Journal of Arts & Social Sciences
Vol 8, Issue 1, 50-57 (2026)

Evaluating the Success of Microfinance Applications Among Aquaculture Farmers in Malaysia

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Abstract
Aquaculture is a key contributor to Malaysia's food security, economic growth but farmers face significant challenges in securing financial support. This study evaluates how business characteristics and financial services influence the success of microfinance applications among aquaculture farmers in Malaysia. A total of 266 aquaculture farmers (respondents) were collected. This study examines the factors that can affect the success of securing financial loans among aquaculture farmers in Malaysia. Results indicated that microfinance services particularly loans, savings, and insurance significantly enhance entrepreneurial success and client well-being when aligned with the sector's operational realities. Business characteristics such as experience, technology adoption, and production capacity emerged as strong predictors of success.

Key words: Business Characteristics, Assess to Financial Services, Financial Literacy, Business Management Skills, Microfinance, Aquaculture, Clients' Wellbeing
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Introduction

Aquaculture is a key contributor to Malaysia's food security, economic growth, and rural livelihoods, providing a stable source of affordable protein while supporting employment and exports. The industry also reduces pressure on wild fisheries and encourages sustainable practices. However, farmers face significant challenges in securing financial support. Farmers have limited access to credit, high initial investment costs, and perceived risks by financial institutions often restrict expansion and modernization. Small-scale farmers, in particular, struggle with collateral requirements and inconsistent cash flow. Addressing these financial barriers through targeted funding schemes and policy support is essential to ensure the continued growth and sustainability of Malaysia's aquaculture sector. The aquaculture has emerged as a vital driver of Malaysia's agri-food economy, contributing significantly to national food security and rural livelihoods (Hassan, Rahman, & Ali, 2019). As the sector expands, particularly on the part of the small-scale and semi-commercial farmers, the need to have an easy and dependable source of funds increases. Despite the presence of microfinance institutions (MFIs) designed to serve underserved populations (Yunus, 2006), aquaculture farmers often face considerable barriers in accessing and effectively utilizing microfinance products. These challenges include irregular income cycles, limited financial literacy, and insufficient business documentation factors that complicate credit assessment and repayment capacity (Hamid, Omar, & Mohd, 2019; Salim, Zainuddin, & Karim, 2024). Microfinance seeks to achieve financial inclusion through the provision of small-scale credit and other financial services to the people who are not included in the formal banking sector (Yunus, 2006; Maxwell, 2012). In aquaculture, where significant upfront investment, high operational

costs, and exposure to environmental and market risks are common (Julious, 2005), microfinance has the potential to strengthen resilience and sustainability.

Problem Statement

Microfinancing is very important for small-scaled aquaculture farmers in Malaysia because it addresses critical financial and operational challenges that limit their productivity and growth. Many small-scale farmers struggle with limited access to formal credit, high start-up costs, and inadequate cash flow, which restricts their ability to invest in modern equipment, quality feed, or disease management practices. Microfinance provides affordable, accessible loans tailored to their needs, enabling them to expand operations, adopt sustainable practices, and improve efficiency. Other than financial funding, microfinance programs often include training, technical support, and financial literacy, helping farmers make informed decisions, manage risks, and achieve long-term financial stability in a competitive market.

Hence, microfinance services provide critical insights into how financial support influences aquaculture business decision-making, resource allocation, and overall financial well-being. In Malaysia, aquaculture farmers often face challenges such as limited access to formal credit, inefficient cash flow management, and inadequate financial literacy, which constrain growth and sustainability. Therefore, offering tailored loans, training, and advisory services, microfinance helps farmers optimise resource use, plan investments, and improve operational efficiency.

The previous studies of microfinance in Malaysia have dealt mainly with agriculture in general, or with a broader social impact of microfinance like poverty reduction and women empowerment (FAO, 2018), but not with the specific business and operational realities of the aquaculture business and sector (Abd Rahman et al., 2022). Aquaculture producers work in unique circumstances whereby production risk is high, seasonal income is experienced and lack of formal records is witnessed (Belton & Little, 2011). Such situations are usually incompatible with credit assessment processes and repayment systems that are generally used by the MFIs (Cohen, 1988), which in most cases, makes many aquaculture entrepreneurs fail to access microfinance or those who are financed fail to repay the finances. Moreover, the microfinance product design in Malaysia is often not customised well enough to meet the needs of aquaculture. Collateral and repayment terms, loan repayment schedules, and loan structures can be standardised and unresponsive to the cash flow and production cycles of an aquaculture operation (Fowler, 2013; Abd Rahman et al., 2022).

