

RISK MANAGEMENT IN AGRICULTURAL FINANCING: EVIDENCE FROM BMT ASSALAM DEMAK, INDONESIA

Eni Kusrini¹, Cihwanul Kirom²

^{1,2}Universitasa Islam Negeri Kudus, Kudus

✉ enikusrini85@uinsuku.ac.id

Abstract : Demak Regency is predominantly an agricultural region, yet farmers often face significant capital constraints in cultivating their rice fields, which can delay harvests or even cause crop failure. Baitul Maal wa Tamwil (BMT) Assalam Demak addresses this need by offering agricultural financing repayable at harvest time. However, limited funds mean some farmers struggle to meet the monthly installments required by BMT Assalam Demak, creating a research gap this study seeks to address. This research aims to analyze the risk management practices implemented by BMT Assalam Demak in its agricultural financing scheme, with the broader goal of helping farmers gain more systematic knowledge of agricultural financing to improve productivity and income. A qualitative method was employed, using primary data obtained from informants at BMT Assalam and secondary data from related literature, supported by data collection, validity testing, and analysis techniques. The findings show that BMT Assalam Demak effectively manages financial risks affecting both the institution and its farmer-customers, including through systematic hazard identification, competent staff, and bookkeeping software that streamlines operations. With ten branch offices across Demak Regency, BMT Assalam Demak provides farmers convenient access to financing and to tracking their financing history. The harvest-based installment scheme allows farmers to obtain loans more easily and repay them once their harvest is sold, while BMT Assalam Demak benefits through profit-sharing. This mutually beneficial relationship underscores the importance of sound risk management in sustaining both farmer welfare and institutional trustworthiness.

Keywords : Risk Management, Agricultural Financing, Islamic Microfinance, BMT Assalam Demak

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1. INTRODUCTION

Risk is an inherent challenge in economic activities. In finance, risk is defined as the potential for adverse outcomes or deviations from expected returns (Rejda, 2011). Risk is often categorized into two types: valued risk and non-valued risk. A valued risk occurs when the potential benefits of an activity outweigh its potential losses, making it a calculated and acceptable risk. Conversely, non-valued risk emerges when the potential losses exceed the expected benefits. Profit-oriented ventures are invariably accompanied by risks; the higher the expected return, the greater the level of risk an entrepreneur must bear (Vaughan & Vaughan, 2014). Similarly, microfinance institutions such as cooperatives and *Baitul Maal wa Tamwil* (BMT) are not immune to

these risks. Financing risks are an inherent part of their operations, requiring special attention to be identified, measured, and mitigated effectively (Oktapian & Fauzi, 2023).

Risk management in agricultural financing is crucial, as the agricultural sector is exposed to unique and significant risks, including crop failure, climate variability, pest attacks, and price volatility (Jayanti, 2024). Proper and timely risk management can create financial stability for the institution and enable growth, even amidst setbacks. Good risk management practices lead to a more stable and profitable business, benefiting not only the financial institution but also its members. This allows the businesses they finance to develop and contribute to the growth of the micro-economy. BMT Assalam in Demak Regency provides agricultural financing to a community where the majority are farmers. The planting season requires significant capital, including maintenance costs until harvest. Farmers with sufficient capital are not overly concerned about these costs; however, those without sufficient funds—especially those who rent land—often find the costs of cultivation burdensome. Farmers experiencing financial difficulties can access financing services specifically designed for them, often with installment payments timed to coincide with the main harvest (Rodiana et al., 2014). This highlights the need for an effective risk management framework that addresses both institutional and client needs.

