perch.

This structured approach to implementation ensured that participants were not just given resources, but were also empowered with the knowledge and skills to use them effectively, maximizing the project's impact.

Results and Discussion

Vegetable Harvest, Fish Sales and Revenue

The participants cultivated a variety of vegetables including ladyfinger, Brazilian spinach, tomato cherry, red spinach, coriander, water spinach, and celery. The average combined harvest from these vegetables resulted in revenue of RM 80 – RM120 per participant. Given the rising vegetable prices in the market, the timing of the project was impeccable. Local produce not only provided a source of income but also acted as a buffer against escalating household expenses due to soaring vegetable prices.

A significant event marking the success of the project was the fish sale held on November 27, 2021, at Anjung Murni. The sale, conducted in a 'pasar tani' style, witnessed an overwhelming response. Approximately 50 kg of mature catfish was sold within an hour, generating revenue of RM500. All proceeds from this sale were returned to the participants. The subsequent batch was harvested after three weeks, weighed over 100 kg. A portion of the proceeds from this sale was reinvested by the participants to refurbish their kits and canvas ponds with new fry. The project's credibility and the halal toyyib nature of the produce led some buyers to pre-order, even before the sales date. Additionally, some fish were used for personal consumption, a factor considered in the cost-benefit analysis.

Table 2. First Cycle Revenue Generated by the Project

Type of vegetables and fish	Returns (per month per kit)	Note
Leafy Vegetables	RM40- RM 70	
Fruity Vegetables	RM30- RM50	
Catfish	RM50- RM 80	considering the fish were harvested every 2 months, the revenue was pro-rated per month
Red Tilapia	RM40- RM 90	given a harvest cycle of every 4 months, the revenue was pro-rated per month

Source: Table by authors

The project yielded consistent and significant returns for the participants. Table 2 shows the average returns. Beyond tangible financial returns, the project has had a profound impact on some participants. A few were inspired and confident that they invested their own funds to expand their operations. Their investments matured, and they reported earning additional income ranging from RM350 to RM600 per month.

Overall Impact

The urban farming pilot project, primarily aimed at financial empowerment, yielded multifaceted impacts on both participants and the broader community. An overwhelming majority (95%) of the initial participants remained actively involved throughout the project, a testament to its relevance and resonance with its target audience. This engagement translated into tangible financial benefits, with participants experiencing a supplementary income increment (17%-21%) benchmarked against Asnaf's minimum wage of RM1,200 per month. Moreover, the initiative provided economic resilience through significant cost savings on vegetable expenses (RM50-RM80), especially amidst the backdrop of rising food prices. Notably, a segment of Asnaf participants (3%) transitioned from the Asnaf category, showcasing the project's transformative potential. Among the myriad success narratives, the journey of one participant was particularly remarkable. By optimally leveraging the project's resources, this individual realized a supplementary income of 125 %, translating to a monthly revenue of RM1,500. Beyond mere economic metrics, there was a discernible shift in dietary habits, with many participants (95%) reporting an enhanced intake of quality (halal and *toyyib*) food. Furthermore, the project's ripple effects were community-wide, benefiting a significant portion of the registered Asnaf populace (33%), either directly or through the consumption of the project's produce.

In addition to its tangible financial outcomes, the urban farming pilot project engendered a myriad of intangible benefits that significantly enriched the community's fabric. Beyond its economic implications, the initiative transformed the community's landscape, introducing calming and aesthetically pleasing green spaces that offered a respite from urban congestion. This act of urban farming transcended mere agricultural pursuits, fostering a robust sense of community among participants and allowing them to fortify social bonds and connect deeply with the broader community. Moreover, the project emerged as a potent tool for community empowerment, bolstering resilience, especially in the realms of food and nutrition security, a facet that became particularly salient during challenging times like the Covid-19 pandemic. At its core, the initiative addressed the fundamental concern of food security, ensuring a consistent supply of fresh, nutritious produce for every household, thereby enhancing the overall quality of life of community members.

