

Fruit Microtakaful Scheme Working Framework in Malaysia

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Abstract: Microtakaful is an emerging concept in the insurance industry that aims to provide low-cost, accessible, and Sharia-compliant insurance products to the underserved populations. In Malaysia, the Fruit Microtakaful Scheme has been introduced to address the needs of low-income households, particularly those in rural areas. There is no gainsaying that microtakaful plays a pivotal role in protecting the lives of low-income farmers as it helps reduce potential risks, they are exposed to curb unforeseen calamities, but there is still low coverage for low-income farmers. Consequently, providing microtakaful for low-income farmers is highly necessary. This article presents a working framework of the Fruit Microtakaful Scheme in Malaysia, including its operational model, distribution channels, marketing strategy, and risk management approach. This study explored the Fruit Microtakaful Scheme framework for Malaysia's smallholder farmers. A focus group discussion that involved ten participants from various agencies related to the Takaful industry was conducted to determine the underlying basis of the FMTS framework, with the Central Bank of Malaysia as the regulator. The discussion revealed the need for protection against floods, droughts, pests, diseases, season contributions, and the implementation of FMTS. The fruit microtakaful framework for smallholder farmers in Malaysia was presented in this study.

Keywords: droughts, floods, Fruit Microtakaful Scheme, pests, smallholder farmers.

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INTRODUCTION

Malaysia produces a wide variety of tropical fruits such as pineapples, durians, watermelons, starfruits, bananas, papayas, and mangoes (Safari et al., 2019). Its tropical climate is very favorable to produce various exotic fruits. Peninsular Malaysia seldom experiences hurricanes or droughts, which increases the capability to boost tropical fruit exports. Table 1 provides information on 1,100 B40 farmers in Malaysia's fruits cultivation in 2019. These farmers are listed under the Department of Agriculture Project or Projek Jabatan Pertanian, which only includes the fruit production of three types of fruits, namely 'Tembikai', 'Tembikai Susu/Melon', and



'Tembikai Wangi'. Taman Kekal Pertanian Malaysia (TKPM) program or Permanent Food Production Areas is proposed as a strategy under the Third National Agricultural Policy (DPN3) to encourage large-scale, commercial, and high-tech agricultural projects by entrepreneurs, including the private sector. A permanent food crop production zone initiative is targeted to increase the country's sustainable and quality food production in collaboration with entrepreneurs in food production. The program is also aimed to increase the participants' net income to at least RM3,000 per month and encourage the private sector's involvement in the production of food crops.

Table 1 Information on Farmers in Fruits Cultivation, 2019

| State | No. of farmers | Area of plantation (Ha) | Land Used (Ha) | Total production (kg) | Production value (RM) |
|-----------------|----------------|-------------------------|-----------------|-----------------------|-----------------------|
| Johor | 30 | 98.2 | 35.85 | 1,245,532.00 | 2,054,577.00 |
| Kedah | 14 | 100.41 | 97.79 | 1,747,444.84 | 2,900,678.65 |
| Kelantan | 467 | 773.39 | 749.91 | 16,216,961.00 | 18,547,439.00 |
| Melaka | 19 | 79.48 | 61.99 | 982,995.30 | 1,396,897.00 |
| Negeri Sembilan | 8 | 118.8 | 103.8 | 2,271,778.00 | 4,223,753.00 |
| Pahang | 16 | 135.5 | 135.5 | 870,929.58 | 1,418,860.04 |
| Perak | 14 | 41.21 | 41.21 | 759,972.00 | 1,112,963.60 |
| Perlis | 5 | 16.12 | 16.12 | 111,450.00 | 360,050.00 |
| Pulau Pinang | 2 | 1.12 | 1.12 | 9,382.00 | 10,504.00 |
| Sabah | 11 | 10.52 | 10.02 | 95,295.05 | 250,053.45 |
| Sarawak | 2 | 8.24 | 8.24 | 75,080.00 | 116,252.00 |
| Selangor | 40 | 51.11 | 49.85 | 1,039,083.60 | 3,088,919.80 |
| Terengganu | 471 | 825.11 | 815.54 | 14,005,047.50 | 20,109,190.00 |
| WP Labuan | 1 | 0.66 | 0.65 | 9,593.00 | 15,279.00 |
| TOTAL | 1,100 | 2,259.87 | 2,127.58 | 39,440,543.87 | 55,605,416.54 |