As a financial institution, BMT Assalam in Demak Regency requires strong cooperation with farmers. Financing is not simply provided; it requires a guarantee from the farmers based on agreed-upon terms. BMT Assalam always prioritizes risk management throughout its operations, aiming for a smooth collaboration without significant losses to either party. The risk management function is expected to regulate and minimize risks in agricultural cooperation, considering the relatively long production cycle (approximately four months for rice) and the possibility of either a successful or failed harvest. One of the key risks identified in agricultural financing is *moral hazard*, where farmers may have an incentive to increase their risk exposure because they do not bear the full costs of that risk (Sari, 2025). This is often exacerbated by *information asymmetry*, where the financial institution lacks complete information about the farmer's activities and intentions. BMT Assalam has implemented various risk mitigation strategies in its agricultural financing to ensure its products remain viable. The importance of the agricultural sector is reflected in its contribution to GDP, as shown in Figure 1.

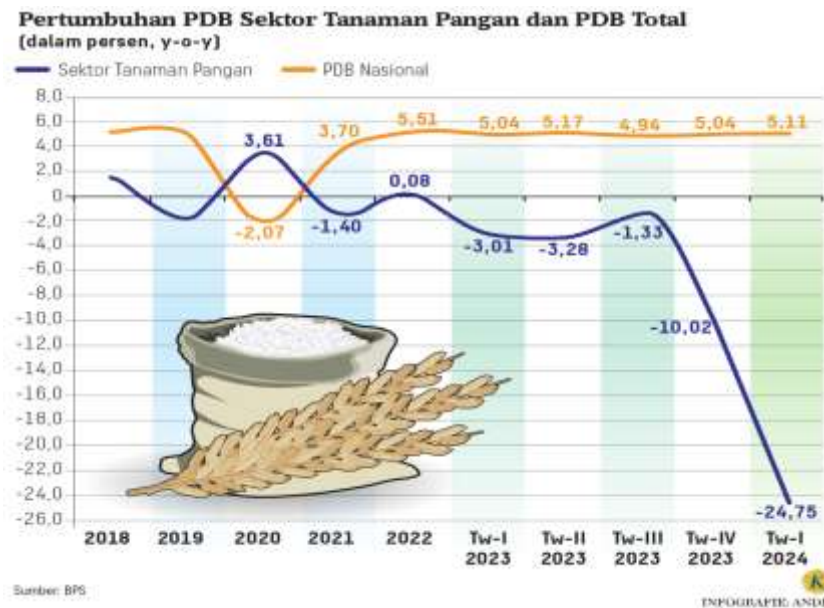


Figure 1 GDP Growth in the Food Crops Sector and Total GDP from 2018 to 2022
Source : Badan pusat Statistik, 2025

Despite the critical role of agricultural financing in supporting food security and rural economies, its implementation in Indonesia faces persistent challenges. One of the most significant issues is information asymmetry between financial institutions and farmers, which often leads to moral hazard and adverse selection (Muqorobin et al., 2026). This condition is exacerbated by limited farmers' sharia financial literacy, the risk of crop failure, and fluctuations in commodity prices (Maulidia et al., 2026). Studies indicate that when farmers are covered by financing or insurance schemes, there is a tendency to increase risk exposure because they do not bear the full costs of that risk, creating moral hazard that ultimately undermines the sustainability of agricultural financing programs (Suryanto & Rosalia, 2023). Furthermore, a regulatory gap between rigid banking standards and agricultural risk realities creates what scholars term a "Proximity Paradox," where formal Islamic financial institutions remain structurally disincentivized from financing smallholder farmers (Muqorobin et al., 2026). In response to these challenges, Islamic microfinance institutions like BMT have emerged as alternative financing providers, offering schemes such as harvest-based installment payments that align with farmers' seasonal income patterns (Thamaga, 2021). This approach not only helps reduce farmers' dependence on informal loan sharks but also creates opportunities to integrate information transparency and farmer education as preventive strategies against moral hazard (Maulidia et al., 2026).

