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A PRELIMINARY STUDY ON THE INTENTION TO PARTICIPATE IN PADDY CROP *TAKAFUL* SCHEME AMONG PADDY FARMERS IN SEKINCHAN, SELANGOR, MALAYSIA: EMBRACING THE BLENDED ISLAMIC SOCIAL FINANCE PADDY MICRO-*TAKAFUL* MODEL

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ABSTRACT

Paddy farming in Malaysia is highly vulnerable to risks such as climate change, pest infestations, and crop diseases, threatening both farmers' livelihoods and national food security. To mitigate these challenges, the Malaysian government introduced the Paddy Crop *Takaful* Scheme, supported by an initial grant of RM50 million from the Government. This study examines paddy farmers' intention to participate in the scheme, focusing on key influencing factors such as price, risk exposure, attitude, subjective norms, and perceived behavioural control, using the Theory of Planned Behaviour (TPB) as its analytical framework. A quantitative methodology was employed through a pilot survey involving 30 paddy farmers from Sekinchan, located within the Integrated Agricultural Development Area (IADA) Barat Laut Selangor. Data analysis included descriptive statistics, reliability tests (Cronbach's alpha), validity assessments, and crosstabulations to determine patterns in farmers' decision-making. Findings reveal that attitude and risk exposure are the strongest predictors of participation, while perceived behavioural control had the least influence. Notably, only 13 per cent of farmers received financial support from Islamic social finance institutions such as *zakat* and *waqf*, indicating an untapped opportunity to enhance affordability and inclusivity for low-income farmers (B40 group). The novelty of this research lies in the discourse on agriculture risk management by proposing a blended Islamic social finance paddy micro-*takaful* model, aligned with Malaysia's Value-Based Intermediation *Takaful* (VBIT) framework. Despite the small sample size, the findings provide valuable insights for policymakers and *takaful* operators, advocating for greater integration of Islamic social finance mechanisms to strengthen farmers' financial security and support national food resilience strategies.

KEYWORDS: PADDY CROP MICRO-TAKAFUL SCHEME, PLANTER'S INTENT, ISLAMIC SOCIAL FINANCE, FOOD SECURITY, ISLAMIC FINANCE

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ABSTRAK

Pertanian padi di Malaysia adalah terdedah kepada pelbagai risiko seperti perubahan iklim, serangan perosak, dan penyakit tanaman, yang mengancam mata pencarian pesawah serta jaminan makanan negara. Bagi menangani cabaran ini, kerajaan Malaysia telah memperkenalkan Skim Takaful Tanaman Padi, menerusi geran sokongan permulaan sebanyak RM50 juta. Kajian ini bertujuan untuk meneliti niat/kehendak pesawah untuk menyertai Skim Takaful Tanaman Padi, dengan menumpukan kepada faktor utama seperti harga, pendedahan risiko, sikap, norma subjektif, dan kawalan tingkah laku, menggunakan Teori Tingkah Laku Terancang (TPB) sebagai rangka kerja analisis. Pendekatan kuantitatif digunakan melalui kajian rintis terhadap 30 pesawah padi di Sekinchan yang berada dalam lokaliti Kawasan Pembangunan Pertanian Bersepadu (IADA) Barat Laut Selangor. Analisis data melibatkan statistik deskriptif, ujian kebolehpercayaan (alpha Cronbach), penilaian kesahihan, dan taburan silang bagi mengenal pasti corak dalam proses membuat keputusan pesawah. Dapatan menunjukkan bahawa sikap dan pendedahan risiko merupakan faktor paling dominan dalam mempengaruhi niat untuk menyertai takaful, manakala kawalan tingkah laku mempunyai kesan yang paling rendah. Dapatan awal kajian juga mendapati hanya 13% pesawah menerima bantuan kewangan daripada institusi kewangan sosial Islam seperti zakat dan wakaf. Hal ini membayangkan terdapat ruang agar institusi sosial Islam lebih berperanan untuk meningkatkan kemampuan dan keterangkuman bagi pesawah berpendapatan rendah (kumpulan B40). Keaslian kajian ini terletak kepada hasil perbincangan tentang pengurusan risiko pertanian dengan mencadangkan model integrasi mikro-takaful kewangan sosial Islam, sejajar dengan rangka kerja Takaful Berasaskan Pengantaraan Nilai (VBIT) Malaysia. Walaupun kajian ini berasaskan saiz sampel yang kecil, hasilnya memberikan pandangan berharga kepada pembuat dasar dan pengendali takaful, bagi menyokong integrasi mekanisme kewangan sosial Islam dalam usaha meningkatkan keselamatan kewangan pesawah dan memperkukuh daya tahan makanan negara.

KATA KUNCI: SKIM MIKRO-TAKAFUL TANAMAN PADI, NIAT PESAWAH; KEWANGAN SOSIAL ISLAM; KETERJAMINAN MAKANAN; KEWANGAN ISLAM

1. INTRODUCTION

The agricultural sector in Malaysia holds a vital place in the nation's socio-economic framework, acting as a significant driver of economic growth and an essential source of food security for its population (Abu Dardak, 2022). This sector is expected to see modest growth of 0.8 per cent in Q3 2023, rebounding from a contraction of -1.1 per cent in Q2 2023 (Aman, 2023). Despite its growth, Malaysian agriculture faces persistent threats to food security, including climate volatility, natural disasters, pest outbreaks, and crop diseases (Alam *et al.*, 2020). These challenges are compounded by inadequate subsidies and limited access to effective risk protection mechanisms. Further, paddy as the staple food of many Asians including Malaysian has been a major focus of the government to protect its production toward ensuring the food supply. The risks associated with Malaysia's paddy farming sector are diverse and dynamic, covering a range of natural and economic threats. These include drought, floods, fires, extreme weather, pest infestations, disease outbreaks, and the volatility of both input and output prices, as noted by Bakar and Sum (2020). These hazards not only impact the sector's productivity and economic stability but also threaten the nation's food security. This underscores the urgent need for risk management solutions to support a stable and resilient agricultural foundation.