The fruit industry has become one of the essential sources in Malaysian agriculture, with an estimated market potential of RM 5,243.40 million in 2020. This article focuses on fruits categorized as short-term fruit plants cultivated and harvested for about a year. The short-term fruits include pineapple, watermelon, rock melon, papaya, and banana. Pineapple is the highest type of fruit produced in Malaysia and is mainly planted in Johor. Watermelons are excessively grown in Kelantan (Bachok), Terengganu (Setiu), and Johor (Kluang). Meanwhile, bananas and papaya are primarily planted in Johor, Pahang, and Sabah. Each short-term fruit is grown at a different cost and cultivation period, yield per kg, and earned farming profit per hectare. Some examples of cultivated fruits are summarized in Table 2, the Summary of Crop Fruits Financial Flow.

In Malaysia, the pineapple industry is increasing, as reported in 2019, with the export of pineapple-based products at RM491 million (Amin et al., 2021). In addition, Malaysia exported pineapple products to more than 20 countries, including Singapore, Egypt, United Arab Emirates, China, Japan, and Saudi Arabia (Abu-Hussin et al., 2021). The focus will be on increasing productivity and production of pineapple, banana, watermelon, durian, and papaya in line with growing demand for export markets such as China and the Middle

East and rising existing market shares in Singapore, Hong Kong, Indonesia and the Netherlands. Fruit exports are expected to increase from 830 thousand metric tons in 2010 to 1.04 million metric tons by 2020. The agriculture sector in Malaysia is governed by the Ministry of Agriculture and Agro-Based Industry (MOA). There are four organizations involved directly with farming and marketing: DOA, FAMA, LPP, and MPIB.

Table 2 Summary of Fruits Crop Financial Flow, 2019

| Commodity | Economical Planting Duration (months) | Gross Income | | Cost | | | |
|----------------|---|--------------|---------|-------------------------|-----------------------|---------------------|----------------------|
| | | (Kg) | (RM) | Setting up Cost (RM) | Material Cost (RM) | Labour Cost (RM) | Another cost (RM) |
| Josaphine (TG) | 13 | 38,000 | 52,800 | 2,700 | 18,742 | 9,900 | 802 |
| MD2 (TG) | 15 | 38,000 | 112,900 | 2,700 | 68,945 | 9,900 | 925 |
| MD2 (TM) | 15 | 38,000 | 112,900 | 3,400 | 70,895 | 9,900 | 925 |
| Moris (TG) | 13 | 38,000 | 44,600 | 2,700 | 14,821 | 9,900 | 802 |
| Moris (TM) | 13 | 38,000 | 44,600 | 3,400 | 16,771 | 9,900 | 802 |
| N36 (TG) | 15 | 38,000 | 48,800 | 2,700 | 18,945 | 9,900 | 925 |
| N36 (TM) | 15 | 38,000 | 48,800 | 3,400 | 20,895 | 9,900 | 925 |
| Rock Melon | 3 | 144,000 | 504,000 | 222,940 | 91,465 | 54,000 | 29,000 |
| Watermelon | 3 | 25,000 | 25,000 | 3,730 | 10,173 | 3,000 | 785 |

The Malaysian fruit industry is important socio-economically. No less than 135,000 smallholders are involved in fruit cultivation in Peninsular Malaysia, ranging from one to two hectares each in size (Zakaria & Rahim, 2014). Fruit crops use around 375,000 hectares (5.4%) of land in Malaysia (Zakaria & Rahim, 2014). Malaysia imported about RM 193.80 million worth of fruits in 2011, while its export amounts to RM 269.07 million. Malaysian tropical fruits are mainly exported to markets in Singapore, Thailand, Hong Kong, and Indonesia while mainly imported from China, the USA, South Africa, and Thailand. Per capita consumption of tropical fruits in Malaysia was 44.88 kg in 2011 (Zakaria & Rahim, 2014). There are 18 commodities of tropical fruits which have been advised by FAMA to be grown by the growers based on the demand and marketing potential requirements.