This research shifts the focus towards emphasizing information transparency and education for farmers as a strategy to mitigate financing risks and moral hazard. The goal is to ensure orderly administration and financing procedures for the mutual benefit of both the institution and its farmer-clients. Susanti (2018) conducted research on the Implementation of *Mudharabah* Financing Risk Management for the Agricultural Sector at KSPPS BMT BUS using a qualitative case study method. The results showed that the main risks stem from crop failure, weather changes, and customer moral hazard. Mitigation was carried out through customer selection, 5C analysis, business monitoring, and regular farmer mentoring. Similarly, research conducted by Rahmawaty et al. (2024) on *musyarakah* financing risk mitigation in the

agricultural sector at KSPPS Al Huda Kajajar, using a descriptive qualitative method, found that risks identified included financing risk, operational risk, and market risk. Mitigation strategies were implemented through business feasibility analysis, field surveys, regular monitoring, and coaching for farmers receiving financing. Sari (2025) conducted research on the implementation of risk management in minimizing *murabahah* financing in the agricultural sector, finding that mitigation strategies were implemented through early risk identification, field surveys, monitoring of fund use, monitoring of agricultural businesses, and early response to potential problematic financing.

Based on these studies, previous research has extensively examined risk management in agricultural financing across various contracts, including *mudharabah* (Susanti, 2018), *musyarakah* (Rahmawaty et al., 2024), and *murabahah* (Sari, 2025), with mitigation strategies generally centered on customer selection, feasibility analysis, field surveys, and ongoing monitoring. However, these studies have largely focused on procedural and operational mitigation mechanisms, while paying limited attention to the role of information transparency and education for farmers as a preventive strategy against moral hazard (Yusuf & Maulana, 2025). Furthermore, no prior study has specifically examined risk management practices within harvest-based installment financing schemes, such as those implemented by BMT Assalam Demak, where repayment timing is directly tied to agricultural cycles. This gap presents an opportunity to explore how information-based strategies, alongside conventional risk mitigation tools, can strengthen orderly administration and mutually beneficial outcomes for both BMT and farmers.

Therefore, this study aims to analyze the risk management strategies implemented by BMT Assalam Demak in agricultural financing, with particular emphasis on how farmer information and education function as a mitigation strategy against financing and moral hazard risks, in order to ensure orderly administrative and financing procedures that benefit both the institution and its farmer-customers.

2. THEORY AND METHODS

2.1 Risk Control

According to ISO 31000:2018, risk management is the coordinated activities to direct and control an organization's risk management. The risk management process includes communication and consultation, contextualization, risk identification, risk analysis, risk evaluation, risk treatment, monitoring, and review. In the context of agricultural financing, risks include crop failure, climate change, pest and disease attacks, commodity price fluctuations, farmer moral hazard, and the risk of financing default.

Risk control is a crucial step in the risk management process, aimed at minimizing the likelihood of a risk occurring and the resulting losses. Risk control is implemented after the risk identification and measurement process, allowing the organization to determine appropriate steps to manage the risk. According to George E. Rejda, risk control is a technique used to reduce the frequency and severity of potential losses within an activity or organization (Rejda, 2011).

In general, risk control can be achieved through several methods, such as risk avoidance, which involves not engaging in activities that could potentially pose a risk. This is the most effective method for eliminating risk, but it is often difficult to implement because it can hinder business activities or opportunities. Therefore,

organizations typically combine this method with other control methods. (Dorfman, 2007). Another method is risk reduction, which is an effort to reduce the likelihood of a risk occurring or minimize its impact. Risk reduction can be achieved through the implementation of monitoring systems, the use of safer technology, human resource training, and the implementation of clear standard operating procedures (SOPs). The main goal of this method is to reduce the level of loss without having to stop risky activities (Vaughan & Vaughan, 2014).

Additionally, there are risk transfer methods, which transfer some or all of the risk to another party. The most common examples are through insurance or a cooperation contract with a third party. In this way, the organization can continue its activities but the financial risk is transferred to another party better able to bear it. (Harrington & Niehaus, 2004). The final method is risk retention, which is the decision to assume the risk yourself if the risk is considered small or the cost of controlling it is greater than the potential loss. Risk retention is usually done consciously and deliberately by setting aside a reserve or emergency fund to anticipate potential losses (Rejda, 2011).