Agricultural *takaful* is essential for protecting farmers from various risks in agriculture. Despite the importance of this sector in Malaysia, particularly in paddy farming, the scheme has never been introduced in Malaysia, until the first paddy crop *takaful* scheme was introduced in September 2024. This study embarks to explore the factors influencing farmers' intention to participate in paddy crop *takaful* scheme in Selangor as a means of managing agricultural risks. Key variables analysed include demographic profile, price sensitivity, risk exposure, attitude, subjective norms, perceived behavioural

control, and overall participation intention in agricultural *takaful*. Despite the growing need for agricultural risk management, existing literature on the factors influencing paddy farmers in Selangor to adopt *takaful* remains limited. Existing literature on paddy farmers' participation in agriculture *takaful* schemes consistently highlights perceived behavioural control and perceived risk as key determinants. For instance, Abd Aziz *et al.* (2015) found these two variables to significantly predict farmers' intention to participate in agriculture *takaful* among respondents from Selangor and Kedah, whereas attitude and subjective norms were less influential. Similarly, Abd Aziz (2014) reaffirmed the importance of perceived behavioural control, perceived risk, and attitude, while demographic factors such as age and income showed no significant effect. Complementing these findings, Johari *et al*. (2024), in a study on crop insurance in Kedah, demonstrated that farm income and individual risk attitudes played pivotal roles in insurance uptake, suggesting that economic capacity may be just as critical as psychological drivers.

While these studies offer valuable insights, they may not fully reflect the behavioural dynamics of farmers in high-productivity zones such as Sekinchan, Selangor. In this region, factors like localised flood risks, cooperative farming structures, and advanced agricultural support systems may shape distinct perceptions and decision-making processes. Furthermore, there is a scarcity of studies exploring the relationship between farmers' income levels and financial assistance received from Islamic social finance mechanisms such as *zakat*, *waqf*, and *sadaqah*. A pilot study in Sekinchan would therefore serve a dual purpose: validating existing behavioural models in a new context, and uncovering region-specific motivators or barriers to *takaful* participation. Such findings would not only enrich theoretical understanding but also inform the development of more responsive, inclusive, and *Shariah*-compliant *takaful* solutions tailored to the needs of high-performing farming communities.

To address these gaps, this study employs a quantitative methodology, utilizing survey data collected from 30 paddy farmers in Sekinchan, located in the Integrated Agricultural Development Area (IADA) Barat Laut Selangor. The data are analysed using frequency and descriptive statistics to provide a comprehensive overview of variable distributions. Reliability is assessed using Cronbach's alpha to ensure internal consistency, while validity tests confirm measurement accuracy. Additionally, crosstabulation analysis is employed to examine relationships between categorical variables, offering deeper insights into farmers' decision-making processes regarding *takaful* participation.

This study aims to provide valuable empirical evidence to support the development of more inclusive and effective agricultural *takaful* schemes, ensuring greater financial protection for farmers while strengthening Malaysia's food security initiatives.

2. LITERATURE REVIEW

Agricultural Risks and the Needs for Protection

Agriculture is a vital sector for economic sustainability, safeguarding food security and significantly contributing to a nation's Gross Domestic Product (GDP) (Huirne, 2003). However, the sector faces persistent low productivity due to substantial risks that are inherent in agricultural activities. These risks, although present in many industries, require constant assessment and management by farmers. In the Asia-Pacific region, Malaysia is particularly vulnerable to threats such as floods, landslides, droughts, and climate change (Alam *et al*., 2020). Previous literature has identified five primary categories of agricultural risk: institutional, market, production, financial, and personal risk. Among these, production risk is highlighted as the most significant issue for farmers, as shown in studies by Komarek *et al*. (2020). Further, Komarek *et al.* (2020) asserted that production risks such as unpredictable weather patterns, pest outbreaks, and crop diseases pose major threats to farm productivity and income stability, especially in regions dependent on rain-fed agriculture. Their findings highlight the need for risk mitigation mechanisms such as agricultural insurance or *takaful* to safeguard farmers' livelihoods against these uncertainties.

To address these risks, *takaful* has become an essential tool for risk mitigation at various levels (Thirawat *et al*., 2017; Alam *et al*., 2020). *Takaful* offers farmers a mechanism to protect themselves from financial uncertainties arising from uncontrollable factors that may hinder their agricultural activities (Rai, 2019). Furthermore, *takaful* schemes provide a protective barrier against adverse effects caused by natural disasters or fluctuating market conditions (Kaur & Malhotra, 2023). The Malaysian government has been proactive in supporting the agro-food industry through assistance programs and subsidies (Bernama, 2022). While these initiatives aim to reduce the inherent risks in agriculture, establishing agricultural *takaful* remains critical for strengthening the financial resilience of farming communities.

Although agriculture *takaful* offers a promising solution to mitigate many risks, it is important to recognize that not all challenges can be fully addressed by this financial tool. According to Fauzilah Salleh *et al*. (2023), as outlined in Table 1, agricultural *takaful* primarily covers production risks, including those associated with natural disasters and climate change.

TABLE 1: DETAILS OF RISK COVERED IN ASEAN

Country	Target	Risks covered
Myanmar	Paddy rice	Weather-related disasters
Cambodia	Rice (rubber, cassava, maise)	Excessive rain, drought, dry days
Indonesia	Rice, maise, palm oil	Flood, drought, named pests and diseases, rainfall, windstorm
Laos	-	-
Philippine	Rice, maise, high-value crops	Natural calamities, pests and disease, other perils insured
Thailand	Rice	Flood, drought, frost, windstorm/ typhoon, fire, hail, pests and diseases, elephant damage
Vietnam	Rice	

Source: Salleh *et al.* (2023)

Existing Agricultural Takaful Models in ASEAN Countries

Comparative analysis of agricultural *takaful* schemes across ASEAN countries as depicted in Table 1 illustrates diverse implementations. Nations such as Indonesia, Thailand, and the Philippines have structured crop insurance programs that cover risks ranging from floods to pest infestations (Salleh *et al*., 2023). Malaysia could be considered somewhat left behind and underdeveloped compared with other ASEAN countries. It was only in the last quarter of 2024 that the country introduced its first agricultural scheme, despite being a pioneer in Islamic banking and finance. The introduction of the Paddy Crop *Takaful* Scheme in September 2024 marks a significant step forward in addressing this gap and reinforcing national food security (The Star, 2024).

Takaful has the potential to provide communities with a necessary safety net, offering families a sense of financial security and optimism for the future (Patel, 2011). Agricultural *takaful*, in particular, plays a vital role in alleviating poverty and ensuring food security. As research indicates, agriculture has a more profound impact on poverty reduction and food security compared to other economic sectors (Pawlak & Kołodziejczak, 2020). By acting as a protective layer, agricultural *takaful* helps lift communities out of poverty and contributes to a stable food supply. According to Ben Ayed and Hanana (2021), agricultural sustainability is essential for addressing food security and eradicating hunger, especially for the growing global population. Agricultural growth is also crucial for advancing Sustainable Development Goal 2 (Zero Hunger) (Zhang *et al*., 2020). Those with

limited resources, often highly vulnerable to adverse weather, natural disasters, fires, and theft, are particularly in need of agricultural *takaful* to help them recover from the challenges.