The government has outlined several approaches and strategies for enhancing fruits farming productivity. Some plantation areas are prepared with the necessary infrastructure and are developed with the concept of *Ladang Kontrak*. To encourage the realization of large-scale and commercialized fruit farming, more areas of the TKPM program for permanent food production under the national production policy must be implemented.

Nearly twenty-four per cent of Malaysia's land area is agricultural land, where 7,605,000 hectares is arable and permanent cropland. The tropical climate with a humidity level of 90% provides Malaysia's proper conditions to produce various crops. This report focuses on three leading food crops – paddy, vegetables, and rice, which dominated the supply for domestic demand. Table 3 shows the land use (in hectare) and production (in metric tons) of the three selected food crops. The figures indicate that the land use for food crops is mainly dedicated to cultivating paddy, as rice is a staple food in Malaysians' everyday diet. On average, a Malaysian citizen consumes 82.3 kilograms of rice per year. Thus, rice production, which stood at 2.91 million metric tons in 2019, plays a crucial part in the country's agriculture in ensuring food security. Several fruits are grown for domestic purposes, such as bananas, pineapples, watermelons, and rock melons. It must be noted that the figures in Table 3 for

fruits' land use and production are inclusive of short-term fruits and perennial plants. Vegetables such as water spinach, spinach, cabbages, cauliflowers, and many legumes are also grown in different states of Malaysia, with an average of 1.12 million annual productions. The total of 946,704 hectares of land use and 5,597,817 metric tons of food crops produced in 2019 shows that the agriculture sector is essential in maintaining food security among 32.37 million people living in the country.

Table 3 Food Crops Land Use and Production the year 2015-2019

| Crop Type | 2015 | 2016 | 2017 | 2018 | 2019 |
|----------------------------|-----------|-----------|-----------|-----------|-----------|
| Land Use (hectares) | | | | | |
| Fruits | 203,562 | 194,970 | 208,590 | 198,435 | 198,311 |
| TOTAL | 953,575 | 947,309 | 956,677 | 957,557 | 946,704 |
| Production (Metric Tonnes) | | | | | |
| Fruits | 1,768,722 | 1,664,793 | 1,492,601 | 1,540,401 | 1,616,723 |
| TOTAL | 5,883,212 | 5,600,046 | 5,066,650 | 5,178,062 | 5,597,817 |

Table 4 shows the number of fruit cropping farmers by the state for 2019 to 104,664 farmers. Therefore, the farming community needs to earn sufficient income from the harvest of their fruit which directly determines their food security (Giller et al., 2021). However, cropping activities must also focus on protecting their crops against the exposed risk and the uncertainties of the future (Ogunnupebi et al., 2020). Risk is a vulnerability state when there is a catastrophic or humiliating result of a portion of possible consequences (Burhan et al., 2017; Yazid et al., 2020). Thus, highlighting the importance of developing the Fruits Microtakaful Scheme (FMTS) for smallholder farmers' communities for the sustainability of the agriculture sector. Microtakaful is a tool that helps manage risk for low-income groups to present the participant's claimant with a certain amount of money (guaranteed) in the event of a safe danger (Foziah et al., 2018; Salleh & Ahmad Saufi, 2020; Yazid et al., 2020; Salleh & Ibrahim, 2013). Microtakaful is one of the preventive measure's resources recognized as helping low-income groups retain their financial capacity and preserve their lives (Garba et al., 2022). Once the intricacies of these relationships are comprehended, more effective disaster-prevention policies (e.g. floods and wildfires) can be devised. Prepared to deal with natural disasters (e.g. areas prone to flooding or areas prone to wildfires), farmers residing in such areas will be better prepared (Daud et al, 2016; Srinivas & Nakagawa, 2008; Salleh & Ahmad Saufi, 2020).