From a sharia economic and financial perspective, risk management must also adhere to sharia principles, such as avoiding usury (*riba*), *gharar*, and *maysir* (gambling), as well as implementing the principles of profit and risk sharing. Therefore, risk management in sharia financial institutions aims not only to minimize losses but also to maintain compliance with sharia principles in all financial activities. (Iqbal & Mirakhor, 2011).

2.2 Financing

Islamic financial institutions play a crucial role in providing financing facilities. Financing at Islamic financial institutions, such as BMTs, provides services in the form of profit-sharing schemes such as *mudharabah* and *musyarakah*, *ijarah* and rental contracts, *murabahah*, *salam*, and *istishna*, as well as *qard* loans (Ritonga et al., 2024). Financing broadly means financing issued to support planned investments, through one's own efforts or others. Financing can be defined as funding through an institution that provides financing, for example, a sharia cooperative to its members. According to Law No. 10 of 1998, Article 1(12) states that: "Financing based on sharia principles is financing in the form of money or bills that are disputed with it according to the agreement of the bank with another party that requires the party being financed to develop the money or bills, according to the agreed time with obtaining profit sharing." According to this definition, financing is the provision of loans by two parties who have an interest, namely the party providing and receiving financing. In reality, BMT financing is the provision of loans to its members in the amount determined according to the agreed time period with profit sharing in return (Nizar, 2015).

Agricultural financing plays a strategic role in supporting the agricultural sector, which is a vital pillar of national food security and rural economic development (Larasati et al., 2018). However, financing in the agricultural sector faces unique and significant challenges compared to other sectors. These challenges include high production risks due to natural factors such as climate change, pest attacks, and crop failure (Ma et al., 2025). In addition, farmers often face capital constraints because they do not have sufficient own funds to finance their farming activities, forcing them to seek financing from conventional financial institutions or even loan sharks that apply interest systems containing usury elements (Larasati et al., 2018).

Agricultural credit itself exhibits distinct characteristics such as seasonality, small scale, low efficiency, and high bad debt rates, which complicate the financing process (A'la, 2025). In the context of agricultural production, capital needs include both fixed costs (such as land, buildings, and machinery) and variable costs (such as seeds, fertilizers, pesticides, and labor wages), where the amount of capital required depends on the scale of the farming business and the type of commodity cultivated (Soekartawi, 2003). This condition is often exacerbated by information asymmetry between financial institutions and farmers, which can lead to moral hazard and adverse selection. In response to these challenges, Islamic microfinance institutions such as *Baitul Maal wa Tamwil* (BMT) have emerged as alternative financing providers offering sharia-compliant financing schemes, including harvest-based installment payments (*yarnen*) that align with farmers' seasonal income patterns (A'la, 2025). This approach not only helps reduce farmers' dependence on informal loan sharks but also creates opportunities to integrate information transparency and farmer education as preventive strategies against moral hazard.

2.3 BMT

BMT uses financing contracts with profit sharing, namely *mudharabah* and *musyarakah*, financing contracts with margin, namely *murabahah* and *baibithaman ajil* (BBA), and *qardhul hasan* financing. According to Kusmiyati (2007), BMT financing uses financing contracts with profit sharing, namely *mudharabah* and *musyarakah*, financing contracts with margin, namely *murabahah* and *baibithaman ajil* (BBA), and *qardhul hasan* financing. According to Kusmiyati (2007), *murabahah* financing is more dominant because this financing tends to have a smaller risk and is more secure for shareholders. The *murabahah* contract is a sale and purchase contract with an agreement on a profit margin from the cost price of an item.

The financing of "yarnen" (pay for harvest) BMT As Salam Demak will provide financing that is currently needed by members and payment for procurement of goods is made in cash or *Tanggung* as in the classical economic era was done by Rasulullah SAW, he permitted the practice of *murabahah*. As the Prophet said: "There are three things that contain blessings: buying and selling not in cash, *muqaradhah* (*mudharabah*), and mixing wheat with millet for household needs, not for sale" (H.R. Ibn Majah).