Malaysia's First Paddy Crop Takaful Scheme

Islamic banking and finance have flourished in Malaysia over the past four decades. However, despite the sector's emphasis on fairness and equity, there has been a notable lack of *takaful* or insurance schemes specifically designed to protect the agriculture sector and its underserved farming community. This absence contrasts with efforts in neighbouring countries such as Indonesia, Vietnam, the Philippines, and China, where agricultural insurance initiatives have been established (Panda, 2021). Nonetheless, Malaysia has begun exploring agricultural *takaful* as a response to the complex and unpredictable risks inherent in agriculture, which require careful assessment before integration into *takaful* operations (Panda, 2021).

Agriculture *takaful* has become the talk of the town in Malaysia particularly due to its crucial role in supporting national food security. Consequently, the Malaysian government, through the Ministry of Agriculture and Food Security, has prioritised efforts to protect the agrifood industry. National food security has emerged as a critical concern, especially during the COVID-19 pandemic and amidst the challenges posed by climate change affecting the world. After years of developing a viable agricultural *takaful* model, the first Paddy Crop *Takaful* Scheme was launched in September 2024 by Agrobank. This initiative aims to protect paddy crops, securing paddy as the nation's staple food while also safeguarding farmers' incomes against unforeseen events.

Paddy Crop Takaful Scheme

Agrobank's Paddy Crop *Takaful* Scheme (*Skim Takaful Tanaman Padi*, STTP), developed in partnership with the Ministry of Agriculture and Food Security, is Malaysia's first *Shariah*-compliant insurance program tailored exclusively for paddy farmers. This project, which was officially introduced at the Malaysian Agriculture, Horticulture, and Agrotourism Exhibition (MAHA) 2024, intends to reduce the financial risks that rice farmers suffer as a result of natural calamities, pest infestations, and crop illnesses. The policy covers losses caused by natural disasters up to RM3,000 per hectare per season and damages caused by pest infestations or diseases up to RM1,500, which is more than previous disaster funds provided coverage for. For the first year, the government fully subsidises the annual premium of RM120 per hectare, which covers two planting seasons and ensures farmer access.

Registration for the scheme is open to all registered individual paddy farmers in Malaysia, and forms are available at the Area Farmers' Organisation offices. The STTP's principal goals are to reduce financial burdens on rice farmers, increase their resilience to agricultural risks, and strengthen national food security by stabilising and maintaining paddy production (The Star, 2024). This initiative demonstrates the Malaysian government's commitment to integrating Islamic financial solutions into the agricultural sector, so encouraging sustainability and the well-being of farming communities.

Integration of Islamic Social Finance (ISF) in Agriculture Micro-Takaful Scheme

Islamic social finance, which includes *zakat* (almsgiving), *waqf* (endowments), and *sadaqah* (charitable giving), plays a vital role in supporting socio-economic welfare in Muslim communities. In recent years, the integration of Islamic social finance into *takaful*, particularly micro-*takaful* has been recognised as a significant tool to alleviate poverty, provide financial protection to low-income groups, and support sustainable development in rural and agricultural sectors. Several real-world initiatives and pilot projects have integrated Islamic social finance instruments such as *zakat*, *waqf*, and *sadaqah* into micro-*takaful* schemes. These efforts aim to provide financial protection for underserved and vulnerable populations, particularly in rural and low-income communities. In Pakistan, the Akhuwat model, supported by government and community institutions, uses *zakat* and *sadaqah* in providing *qard hasan* financing to support low-income families (Jaafar, 2018). In

Indonesia, BAZNAS mobilises *zakat*, *infaq*, and *waqf* to fund protection for informal workers and healthcare recovery, including medical aid and health-related *waqf* initiatives (Ascarya, 2022).

The *takaful* system is believed might further secure the nation's food supply and offer social security assurances to rice farmers in the form of income protection (Sulaiman, 2023). While Shamsudheen and Muneeza (2024) proposed blended Islamic social finance micro-*takaful* as a tool for enhancing financial inclusion by promoting socio-economic justice while giving paramount consideration to SDGs. In general, micro-*takaful* is designed to offer protection to underserved populations who face financial vulnerabilities but may not have access to conventional insurance products. Research by Mikail *et al*. (2017) revealed that the integration of Islamic social finance namely *zakat* and *waqf* into micro-*takaful* has resulted in better social outcomes, particularly in terms of poverty alleviation.

Crop *takaful*, a specialised form of micro-*takaful*, provides coverage for risks related to farming activities, such as natural disasters, pest attacks, or adverse weather conditions, which are prevalent in agriculture. The significance of crop *takaful* is highlighted in several studies, showing that it is an effective risk management tool that supports farmers in managing agricultural production risks. However, many farmers, particularly those in the B40 income group (the bottom 40 per cent of income earners), may not be able to afford *takaful* contributions.

Islamic social finance can play a pivotal role in making crop *takaful* more accessible to these farmers. By utilising *zakat* and *waqf*, *takaful* operators can reduce the contribution amount for low-income farmers, ensuring that they are not excluded from the benefits of agricultural *takaful*. ISF ensures the redistribution of wealth, aligning with the Islamic principles of mutual assistance and social solidarity (Mohamad *et al*., 2024). Islamic social finance institutions could also be key enablers in making *takaful* more inclusive, particularly for smallholder farmers in developing countries. Moreover, Sulaiman (2024) pointed out that agricultural *takaful* schemes supported by *zakat* or *waqf* funds could provide protection against losses due to natural calamities, thereby contributing to the resilience of rural economies. These schemes can also be structured in a way that promotes sustainability and long-term viability by leveraging social finance to cover operational costs and pay out claims during high-risk periods.

The crop micro-*takaful* scheme can reduce the community's dependence on the government with stakeholders' involvement in contributing a certain sum as part of their corporate social responsibility initiative (Salleh *et al*., 2023). The study emphasises that paddy crop *takaful* serves as a *Shariah*-compliant risk management tool designed to protect smallholder farmers especially those vulnerable to climate-related disasters like floods. The study underscores how such schemes can enhance resilience and contribute to national food security by stabilising farmers' incomes and reducing the impact of agricultural losses.