Agricultural insurance is a unique line of property insurance applied as a financial tool to transfer production risk associated with farming to a third party via a premium payment (Lin, & Kwon, 2020; Ahmed et al., 2022). In many countries, the public sector provides agricultural insurance, insuring small scale farmers against crop losses to adverse weather or other hazards (Alam et al., 2020). There are several critical potential benefits from managing weather risk through agricultural risk transfer and insurance either at the individual farmer level (micro-level insurance) or a government-level (macro-level), including: 1) protecting smallholding farmers and smoothing incomes during significant events, thereby reducing their potential to fall into the poverty trap (Salleh & Ibrahim, 2013); 2) protecting the productive capacity of rural enterprises and smallholding farm households (Garba et al., 2022); 3) financing disaster relief and encouraging structured social safety net policies (Skees & Murphy, 2009).

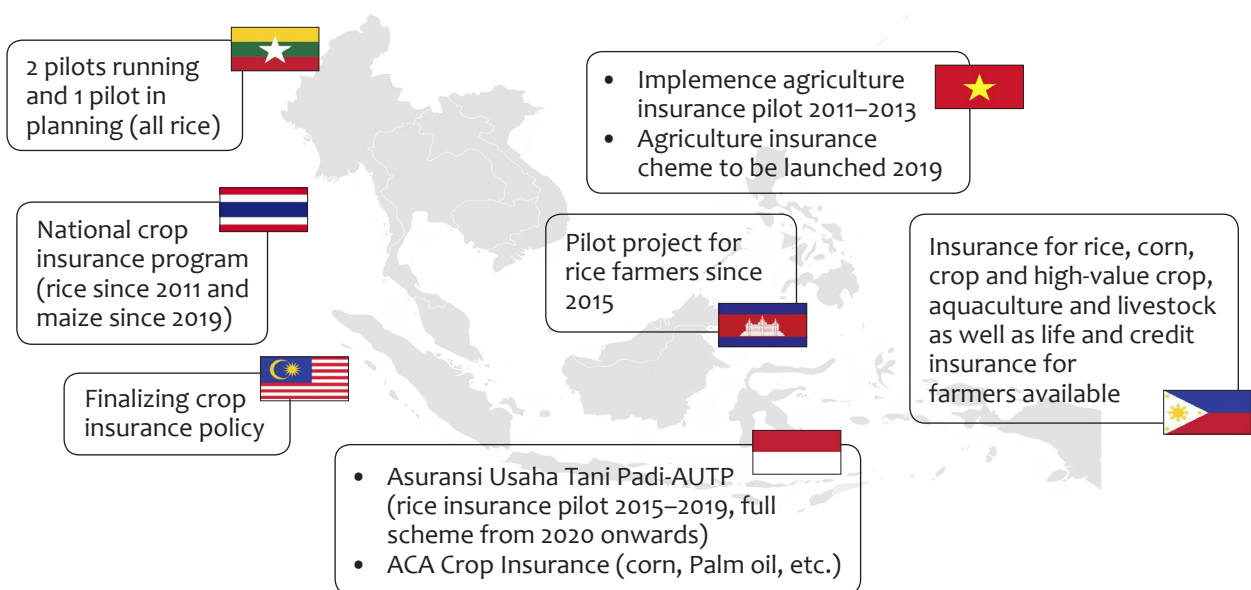
Crop insurance enables farmers to remain creditworthy even in years of significant crop loss and avoid falling into poverty. More importantly, it may allow them to pursue riskier but potentially much more profitable farming activities, which usually center on credit to purchase new production enhancing technology. Agricultural insurance can potentially leverage small farmers' access to rural finance.