Financing Conditions and pillars of *murabahah* buying and selling, among others: a) The second buyer must know about the purchase price. This information will be an absolute requirement of the *murabahah* contract; b) The desire to be obtained by the second seller must be clear. The profit is in the form of a percentage of the purchase price. The profit added to the cost price will be the selling price for the second buyer. This selling price will be the condition for the validity of the sale; c) The capital to buy the transaction object must have its equivalent in the market; d) The transaction object and means of payment must not be in the form of *ribawi* goods; e) The sale contract between the first buyer and the first seller must be valid; f) *Murabahah* is based on the trust of the buyer and seller. The buyer believes in the information provided by the seller, and a seller must not betray. Like other sales, *murabahah* must also be accompanied by *sighat* (*ijab* and *qabul*). The conditions and provisions that must be met in the *ijab qabul* are the clarity of the objectives of both parties who are contracting must have compatibility between *ijab* and *qabul*, and the meeting of *ijab* and *qabul* in one *majlis*. At the time of implementing the agreement regarding the time of repayment of the financing must also be agreed upon, both cash and non-cash payments by

installments or payment when due. *Murabahah* contracts in the financing of the agricultural sector can be applied to the provision of agricultural tools and machinery, seeds, seeds, fertilizers, and pesticides. Farmers can return the financing along with the agreed margin, in cash or deferred by installments or post-harvest payment of "yarnen". The payment of "yarnen" relieves farmers, especially food crop farmers who need monthly time to get income from their crops (Rodiana et al., 2014).

2.4 Research Methods

This study uses a qualitative research method with a socio-economic approach. This study aims to understand the application of risk control in financing products, specifically agricultural financing, at BMT Assalam, Demak Regency. The researcher's rationale for using a qualitative socio-economic approach is as follows: a) To understand the risk control implemented by BMT Assalam in Demak Regency to anticipate financing risks, particularly for agricultural products; b) To understand the agricultural product financing scheme implemented by BMT Assalam in Demak Regency; c) To understand the contribution of risk control labeling to BMT Assalam in Demak Regency and to the agricultural sector in Demak Regency; d) To understand a phenomenon that can increase knowledge and provide references related to risk control in agricultural financing (Wahid & Murni, 2017).

Data sources used by researchers include *Primary Data*: Data collected from informants. Researchers will conduct direct research to obtain primary data from BMT Assalam and farmers in Demak Regency. *Secondary Data*: Describe and paraphrase information obtained through journal articles, e-books, and reference books that examine the theme. Data sources were obtained from primary data through informants at BMT Assalam Demak and secondary data through related bibliographies. Competent informants who provided data and information for this study included leaders, managers, employees, and farmers who received financing from BMT Assalam Demak.

In data analysis techniques, interviews and observations were conducted to strengthen the data analysis techniques. This was done through qualitative interpretation of the data from the informants. Systematically, the analysis went through three stages: *Data reduction* using various methods and important notes in the field. *Data presentation* by drawing conclusions from the patterns that had been observed.

The object of this research is BMT Assalam in Demak Regency. BMT Assalam has 10 branch offices spread across Demak Regency. Each branch offers financing that is repaid upon harvest. Data collection is carried out using the following methods: a) *Interviews* with informants were conducted using a list of questions prepared by the researcher, tailored to the problems encountered in the field. This data collection technique facilitated the researcher's ability to obtain valid and in-depth information (Sugiyono, 2005); b) *The observation* method used by researchers with informants was systematic and detailed. Researchers collected information through note-taking and recording. This process will be carried out in greater depth to explore and obtain more accurate information from informants (Hadi, 2001); c) *Documentation* Method Documentation is carried out through photography, video, and other methods that support the documentation collection process. Send feedback.