According to Sabri *et al*. (2021), the integration of *zakat* and *waqf* holds significant potential as a sustainable source of funding for the development of micro-*takaful*, particularly due to the substantial risk funds required. Likewise, Kassim (2013) proposed a *waqf*-based micro-*takaful* model and recommended that *zakat* be utilised as contributions on behalf of the *asnaf*, ensuring the continuity of the risk fund. Similarly, Md Hashim and Badri (2022) advocated for a model in which micro-*takaful* contributions are funded entirely through *zakat* and *waqf*. To address concerns surrounding *tamlik*, the transfer of ownership of *zakat* from the authority directly to the *asnaf*, the study proposed that the *zakat* amount be disbursed to the *asnaf*, who would then independently contribute to the micro-*takaful* scheme. Furthermore, to mitigate potential legal or operational issues related to *waqf*, the findings suggested that *waqf* and endowment assets be managed and invested by the *takaful* operator, with only the income generated from such investments used to fund micro-*takaful* contributions for the *asnaf*.

While Islamic social finance has immense potential in supporting micro-*takaful* and agricultural *takaful*, certain challenges remain. For instance, the efficient collection and distribution of *zakat* funds may require better institutional frameworks and transparency to ensure that the funds reach their intended beneficiaries (Sawmar *et al.*, 2021). Additionally, creating awareness among farmers and low-income communities about the benefits of *takaful* and how it can protect their livelihoods is essential for improving uptake.

Nevertheless, the opportunities are substantial. The integration of Islamic social finance with micro-*takaful* and agricultural *takaful* represents a holistic approach that combines financial protection with social welfare, helping to foster economic resilience and poverty reduction. As more research and case studies demonstrate the positive impact of these initiatives, there is growing momentum for Islamic social finance to become a cornerstone in expanding *takaful's* reach to underserved population.

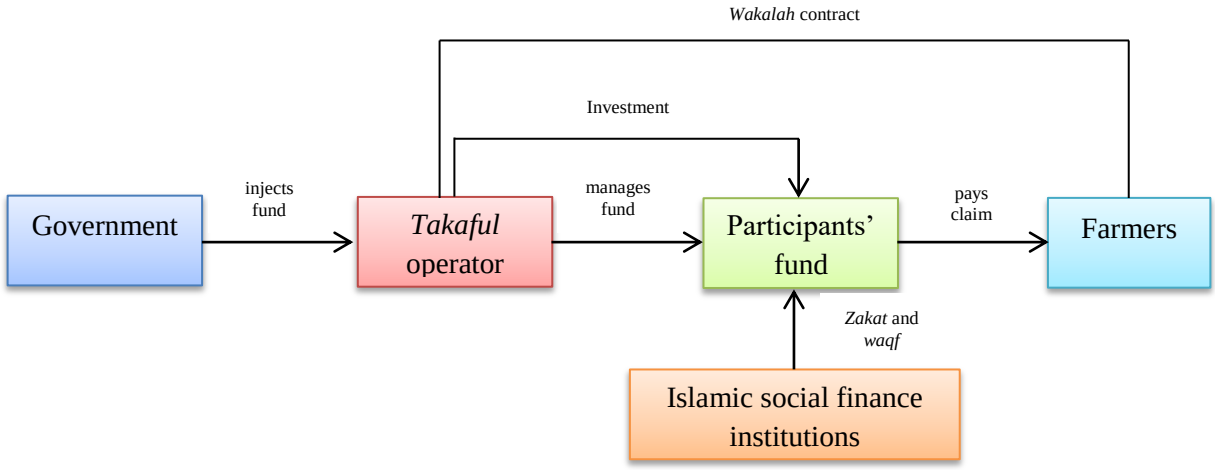

FIGURE 1: CONCEPTUAL FRAMEWORK OF BLENDED ISLAMIC SOCIAL FINANCE PADDY MICRO-*TAKAFUL*
Source: Figure by Authors

Figure 1 illustrates the conceptual framework of the "Blended Islamic Social Finance Paddy Micro-*Takaful* Model". This framework integrates Islamic social finance mechanisms such as *zakat* and *waqf* into the paddy crop *takaful* scheme to support B40 farmers, who belong to the low-income group. The diagram emphasises the collaborative roles of key stakeholders, including the government, *takaful* operators, and Islamic social finance institutions, in establishing a financial safety net for vulnerable farmers. The framework depicts how *zakat* and *waqf* funds can be leveraged to subsidise *takaful* contributions, making agricultural *takaful* more affordable and accessible. Through Islamic social finance mechanisms, such as *zakat* and *waqf*, this will contribute to the sustainability of *takaful* schemes by providing a steady stream of funds to cover the premiums of the poor. This makes *takaful* a more viable and sustainable financial product for underserved markets.

Additionally, the model aligns with Malaysia's Value-Based Intermediation *Takaful* (VBIT) framework, ensuring that *takaful* serves both financial protection and social welfare objectives. By integrating Islamic social finance, the framework aims to enhance financial inclusion, reduce farmers' dependence on government aid, and promote sustainable risk management in the agricultural sector.

The Concept of Takaful
From Islamic point of view, *takaful* is a *Shariah* compliant risk management system that emphasised on collective protection among the participants. *Takaful* derived from an Arabic word "*kafala*" which

means joint guarantee, whereby a group of participants agree to jointly guarantee among themselves against a defined loss (Bank Negara Malaysia, n.d). The values of mutuality and collaboration include kindness, shared responsibility, joint indemnity, common interest and solidarity. It reflects an arrangement which members agree to contribute to a fund that will be used to cover losses incurred by the members.

The *Takaful* Act of 1984 (now repealed with the Islamic Financial Services Act 2013 (IFSA 2013) defines *takaful* as a system rooted in brotherhood, solidarity, and mutual assistance, where participants collectively contribute to a fund intended to provide financial support in times of need. While IFSA 2013 has refined the definition to highlight the element of mutual assistance or *ta'awun*. Under IFSA 2013, *takaful* is defined as an arrangement built on mutual assistance where participants agree to contribute to a common fund. This fund provides mutual financial benefits to the participants or their beneficiaries when pre-agreed-upon events occur. Essentially, it is a *Shariah*-compliant form of insurance based on shared responsibility and risk pooling (Bank Negara Malaysia, 2013). The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) defines *takaful* as "a process of agreement among a group of persons to handle the injuries resulting from specific risks to which all of them are vulnerable" (AAOIFI, 2017). While, the Islamic Financial Services Board (IFSB) defines *takaful* as "a mutual guarantee in return for the commitment to donate an amount in the form of a specified contribution to the participants' risk fund, whereby a group of participants agree among themselves to support one another jointly for the losses arising from specified risks" (IFSB, 2018).