Table 4 Total number of food cropping farmers by the state for the year 2019

| State | Fruits |
|-----------------|---------|
| Johor | 34,086 |
| Kedah | 8,739 |
| Kelantan | 13,781 |
| Melaka | 2,430 |
| Negeri Sembilan | 4,151 |
| Pahang | 21,587 |
| Perak | 8,326 |
| Perlis | 2,674 |
| Pulau Pinang | 1,790 |
| Selangor | 1,473 |
| Terengganu | 5,627 |
| TOTAL | 104,664 |

From Figure 1, agricultural insurance is generally implemented in most ASEAN countries such as the Philippines, Thailand, and Vietnam. Meanwhile, other ASEAN countries are steering towards employing the insurance. However, Malaysia is still at the stage of finalizing the insurance policy. For the time being, Malaysia has no stand-alone policy for crop insurance.

Overview of Crop Insurance in ASEAN



Source: GIZ, 2009

Figure 1 Overview of Crop Insurance in ASEAN

METHODS

A survey has been conducted to provide insight into the crop microtakaful Scheme to gather information on smallholder farmers, demographic profiles, types of crops grown by them, types of perils, and the community's affordable premium. A sample of 275 smallholder farmers generated by the Federal Agricultural Marketing Authority (FAMA) has been identified to participate in the survey.

Information is gathered through a questionnaire survey which is designed into three sections. The first section investigates the smallholder farmer's agricultural operations and the selection of natural perils. Meanwhile, the second section of the questionnaire requests the respondents to state their affordable contribution to the takaful scheme. The last section accumulates the demographic profiles of smallholder farmers. The preliminary findings from the survey can influence decisions at many levels about cash crops' disaster damage in formulating the FMTS. To achieve the FMTS framework, some critical information must be drawn from selected stakeholders. Thus, a focus group discussion (FGD) was held among related agencies such as the Ministry of Agriculture and Food Industry (MAFI), Malaysian Takaful Association (MTA), Central Bank of Malaysia (CBM) and National Security Council (NSC). The discussion is essential for drawing vital information about designing a framework; types of products, sum insured, contribution and parametric. The forum was designed to gather information from the industry experts regarding the following proposed framework outcomes. Their perceptions and opinion play an essential role in conducting the smallholder farmers' takaful framework.

RESULTS AND DISCUSSION

Based on 275 responses obtained, eight demographic characteristics are discussed, including gender, age, race, education level, state, number of families dependent, type of housing, and housing status to describe the sample characteristics. The majority of the respondents are male (81.5%) compared to females (17.8%), mainly from the age group between 31 to 50 years old, which accounted for 52.7%. 35.2% of elderly respondents follow this with more than 50 years old, and 12.0% of young smallholder farmers with less than 30. Most respondents are smallholder farmers on the East Coast of Malaysia (Terengganu, Kelantan, and Pahang), which accounted for 40.3%. Meanwhile, 37.5% of the respondents are from the northern states (Kedah and Pulau Pinang), 13.5% from Johor and a small percentage of 8.7% is from Selangor. In terms of race, most respondents are Malay (96.0%), with a small fraction of Chinese and Indians (2.2%). The majority of the respondents accounting for 54.9%, received education at the secondary level and 26.9% at the tertiary level. A large percentage of the respondents, comprising 92.3%, live in bungalows, whereas 3.3% are in semi-detached housing, and 4.4% live in terrace houses. The majority of them live in their houses and land (89.4%), and the rest are either renting their homes, renting the land or squatting.

Information on farming activities by the smallholder fruits farmers is vital in understanding their capabilities to improve their livelihoods. The smallholder farmers' fruits include honeydew, corn, jackfruits, rockmelon, roselle, sugar cane, watermelon, and pineapple. More than half of the respondents, or 58.1%, have less than ten years of experience in farming. Next, 25.8% of the respondents have experienced farming for 10 to 20 years, and another 16.0% have been involved in agriculture for more than 20 years. The findings also indicate that many of the respondents are running a farm with a size between 1 to 1.9 acres (39.3%). Another 26.2% with a farm size of 2.0 to 2.9 acres, 16.0% with a farm size of 3.0 to 3.9 acres and a small fraction of the farms are more than 4.0 acres (9.1%) or less than 1.0 acre (9.5%). The respondents carry out their farming activities on land, which is mainly freehold (64.8%), rental (25.6%) or on the lease (6.6%). They also admitted that they received helpful

advice on farming from the Department of Agriculture Malaysia (49.8%), the Federal Agricultural Marketing Authority, abbreviated as FAMA (18.9%) and the Malaysian Agricultural Research and Development Institute or MARDI (9.1%). Besides that, 29.1% of the respondents received advice from their social contacts or family and friends.