3. RESULTS AND DISCUSSION

3.1 Data Analysis Results

Risk management in agricultural financing provides a productive contribution to farmers. Risk management can also minimize potential losses for BMT Assalam Demak. One function of management at all levels is risk control. Another function is to bring all these aspects together into a coherent whole and direct them toward achieving the goals of the organization, specifically BMT Assalam Demak, in agricultural financing.

3.2 Risk Identification

In the realities of financing practices, particularly in agricultural financing, BMT Assalam Demak needs to make significant changes in risk identification. Therefore, a rapid response to pressing issues, both institutional and human-related, is essential. In fact, risk managers can sometimes become trapped in managing only one part of their overall risk management program. Periodically, risk managers must broaden their review, which they can conduct in-house or with the assistance of consultants from insurance companies. Currently, insurance for BMT Assalam Demak members is managed solely by the BMT.

Risk is the possibility of an undesirable event affecting an activity or object. Risk management is the process of managing the potential for risk to minimize the likelihood and impact of the risk, as outlined in HIRARC (Hazard Identification, Risk Assessment, and Risk Control). BMT Assalam Demak maps and identifies risks, as explained by Putranto (2010), who defines HIRARC as follows:

- a) Hazard Identification is the process of inspecting each work area to identify all inherent hazards. This includes machinery, equipment, laboratories, office areas, warehouses, and transportation.
- b) Risk Assessment is the process of assessing the risks of hazards in the workplace, such as property and financial losses, injuries, or illnesses resulting from accidents.
- c) Risk Control is a process used to identify and control all potential hazards in the workplace and conduct continuous reviews to ensure work is safe. BMT Assalam Demak regularly evaluates its agricultural financing and ensures there are no detrimental risks in financing for farmers.

3.3 Risk Management Through Murabahah Contracts

Agricultural financing carries a relatively higher risk than other sectors because it is heavily influenced by natural factors such as weather, pests, and soil conditions. Furthermore, fluctuations in agricultural prices and limited farmer managerial skills also increase financing risk. Common risks include default risk, production risk, and market risk. In the context of BMT Assalam Demak, agricultural financing risk management is carried out through several stages. The first stage is a financing feasibility analysis using prudential principles, such as character, capacity, capital, business conditions, and collateral (the 5Cs) (Kasmir, 2016). This analysis aims to ensure that prospective customers have the ability and willingness to repay the loan.

The HIRARC theory has strong relevance to the implementation of agricultural financing in Demak Regency. During the hazard identification stage, financing institutions identify various potential hazards, such as tidal flooding, climate change, pest attacks, commodity price fluctuations, and farmer moral hazard. Furthermore, through risk assessment, the likelihood and impact of each emerging risk are assessed. During the risk control stage, financing institutions implement various mitigation strategies, such as financing feasibility analysis, farming monitoring, farmer mentoring, agricultural insurance utilization, and early warning systems to minimize the potential for problematic financing. Therefore, HIRARC can be used as an analytical framework

for identifying, assessing, and controlling agricultural financing risks in Demak Regency.

The second stage is financing monitoring or supervision. BMT Assalam Demak regularly monitors the agricultural businesses it finances, both through field visits and direct communication with customers. This aims to detect potential issues early that could lead to problematic financing. Furthermore, BMT also implements risk mitigation strategies, such as diversifying financing across various agricultural commodities and using appropriate contracts, such as *mudharabah* or *murabahah*, according to customer needs. The use of these sharia contracts not only reduces risk but also ensures compliance with sharia principles. Risk management is also implemented through an educational approach to customers, such as providing mentoring and training related to agricultural business management. Thus, customers not only receive financing but also gain increased capacity in managing their businesses. By implementing sound risk management, BMT Assalam Demak can minimize problematic financing and increase the success of financing in the agricultural sector. This not only benefits the institution but also supports farmer welfare as part of the goal of a just sharia economy (Ismail, 2011).