In general, the applicable model of *takaful* in Malaysia is based on *tabarru'* (donation) and *wakalah* model. On the other hand, at international level, there is a shift in the definition of Islamic insurance by the OIC International Fiqh Academy from *tabarru'* (donation) to *ta'awun* (mutual assistance). The resolution in 1985 read as follows: "The alternative contract that respects the principles of Islamic transactions is the cooperative insurance (Islamic insurance) contract that is based on *tabarru'* and *ta'awun*." In 2013, the revised resolution states that "The cooperative (Islamic) insurance is a new contract that is based on the principle of *ta'awun".* Interestingly, the revised definition clearly acknowledged "*ta'awun*" as a new contract departure from the widely accepted *tabarru'* (donation) as the underlying concept of *takaful*.

Factors Influencing' Intention to Participate in Family and Agriculture Takaful?

Farmers in regions where climate changes, diseases, pests are challenges need to mitigate their risk against any calamities through insurance system as a risk management strategy. Despite its benefits, the adoption rate of agriculture *takaful* varies significantly. There are multiple factors that influence farmers' intentions to participate in subscribe agriculture *takaful*. A review of 20 years of *takaful* literature conducted by Ansari (2022), found that the most common theory used to explain consumer behaviour towards *takaful* services is the Theory of Planned Behaviour (TPB). TPB is a well-established theory in the field of psychology and has been widely used to explain consumer behaviour in various contexts. The theory posits that an individual's behaviour is influenced by their attitudes, subjective norms, and perceived behavioural control. In the context of *takaful*, the theory suggests that an individual's intention to participate in *takaful* is influenced by their attitudes towards *takaful*, subjective norms and perceived behavioural control.

A study by Daniel and Steven (2023) concluded that the intention to participate in family *takaful* schemes is not only affected by attitude, subjective norm, and perceived behavioural control but also influenced by moderating factors like demographic variables, consumer knowledge, situational factors, and consumer level of religiosity. However, a study by Md Husin (2014) found that people's attitude and their sense of control are important in deciding to join family *takaful*, but what others think (subjective norm) is not very important. The study also showed that being knowledgeable and having experience encourages people to join. However, being very religious or just aware of *takaful*

does not always mean someone actually wants to join sometimes. These factors have little or even a negative effect. Further, Md Husin (2014) found that people are more likely to join family *takaful* if they have a positive attitude and feel in control of their decision. Knowing more and having experience also help increase interest. However, what others think, being religious, or just being aware of *takaful* do not always make someone want to join; sometimes, these factors have little or no effect. These findings indicate that the decision to participate in family *takaful* is influenced by a combination of factors, and the impact of each factor can vary depending on individual and contextual differences. In recent study by Muhammad Zuki *et al*. (2024) who conducted a systematic review highlighted inconsistent findings: some studies document a significant, positive impact of religiosity on both attitude and intention, but others only find a link with attitude, not intention. This point is related to religiosity being an important but non-universal predictor.

Various demographic characteristics influence the demand for family *takaful* plans. The determinants of family *takaful* demand encompass income, education level, Muslim population, agency system, reputation of *takaful* operators, products and services, as well as marketing and advertising efforts for *takaful* items. A study conducted in Malaysia revealed a significant correlation between *takaful* demand and parameters such as income, Islamic banking development, education, dependence ratio, and Muslim population (Sherif & Shaairi, 2013). Sherif and Shaairi (2013) argued that the demand for family *takaful* in Malaysia is largely driven by several key economic and demographic factors. Their study demonstrated a significant positive relationship between family *takaful* demand and variables such as income, Islamic banking development, education, dependence ratio, and the Muslim population. They emphasised that as income levels rise and the Islamic financial sector develops, the affordability and accessibility of *takaful* products improve, thereby boosting demand.

A study conducted by Abd Aziz *et al.* (2015) discovered that perceived risk, attitude, and perceived behavioural control are the key elements that influence the intention of paddy farmers in Kedah to participate in agriculture *takaful*. The survey also revealed that farmers face the most severe and frequently encountered dangers due to pest infestations. In a similar vein, a study by Rifas and Jahan (2022) in Sri Lanka found that both attitude and perceived behavioural control significantly influenced paddy farmers' intention to participate in agriculture *takaful*, while subjective norm had little impact. Perceived behavioural control (the sense of empowerment to join) was the strongest predictor, followed by attitude. The major risks identified were floods, droughts, heavy rainfall, diseases, and especially pest infestations. In another context, however, a research by Sulaiman (2023), Bunu, and Alkassim (2023) in Nigeria reported that attitudes toward *takaful*, perceived behavioural control, and subjective norms all significantly affect farmers' intention to take up agricultural *takaful*. However, perceived behavioural control had the largest influence, suggesting that the more farmers feel able to participate, the more likely they are to do so. Awareness campaigns and improving understanding of *takaful* benefits were also recommended to encourage participation. Newer research examining implementation challenges (Salleh *et al*., 2023; Waqas *et al*., 2025) points out that, beyond perceived risks like pests and climate extremes, low awareness and affordability remain key obstacles to wider *takaful* adoption. These studies suggest that targeted education, policy support, and integrating Islamic social finance could help mitigate risks and enhance farmer participation.

In conclusion, multiple factors able to influence the intention of farmers to participate. However, this study only focusing on price, risk exposure, attitude, subjective norm, and perceived behavioural control as factors that shape the intention of farmers. Prior studies have mostly examined the behavioural patterns of participation in agriculture *takaful* in Kedah, with limited attention given to the corresponding trend among paddy farmers in Selangor. The findings would be advantageous for *takaful* operators, relevant ministries and policy makers to effectively implement an agriculture *takaful* plan for this industry.

3. METHODOLOGY

The research used a quantitative approach, specifically focusing on survey research (questionnaire). The Theory of Planned Behaviour (TPB) is employed to provide a rationale for the research design and to steer the development of the questionnaire, encompassing crucial components such as attitude, subjective norm, and perceived behavioural control. By applying the TPB, the researcher not only justifies the research design but also provides a theoretical foundation for understanding and predicting farmers' intentions in the context of agricultural *takaful*. This approach allows the researcher to organise and analyse experiences, determining the study's significance.