Table 5 shows the respondents' farm size, cost, and income for each farmland's acre. The data indicates that the smallholder farmers spent RM3719.94 cultivating their cash crops with an average income of RM7069.19. However, it must be noted that the data is taken across different types of cash crops and farming methods.

Table 5 Farm Size, Cost and Income of the Smallholder farmers

| | Average | Average per acre |
|-------------------------|----------|------------------|
| Cost (RM) | 7080.80 | 3719.94 |
| Income (RM) | 13456.10 | 7069.19 |
| Size of the farm (acre) | 1.9 | - |

The respondents are also queried on other farming information related to their access to credit, membership in farming groups or society, assistance from government bodies and courses attended for self-development. The results indicates that the smallholder farmers mainly spent their savings to cover any expenses and losses on their farms, which accounted for 88.7% of the respondents. Meanwhile, only a tiny per cent of 16.7% of the respondents seek credit from the bank or financial institutions, family, relatives, and friends. Next, the estimated losses and factors of harvest losses in the small farms from the survey. The significant factors causing harvest losses are found to be crop diseases (46.5%), drought (25.8%), and flood (25.8%). The average losses for each factor whereby flood is identified as the primary factor with the highest average loss of RM8821.90. For this study's purpose, the researcher only focuses on three types of perils: flood, drought, and disease that commonly affect the plantations in Malaysia.

Table 6 Interest in Takaful Micro Crop and Contribution

| Item | Percentage (%) |
|---------------------|----------------|
| Interested? | |
| Yes | 72 |
| No | 28 |
| Contribution (RM) | |
| less than RM10.00 | 17.5 |
| RM10.00 – 49.00 | 16.4 |
| RM50.00 – 99.00 | 31.2 |
| RM100.00 – 149.00 | 23.0 |
| RM150.00 – rm199.00 | 3.8 |
| 200.00 and more | 8.2 |

The survey results also found that many smallholder farmers, or 72% of the respondents, are interested in participating in a takaful scheme to protect their losses, as shown in Table 6. Their contribution varies greatly, whereby 54.2% of the respondents are willing to contribute an amount of RM50.00 to RM149.00, and 33.9% of the

respondents are only willing to contribute an amount of less than RM50.00. A small percentage of respondents, 12.0%, are willing to contribute more than RM150.00.

Further, FGD members from the Malaysian Takaful Association (MTA), Takaful Malaysia Berhad, Takaful Ikhlas General Berhad, Swiss Re, Malaysian Agriculture and Food Industry (MAFI), National Security Council (NSC) and the Central Bank of Malaysia agreed on the primary protection on three perils for FMTS. This study introduced the “FRUITS MICRO TAKAFUL SCHEME” (Table 7). Its implementation is based voluntarily with a seasonal contribution fee of RM 100.00 for any perils. This scheme caters to smallholder farmers, specifically those whose monthly income is not more than RM4,000.00.

The discussion is necessary to draw meaningful information about designing a framework: product, the sum insured, contribution and parametric. The discussion was intended to gather information from the industry experts regarding the following proposed framework outcomes. Their perceptions and opinions play an essential role in conducting the smallholder farmers' takaful framework. Based on the discussion among the selected stakeholders, the proposed FMTS is outlined. The finding of the focus group included data sources to enable efficient and successful data gathering.