The financing provided by BMT Assalam Demak uses the *murabahah* contract. This contract is implemented in accordance with Islamic teachings, eliminating elements of usury, gharar, and maysir. Members, who are farmers, benefit from this financing scheme, enabling it to be more effective and compliant with Sharia law. The primary benefit of agriculture financing at BMT Assalam Demak is its transparency, with clear information on purchase and sale prices, based on the collateral provided by farmers. BMT Assalam members, particularly farmers, are fully informed about the price of goods and the agreed-upon profit-sharing calculations, which further creates certainty in installment payments without creating future risks and uncertainty.

BMT Assalam Demak carries out risk control by understanding customer characteristics in agricultural financing through BI Checking history, regular monitoring of the business or agriculture being run, and financing guarantees guaranteed by members of the BMT Assalam Demak cooperative in obtaining financing. Agricultural financing uses a *murabahah* contract to minimize risk. The *murabahah* financing contract is binding and has legal force and sanctions if one party breaks it. This contract is carried out in accordance with Islamic teachings, thus eliminating elements of usury, gharar, and maysir. Members who come from farmers in this financing can understand the financing scheme to be more effective and in accordance with sharia. The most important benefit of agriculture financing at BMT Assalam Demak is that *murabahah* financing is transparent by clearly informing the buying and selling price on the guarantee provided by the farmers. BMT Assalam members, especially farmers, clearly understand the price of goods and the calculation of the agreed profit sharing, which will further create certainty in installment payments without causing risk and uncertainty in the future. The benefits of financing using the *murabahah* contract are not only material but also immaterial, namely prioritizing the aspect of compliance in the application of sharia principles. BMT Assalam Demak through agricultural financing can provide spiritual comfort to BMT Assalam Demak members and its managers (Interview with Mr. H. Hambali, as the Head of BMT Assalam Demak, July 13, 2025).

Through a *murabahah* contract, Islamic financial institutions purchase the goods first and then sell them to farmers with installment payments. *Murabahah* reduces the risk of misuse of funds. One risk of agricultural financing is moral hazard,

which is the misuse of funds. In a *murabahah* contract, funds are not provided in cash; the financial institution provides the goods needed by farmers, allowing for more controlled financing. Therefore, *murabahah* is often chosen to minimize the risk of problematic financing.

4. CONCLUSION

Based on research on risk management in agricultural financing at BMT Assalam Demak, it can be concluded that risk management has been systematically implemented through the stages of risk identification, risk assessment, and financing risk control. The main risks faced in agricultural financing include the risk of crop failure due to climate change and tidal flooding, pest and plant disease attacks, fluctuations in agricultural commodity prices, and the risk of default by financing members.

During the risk identification stage, BMT Assalam Demak conducts field surveys and feasibility analyses of prospective members to determine the condition of the agricultural businesses they will finance. Furthermore, during the risk assessment stage, the BMT assesses members' ability to manage their farming businesses and repay loans based on their characteristics, business capacity, land conditions, and crop yield prospects.

The risk mitigation strategies implemented include the application of the 5C principle in financing analysis, regular monitoring and mentoring of farming businesses, field surveys prior to financing disbursement, and a persuasive approach to members experiencing payment difficulties. These strategies have been proven to help reduce the potential for problematic financing, although they cannot completely eliminate risks stemming from external factors such as extreme weather and unstable agricultural prices.

Based on the HIRARC (Hazard Identification, Risk Assessment, and Risk Control) perspective, the implementation of risk management in agricultural financing at BMT Assalam Demak reflects the process of hazard identification, risk assessment, and risk control. However, strengthening the risk mitigation system through the use of agricultural information technology, collaboration with agricultural extension workers, and the integration of Islamic agricultural insurance schemes is needed to increase the resilience of agricultural financing to various unforeseen risks. Therefore, risk management in agricultural financing at BMT Assalam Demak plays a crucial role in maintaining financing quality, minimizing the risk of loss, and supporting the sustainability of agricultural financing as a productive sector that makes a significant contribution to the economy of Demak Regency.

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