Subjects

This pilot study involved 30 paddy farmers from Sekinchan, Selangor. The respondents were selected in collaboration with the Integrated Agricultural Development Area (IADA) Barat Laut Selangor, which facilitated access to farmers actively engaged in rice cultivation. Although the sample size is limited, the pilot provides early insights into farmers' behavioural intentions toward the Paddy Crop *Takaful* Scheme and helps identify potential patterns that can inform a full-scale study. Participation was voluntary, and respondents were informed about the purpose and confidentiality of the research. While the sample size in this pilot study is limited, it provides early indicators of patterns in farmers' intentions to participate in the Paddy Crop *Takaful* Scheme. The findings serve as a foundation for refining research instruments and strengthening policy recommendations, ultimately guiding future studies to improve *takaful* adoption strategies and enhance financial protection for farmers (CASP, 2023).

Conducting a pilot study is a crucial preliminary step in ensuring the robustness of the main research. This study, involving 30 paddy farmers in Selangor, provides valuable insights into data collection challenges, questionnaire effectiveness, and respondent engagement, allowing necessary refinements before scaling up the research. Pilot studies serve as a testing ground for assessing measurement validity, enhancing reliability, and optimising survey administration procedures to ensure smooth execution in a full-scale study (Muasya & Mulwa, 2023). Beyond methodological refinement, pilot studies play an essential role in identifying potential limitations and mitigating unforeseen obstacles that could affect the main research. They enable researchers to evaluate feasibility, practicality, and ethical considerations before committing to a larger sample (Simkus, 2023). Such assessments ensure that the study remains methodologically sound and practically feasible, reducing errors and inefficiencies that could arise during full-scale implementation.

Measures

The research employed a structured questionnaire guided by the Theory of Planned Behaviour (TPB), which includes three core constructs: attitude, subjective norm, and perceived behavioural control. Two additional independent variables price perception and risk exposure were integrated to better reflect the context of agricultural *takaful* adoption. The dependent variable is the intention to participate in the Paddy Crop *Takaful* Scheme.

The questionnaire was divided into three sections:

- Section A: Independent variables – price (6 items), risk exposure (9 items), attitude (6 items), subjective norm (5 items), and perceived behavioural control (5 items);
- Section B: Dependent variable – intention to participate (5 items); and
- Section C: Demographic profile – gender, age, education level, and income level (multiple choice format).

A five-point Likert scale was used in Sections A and B, ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree*, to capture the respondents' levels of agreement with the presented statements.

TABLE 2: VARIABLES, ITEMS, AND SOURCES

Variable	Items	Source
1. Price	6	Lichtenstein *et al*. (1993), Ndurukia *et al*. (2017), Sharum *et al.* (2020)
2. Risk exposure	9	Brånstrand and Wester (2014), Ellis (2016)
3. Attitude	6	Razak *et al.* (2021)
4. Subjective norm	5	Razak *et al.* (2021)
5. Perceived behavioural control	5	Razak *et al.* (2021)
6. Intention to participate	5	Aziz *et al*. (2016) and Abi Huraira and Jahan (2021)

Source: Table by Authors

Data Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS) version 24. The analysis process consisted of the following steps:

- Descriptive analysis: Mean and standard deviation were calculated to summarise responses to the Likert-scale items;
- Demographic analysis: Frequency distributions were used to profile the respondents' gender, age, education level, and income (Section C);
- Reliability analysis: Internal consistency for each construct was assessed using Cronbach's alpha; and
- Preliminary correlation analysis: Crosstabulations were used to explore associations between key indicators and to inform hypotheses for the main study.

These analyses ensure the robustness of the instrument and allow the researchers to evaluate the feasibility of scaling up the study while aligning with the theoretical constructs of TPB.

4. FINDINGS AND DISCUSSIONS

In this pilot test research, 30 questionnaires were distributed among paddy farmers in Selangor to investigate the intention of the paddy farmer to participate in paddy *takaful* scheme. There are three tables illustrated for the analyses covering frequency analysis (demographic profile), descriptive analysis (mean and standard deviation), a combination of reliability (Cronbach's alpha) and validity analysis, and also crosstabulation table for several questions.

TABLE 3: PROFILE OF RESPONDENTS

Variables	Description	Frequency	Percentage (%)
1. Gender	Male	29	96.0
	Female	1	3.3
2. Age	31 – 40 years old	4	13.3
	41 – 50 years old	12	40.0
	51 – 60 years old	7	23.3
	61 – 70 years old	4	13.3
	More than 71 years old	3	10.0
3. Income	Below RM2,500	26	86.7
	RM2,501 – RM3,170	2	6.7
	RM3,171 – RM3,970	1	3.3
	RM3,971 – RM4,850	1	3.3
4. Education	Middle school	8	26.7
	High school	18	60.0
	Diploma/Certificate	3	10.0
	Degree	1	3.3
5. Experience	3 – 4 years	6	20.0

	5 – 6 years	4	13.3
	More than 7 years	20	66.7
6. Financial Aid from ISF	Yes	4	13.3
	No	26	86.7

Source: Table by Authors

As found in Table 3, the demographic profile can be categorised into six aspects namely gender, age, income, education, experience, and financial aid from Islamic Social Finance such as *zakat* or *waqf*. The majority of the respondents are male representing 96 per cent while females account for only 4 per cent comprising a single respondent. In terms of age, none of the respondents are below 30 years old. The highest population falls between the ages of 41 to 50 years representing 40 per cent. This is followed by the 51 to 60 years old category (23.3 per cent), with both the 31 to 40 and 61 to 70 years old categories having the same percentage (13.3 per cent). The lowest population is among those above 71 years old (10.0 per cent). Referring to the income segment, 86.7 per cent of respondents earn income below RM2,500 categorising them as B40 (bottom 40), assuming the income is solely dependent on them without additional support from family members or other sources. The respondents' education was mostly at the middle and high school level (86.7 per cent) rather than the diploma and degree level of study (13.3 per cent). Most farmers have extensive experience in the field, with the majority having seven years or more of experience. The final category assesses whether respondents have received any Islamic social finance assistance such as *zakat* or *waqf*. Only 13.3 per cent of respondents reported receiving Islamic social finance aid while the rest did not.