Table 7 Proposed Crop Micro Takaful Scheme (CMTS)




| Themes | Items |
|-----------------------|---|
| 1. Name of the scheme | Fruits Microtakaful |
| 2. Crop Insured | Fruits |
| 3. Peril Covered | Natural disaster Pests Diseases |
| 4. Sum insured | The total cost of input material per hectares |
| 5. Contribution Fee | RM100 |
| 6. Period of cover | The insurance coverage shall be from direct seeding or transplanting up to harvesting. The insurance coverage shall commence from the date of the Certificate of Insurance Cover (CIC) or the emergence of seed growth (coleoptiles), if direct-seeded or upon transplanting, whichever is later. |
| 7. Insured | Smallholder farmer (Income – less than RM4,000 per month) |
| 8. Technique | Parametric Cover |

Risk is an innate part of the farming business (Shortall et al., 2019). Many uncertainties inherent in weather, yields, prices, government policies, global markets, and other factors can cause wide swings in farm income (Müller et al., 2020). Malaysian smallholder farmers are frequently exposed to weather, prices, and disease uncertainties (Abubakar et al., 2022). Most of them live on the edge of extreme uncertainty for survival threshold because of no insurance protection. For this study, fruits crop critical perils that mainly affect smallholding farming. Fruits Crops to be insured are short-term crops: 1) Natural disasters include typhoons, floods, droughts, earthquakes, volcanic eruptions and tornados; 2) Plant diseases (e.g., tungro, rice blast/neck rot, grassy stunt, bacterial leaf blight and sheath blight); 3) Pest infestation by any of the following significant pests: rats, locusts, armyworms/cutworms, stemborers, rice grain bugs, black bugs, and brown planthoppers/hopper burn.

Table 8 tabulated the working framework for FMTS. The potential stakeholders to be involved are:

1. Ministry of Agriculture and Food Industry (MAFI)
2. Department of Agriculture (DOA)
3. Ministry of Finance (MOF)
4. Bank Negara Malaysia (BNM)
5. Takaful Operators (Takaful Ikhlas General Berhad)
6. Retakaful (Swiss Re)
7. Malaysian Takaful Association

Table 8 Fruits Micro Takaful Scheme (FMTS) Framework

| POLICYMAKER | |
|---|--|
| 1. Government (MAFI) | 1. To promote small-scale farming |
| 2. Central Bank of Malaysia (CBM) | 2. To set the relevant policies in the micro crop takaful implementation |
|  | |
| POLICY ENFORCER | |
| 1. Takaful & Retakaful | 1. The agencies responsible for covering risks (Takaful Ikhlas General Bhd & Swiss Re) |
| 2. Banker | 2. To provide financial capacity to the micro crop community (Agro Bank) |
| 3. Data Management Agencies | 3. The agency responsible to administer data related to Crop Microtakaful (DOA - Mardi/Pertubuhan Peladang/Bernas) |
|  | |
| MARKETING CHANNEL | |
| 1. Direct Marketing | 1. Marketing is done directly by the takaful operators |
| 2. DOA (Mardi/Pertubuhan Peladang/Bernas) | 2. Work on behalf of the takaful operators to market the products |
| 3. Agents | 3. Work on behalf of the takaful operators to market the products |
|  | |
| END USERS | |
| Smallholder Farmers | Fruits |

CONCLUSION

The Fruits Microtakaful Scheme is a complex and challenging product to deliver safe and sustainable, especially to target farmers in developing economies with a low resource base. However, the Central Bank and MAFI, as policymakers and farmers' organizations, need to work together to make the FMTS sustainable in terms of stabilizing incomes. They need to guard against vulnerabilities in properties. The government's role in the successful application of the FMTS is crucial. Private investment by offering various incentives could be attracted to this sector. In partnership with private players, multiple developments in implementing the FMTS may be piloted, and viable activities eventually expanded. For efficient implementation of FMTS, comprehensive database formulation of individual crops is extremely necessary. The joint efforts of government and academic institutions can prepare a comprehensive database based on regions. FMTS must be made viable to make agriculture attractive and pay-oriented, particularly in developing nations, because over half the population depends on agriculture.

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