Challenges Encountered and Lessons Learned

The urban farming pilot project, although replete with successes, was not without its challenges, which provided invaluable insights for future endeavors. A significant proportion of the participants lacked the requisite knowledge in farming and marketing, which impeded the harvesting process and extended the time to market. This knowledge gap underscores the importance of comprehensive training and capacity building for such initiatives. Furthermore, the collaborative nature of the project, involving multiple stakeholders, occasionally led to coordination challenges, emphasizing the need for clear communication and aligned objectives. Environmental factors, such as heavy rainfall and storms, pose logistical challenges with instances of minor damage to greenhouse structures. Additionally, the project addressed issues related to pests, including mice, insects, and bugs, which not only increased contamination of the harvest but also introduced delays in production. These challenges, while formidable, offer crucial lessons for refining the model and ensuring its robustness in future implementation.

Drawing from the challenges encountered during the pilot project, several lessons emerged that could inform future urban farming initiatives and enhance their efficacy. First, the importance of comprehensive training, both theoretically and practically, should not be overstated. It is

imperative to not only provide this training, but also assess participants' understanding to ensure effective knowledge transfer. For those who have demonstrated success in urban farming, there is an opportunity to scale up their production, and they should be equipped with the necessary skills and resources to do so. Collaborative efforts that form the bedrock of such projects must be nurtured. Regular training, supervision, and reporting mechanisms should be instituted to celebrate success, address challenges, and ensure that all stakeholders remain aligned in their objectives. From an infrastructural perspective, the resilience of greenhouses to weather events and climate change is crucial. Strengthening the infrastructure will not only protect the produce but also ensure consistent yields. Finally, considering the challenges posed by pests, the inclusion of organic pesticides in urban farming kits can enhance the quality and speed of production, ensuring that the produce is not only abundant but also of high quality. These recommendations, rooted in the project's experiences, aim to refine and optimize the urban farming model for broader and more impactful implementation in the future.

Conclusion

Research on a zakat-based urban farming model has demonstrated a novel and effective approach to tackling urban poverty and enhancing food security. Integrating the principles of Islamic social finance with practical urban agriculture, this model has emerged as a beacon of hope in the urban landscapes of Malaysia, showing great potential for global replication in similar settings.

The model's impact on poverty alleviation is significant, providing not only financial relief, but also empowering participants with sustainable skills and sources of income. This approach led to a substantial improvement in food security, with participants cultivating their own produce, leading to both cost savings and better access to nutritious food. The success of this initiative goes beyond mere economic metrics, fostering a strong sense of community and empowerment among participants. The social bonds formed and the collective approach to overcoming economic challenges are testaments to the transformative nature of the project. An additional benefit of this model is the transformation of urban spaces, both environmentally and aesthetically. The creation of green spaces within urban areas not only beautifies these spaces but also contributes to environmental sustainability, offering a multifaceted approach to urban poverty reduction.

The scalability and replicability of the model are its key strengths, as evidenced by its success in Malaysian communities. This adaptability makes it a viable solution for addressing urban poverty and food security challenges globally. Collaboration with Islamic financial institutions in channelling Zakat and CSR funds has been crucial, highlighting the significant role these institutions can play in community welfare and socioeconomic development.

This study also contributes to redefining financial inclusion, advocating for a shift from traditional banking integration to the creation of sustainable economic opportunities. The model exemplifies how financial resources can be utilized more effectively for genuine empowerment and societal change. Integrating the model with technological advancements and policy support could enhance its effectiveness. Further research in this direction, exploring the integration of smart farming techniques and supportive policies, can help maximize the impact of such innovative models.

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Author Contributions

Conceptualization: Baharom Abdul Hamid, Ziyaad Mahomed, Kinan Salim, Wiaam Hassan

Data curation: Baharom Abdul Hamid, Wiaam Hassan

Formal analysis: Baharom Abdul Hamid, Kinan Salim

Methodology: Baharom Abdul Hamid, Ziyaad Mahomed, Kinan Salim, Wiaam Hassan

Project administration: Wiaam Hassan

Writing – original draft: Kinan Salim

Writing – review & editing: Ziyaad Mahomed

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