TABLE 4: DESCRIPTIVE ANALYSIS

Factors	Mean	Standard deviation (SD)
Price	4.042	0.338
Risk exposure	4.102	0.235
Attitude	4.211	0.077
Subjective norm	3.707	0.100
Perceived behavioural control	3.634	0.259
Intention to participate	3.980	0.089

Source: Table by Authors

The descriptive analysis represented in Table 4 indicated the mean and standard deviation of summary item statistics based on the result. The factors are formed according to independent variables (price, risk exposure, attitude, subjective norm, and perceived behavioural control) and dependent variables (intention). As exhibited above, an attitude has the highest value of mean which is 4.211 among the other factors. The second place is risk exposure recorded at 4.102. Meanwhile, for the third place, it is a factor of price with a 4.042. Subjective norm has a mean of 3.707 ranking before the last one. The lowest value is perceived behavioural control with only a 3.634 mean. All of the results for a mean value above 3.000 showed most of the respondents agreed with the statements for each factor can be considered as factors that influence the intention of paddy farmers to participate in agricultural *takaful*.

TABLE 5: RELIABILITY AND VALIDITY ANALYSIS

Factors	Cronbach's alpha	Validity (%)
Price	0.724	93.3
Risk exposure	0.671	83.3
Attitude	0.837	100.0
Subjective norm	0.660	100.0
Perceived behavioural control	0.673	96.7
Intention to participate	0.895	100.0

Source: Table by Authors

The reliability analysis of this study is on the intention to participate in agricultural *takaful* using Cronbach's alpha as an indicator for the reliability test. Cronbach's alpha, represented as α (or coefficient alpha), was formulated by Lee Cronbach in 1951 to gauge reliability. In this context, reliability pertains to consistency. The Cronbach's alpha is utilised to assess the reliability of survey questionnaires. Its value aids in understanding how closely interconnected a group of test items is when considered together. The coefficient of Cronbach alpha ranges from 0 to 1.0, and higher values signify increased reliability. Nevertheless, as a cautious standard, any alpha coefficient above 0.70 is considered an acceptable or suitable measure. Hence, this study used 0.7 as a minimum standard measurement for the reliability test. Moreover, all the variables except risk exposure, subjective norm, and perceived behavioural control were recorded below 0.7. However, according to Nunnally and Bernstein (1994), it can still be considered acceptable if the composite reliability values range from 0.60 to 0.70. Thus, all the results below 0.7 are 0.660, 0.671, and 0.673 still accepted. Since all values are considered acceptable, the result reveals that all variables are reliable.

Table 5 also presents a validity analysis based on 30 respondents, considered 100% with complete and error-free responses. Eight survey questions were found to be invalid. According to the case processing summary, the scale indicates that all cases are considered valid, with no items being removed, resulting in a cumulative validity rate of 73.3 per cent. The variable of price has a 93.3 per cent validity rate since two respondents did not answer some of the questions in this variable section. Similarly, the risk exposure variable consists of five out of eight invalid questions in this section with 83.3 per cent only. The variable with the least invalid question is perceived behavioural control with 96.7 per cent involving only one invalid question.

TABLE 6: CROSSTABULATION BETWEEN INCOME AND FINANCIAL AID

		Financial aid		Total
		Yes	No	
Income	Below RM2500	4	22	26
	RM2501 - RM3170	0	2	2
	RM3171 - RM3970	0	1	1
	RM3971 - RM4850	0	1	1
Total		4	26	30

Source: Table by Authors

In Table 6, a detailed analysis is presented of how financial assistance recipients have been distributed among different levels of income. The outlined table is based on income levels indicating how many individuals never got any form of assistance in terms of *zakat* or *waqf*. Within the income category of under RM2,500, there are a total of 26 respondents. In this category, four people got financial help while the remaining twenty-two did not receive it. This indicates that a few people about 15.4%, in this lowest income category received financial assistance.

Moving on to the next income of RM2501 to RM3170, there are two individuals who none of them receive financial support. Similarly, in the RM3171 to RM3970, there is only one individual who also did not receive any financial assistance. The same pattern is observed in the RM3971 to RM4850, where there is also one individual in this category who did not receive financial assistance.

There were 30 individuals in total and only 4 among them received financial aid while 26 did not. This simply means that financial assistance for *zakat* and *waqf* is not distributed well among the lowest-income earners especially those in the B40 category. This pattern underscores the point that it is vital to prioritize the financial aid funds towards the B40 category since they require them the most, which also aligns with the financial aid objective to assist those with lower income.

TABLE 7: CROSSTABULATION BETWEEN EXPERIENCE OF PADDY FARMERS AND THE FREQUENCY OF RISK OCCURRED

		Frequency				Total
		No Effect	1-2 in a year	3-4 in a year	5-6 in a year	
Experience	3-4 years	2	3	1	0	6
	5-6 years	2	1	1	0	4
	More than 7 years	4	13	2	1	20
Total		8	17	4	1	30

Source: Table by Authors

Table 7 presents an analysis of the frequency of unexpected risks occurring per year in relation to the experience levels of farmers. Among those with 3-4 years of experience, the majority (3 individuals) reported experiencing such events 1–2 times per year, followed by 2 individuals who reported no effect, and 1 individual who experienced the event 3-4 times annually. None of the respondents in this group experienced it 5-6 times per year, totalling 6 respondents.

In the 5–6 years of experience category, 2 individuals reported no effect, and another 2 experienced the event 1–2 times per year. One individual experienced it 3–4 times annually. As for the previous group, none faced the event 5-6 times per year. This category includes 4 respondents. Among those with 7 years of experience and above, the majority, 13 individuals reported experiencing the event 1-2 times a year. Additionally, 4 individuals reported no effect, 2 experienced it 3-4 times, and 1 experienced it 5-6 times annually, making this the largest group with 20 respondents.

Overall, out of the 30 farmers surveyed, 17 experienced the event 1-2 times per year, 8 reported no effect, 4 experienced it 3-4 times, and only 1 individual experienced it 5-6 times annually. These findings suggest that farmers with 7 or more years of experience are the most familiar with such occurrences. Their extended exposure to agricultural risks over time has likely enhanced their awareness and ability to manage these unexpected events.

TABLE 8: CROSSTABULATION BETWEEN AMOUNT OF TAKAFUL CONTRIBUTION AND FREQUENCY OF PAYMENT

		Frequency of payment						Total
		Monthly	Quarterly	Every half year	Every harvest season	Yearly	Other	
Amount of Contribution	RM1-RM10	0	2	1	14	1	1	19
	RM11-RM20	0	2	1	2	1	0	6
	RM31-RM40	0	0	0	0	1	0	1
	RM41-RM50	0	0	1	0	0	0	1
	>RM51	1	1	0	0	0	0	2
Total		1	5	3	16	3	1	29

Source: Table by Authors

Table 8 presents an analysis of the frequency of farmers' willingness to make *takaful* contributions based on their affordability. This comparison highlights the extent to which financial capacity influences contribution behaviour. It sheds light on whether farmers who can afford the contributions make regular payments and whether affordability acts as a barrier for others. This information is critical for understanding contribution patterns, identifying gaps in *takaful* accessibility, and informing the development of more inclusive and flexible contribution schemes that align with the financial realities of small-scale farmers.

Most farmers prefer to make contributions every harvesting season. Two individuals are willing to contribute quarterly, while among the three other cases, one farmer opts for half-yearly contributions,

another chooses an annual contribution plan, and the last one falls into the "other" category. All five belong to the RM1–RM10 contribution range, and none prefer monthly contributions.

In the RM11–RM20 range, two farmers are willing to contribute every season, two every harvest, one twice a year, and another once a year, with no preference for monthly contributions. For the RM31–RM40 range, only one individual contributes annually, with no data on other frequencies. In the range of RM41 to RM50, a single farmer contributes on a half-yearly basis, while in the RM51 and above category, one individual contributes monthly and another quarterly.

Overall, out of 29 individuals surveyed, the majority (16) prefer to make contributions every harvest season. Quarterly contributions are the next most common (five individuals), followed by three contributing half-yearly, three annually, one monthly, and one categorized as "other." This information clearly indicates a strong preference for contribution timing to align with the agricultural cycle, particularly the harvest season. Most of these farmers fall into the lowest contribution bracket (RM1–RM10), suggesting that contribution frequency is closely tied to the timing of agricultural income.

5. LIMITATIONS OF STUDY

The study acknowledges its limitation of the small sample size, as it only involved 30 paddy farmers from Sekinchan, Selangor, which restricts the ability to generalise the findings to all paddy farmers in Malaysia. This limitation means that the results may not fully capture the diversity of experiences, challenges, and perspectives present in other regions or among larger populations. Additionally, the study relied solely on quantitative survey data, which may not provide in-depth insights into the underlying reasons behind farmers' intentions and behaviours. Future research should address these limitations by expanding the sample size to include more farmers from various regions and by incorporating qualitative methods, such as interviews or focus group discussions, to gain a deeper understanding of the factors influencing participation in the Paddy Crop *Takaful* Scheme.

6. POLICY IMPLICATIONS AND RECOMMENDATIONS

The findings of this study highlight key areas where policy enhancements can improve the accessibility and effectiveness of agricultural *takaful* for paddy farmers in Malaysia. Policymakers should prioritise affordability, accessibility, and integration with Islamic social finance mechanisms to strengthen national food security and financial resilience among farmers. One of the most pressing issues identified is the financial burden on low-income farmers, with 86.7% of respondents earning below RM2,500. This calls for expanding government subsidies beyond the initial RM50 million grant to sustain long-term affordability. A tiered subsidy system based on income levels can ensure that financial support reaches farmers most in need. Additionally, since only 13% of farmers reported receiving *zakat* or *waqf* assistance, policymakers should institutionalise the use of Islamic social finance such as, *zakat* and *waqf,* to subsidise *takaful* premiums or contributions, creating a structured funding mechanism for vulnerable farming communities.

Another policy recommendation is to align contribution schedules with agricultural cycles. The study reveals that farmers prefer to contribute every harvest season rather than monthly or quarterly. Establishing flexible payment structures that synchronise with crop seasons would reduce financial stress and encourage participation. Moreover, awareness and education initiatives are crucial in increasing *takaful* uptake. Policymakers should collaborate with agricultural cooperatives and farmers' associations to conduct training programs, demonstrating how *takaful* can safeguard their livelihoods.

The study indicates that risk exposure and attitude are the strongest predictors of participation by thus, risk-based pricing models should also be introduced. By implementing tiered pricing structures

tailored to farmers' risk profiles, *takaful* operators can provide cost-effective protection while maintaining financial sustainability. Strengthening regulatory frameworks to encourage digital adoption and affordability measures will further enhance the viability of *takaful* within the agricultural sector. Malaysia's Risk-Based Capital Framework 2 (RBC2) can be leveraged to support financial stability and risk mitigation efforts among farmers.

For long-term improvement, future research should explore qualitative insights through focus group discussions, identifying farmers' concerns, motivations, and obstacles to *takaful* adoption. By implementing these policy recommendations, agricultural *takaful* can evolve into a more inclusive and sustainable financial tool, ensuring greater protection for farmers while strengthening Malaysia's food security strategy.

7. CONCLUSION

This study provides valuable insights into the intention of paddy farmers to participate in agricultural *takaful*, highlighting the potential of *takaful* as a financial protection mechanism against unforeseen agricultural risks. The pilot test involving 30 farmers reveals a strong interest in *takaful* adoption, despite existing challenges related to affordability and accessibility. While the study's limited sample size restricts broader generalisations, the findings emphasize the importance of expanding research efforts with larger datasets and incorporating additional influencing factors to further validate these results. Recognising the complexities of *takaful* adoption, this research serves as a preliminary step toward a more comprehensive study, incorporating qualitative approaches such as focus group discussions and stakeholder interviews. A deeper engagement with farmers, *takaful* operators, policymakers, and Islamic finance institutions will help refine *takaful* products to better align with farmers' needs.

Beyond financial affordability, this study has also identified a significant gap in the integration of *zakat* and *waqf* within *takaful* frameworks, with only a small percentage of farmers benefitting from Islamic social finance mechanisms. To address this, policymakers and *takaful* operators should make the scheme more affordable and accessible, especially for low-income farmers, by expanding government subsidies and systematically using Islamic social finance mechanisms like *zakat* and *waqf* to help cover *takaful* contributions. Additionally, awareness and educational initiatives should be strengthened through partnerships with agricultural cooperatives to increase understanding and uptake of *takaful*.

Furthermore, the proposed Blended Islamic Social Finance Paddy Micro-Takaful model, aligned with Malaysia's Value-Based Intermediation Takaful (VBIT) framework, reinforces the principles of *maqasid al-Shariah*, ensuring that *takaful* serves both financial and ethical objectives. However, continued institutional support and policy development are essential to maximize the effectiveness of these initiatives. Future studies should explore long-term sustainability models, assess the impact of *takaful* integration on farmers' financial stability, and develop frameworks that enhance accessibility and participation among vulnerable groups. By addressing these challenges, agricultural *takaful* can evolve into a more sustainable and impactful financial tool, strengthening Malaysia's food security strategy and ensuring financial resilience for paddy farmers.

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