Research Objectives

The research objectives are as follows:

- **H1:** Business characteristics have a positive and significant effect on microfinance application success and client well-being.
    - **H1a:** Education has a positive and significant effect on microfinance application success and client well-being.
    - **H1b:** Experience has a positive and significant effect on microfinance application success and client well-being.
    - **H1c:** Technology adoption has a positive and significant effect on microfinance application success and client well-being.
    - **H1d:** Production capacity has a positive and significant effect on microfinance application success and client well-being.
- **H2:** Access to financial services has a positive and significant effect on microfinance application success and client well-being.
    - **H2a:** Access to loan services has a positive and significant effect on microfinance application success and client well-being.
    - **H2b:** Access to savings services has a positive and significant effect on microfinance application success and client well-being.

    - **H2c:** Access to insurance services has a positive and significant effect on microfinance application success and client well-being.

- **H3:** Financial literacy has a positive and significant effect on microfinance application success and client well-being.
    - **H3a:** Loan usage for financial literacy enhancement has a positive and significant effect on microfinance application success and client well-being.
    - **H3b:** Savings usage for financial literacy enhancement has a positive and significant effect on microfinance application success and client well-being.
    - **H3c:** Insurance usage for financial literacy enhancement has a positive and significant effect on microfinance application success and client well-being.
- **H4:** Business management skills have a positive and significant effect on microfinance application success and client well-being.
    - **H4a:** Education on business management skills positively influences the development of business management skills on microfinance application success and client well-being.
    - **H4b:** Experience on usiness management skills positively influences the development of business management skills on microfinance application success and client well-being.
    - **H4c:** Technology adoption on business management skills positively influences the development of business management skills on microfinance application success and client well-being.
    - **H4d:** Production capacity on business management skills positively influences the development of business management skills on microfinance application success and client well-being.

Literature Review

It has been long known that microfinance is a vital tool in promoting financial inclusion and poverty reduction, as well as socio-economic progress in rural and underserved areas (FAO, 2018; Bank Negara Malaysia, 2023). Although it has been found effective in many studies in the field of agriculture, small businesses, and female entrepreneurship (Cohen, 1988; Fowler, 2013), not much has been done on the sector of aquaculture. This irrespective of the fact that aquaculture plays a major role in the agri-food sector of Malaysia, which enhances food security, employment, and rural development (Belton & Little, 2011; Abd Rahman, Ahmad, & Ismail, 2022). The current literature is inclined to address either the aspects of environmental sustainability or efficiency of production, but fails to consider the specifics of financial accessibility and credit system that fishermen in aquaculture are faced with. A key gap is the limited understanding of how business characteristics including education, experience, technology adoption, and production capacity influence microfinance success in aquaculture. Biological risks, long production periods, and unstable revenues are some of the factors that define aquaculture operations and are quite different in comparison to traditional agriculture and question the usability of standardised credit assessment models (Gonzalez-Vega, Mesbah, & Amudha, 2017).

The other gap is in the designing of financial services. The majority of the Malaysian microfinance institutions (e.g., Amanah Ikhtiar Malaysia, TEKUN Nasional, Agrobank) apply generalised products that have a rigid repayment process, collateral and interest rate systems that might not reflect the seasonal or cyclical aquaculture income flows (Bank Negara Malaysia, 2023). Alternative financing models such as Salam contracts, mudarabah, or grace-period loans and the inclusion of non-financial services like technical training, extension support, or digital financial tools remain underexplored (FAO, 2018).

A third gap involves the role of financial literacy. Evidence suggests that financial education enhances repayment performance and financial resilience, yet its contribution to aquaculture microfinance success has not been sufficiently examined (Fowler, 2013; Abd Rahman et al., 2022).

The fourth gap concerns business management skills, which determine how effectively microfinance is utilised. Although management competencies have been associated with entrepreneurial success (Bryman, 2016), the association of management competencies with the outcomes of aquaculture microfinance has been tested on few occasions. Accordingly:

Research Framework

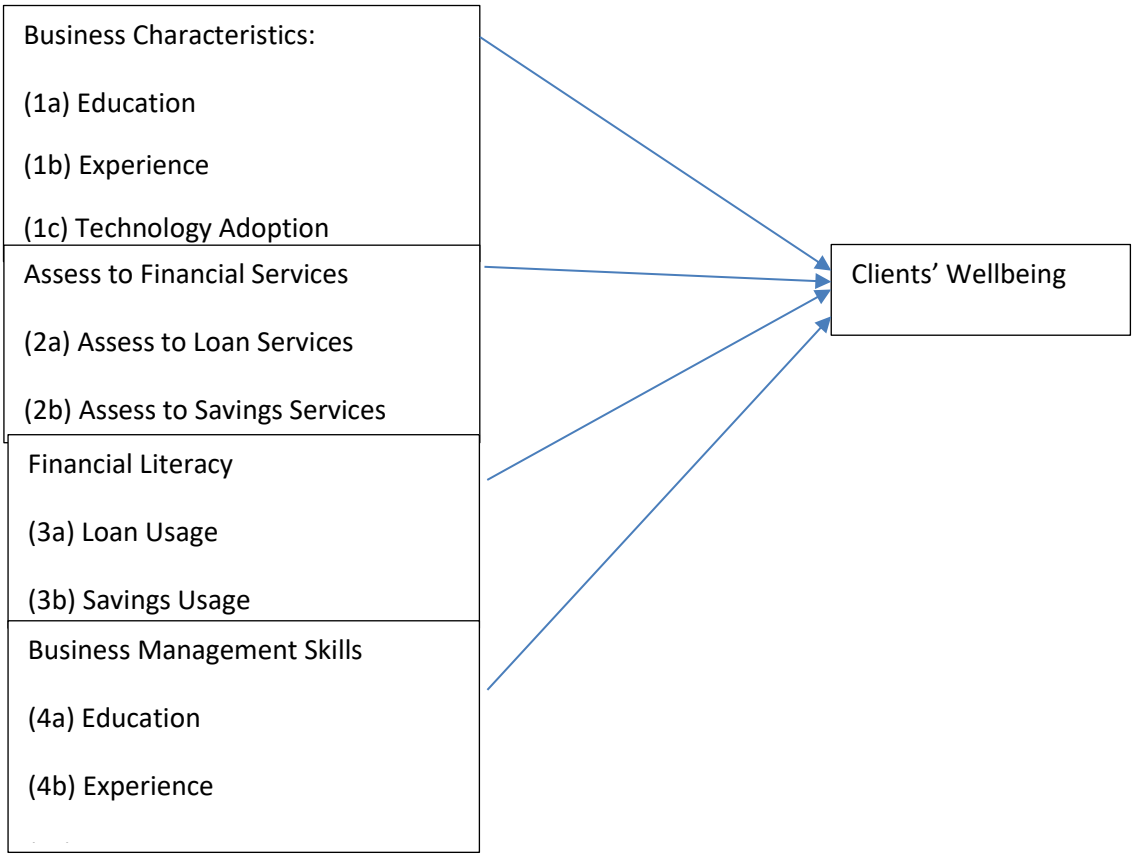


Figure 1: Proposed Research Framework

Figure 1 above illustrates the proposed research framework for the study, which consists of four independent variables and one dependent variable. There are dimensions under each of the dependent variables.

Methodology

This study employed a quantitative research design using a structured survey to collect data from aquaculture farmers in Malaysia. The methods were selected to provide measurable insights into the impact of microfinance on financial decision-making, resource allocation, and overall business performance, aligning directly with the study's objectives. The survey instrument's items were adopted from previous validated studies and adapted to reflect the local aquaculture context. Content validity was ensured by consulting subject matter experts, who reviewed each item for relevance, clarity, and comprehensiveness. Instrument validity was further assessed at the item level using pilot testing with a small sample of farmers, and items showing low reliability were revised or removed.

In this study, a quantitative research design was carried out with a structured questionnaire that was administered to 266 aquaculture farmers in Malaysia. The data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0 to examine the direct effects of

business characteristics and financial services on microfinance application success. Items were evaluated based on Likert scale where respondents were asked to rate construct on a scale of 1-5 and assessed reliability and validity based on measurement model. Respondents were selected through purposive sampling, focusing on individuals with experience in microfinance. Ethical norms were maintained with informed consent, and voluntary participation of the respondents and anonymity during the process of data collection. Figure 2 illustrates the flowchart of the study from literature review to discussion of the results and drawing conclusion of the study



Figure 2: Flowchart of the study

Key Findings

Table 1: Assessment of Variables

Endogenous Variable	R^2	Q^2	f^2
Business Characteristics	0.632	0.583	0.471
Business Management Skill	0.672	0.552	0.046
Application Success & Client Wellbeing	0.743	0.628	0.007
Financial Literacy	0.752	0.605	0.906
Assess to Financial Services	0.472	0.407	0.000

Table 1 illustrates the assessment of endogenous variables indicates that the model demonstrates substantial explanatory power for most constructs, with R^2 values ranging from 0.472 for Assess to Financial Services to 0.752 for Financial Literacy. Predictive relevance (Q^2) values are all above the recommended threshold of 0, suggesting strong predictive capability across constructs, particularly for Application Success and Client Wellbeing (0.628) and Business Characteristics (0.583). The effect size (f^2) analysis shows that Financial Literacy exerts a very large effect (0.906) on its respective endogenous construct, while Business Characteristics also have a notable impact (0.471). In contrast, Business Management Skill (0.046) and Client Wellbeing (0.007) exhibit small effect sizes, and Access to Financial Services shows no additional effect (0.000), implying that its variance is largely explained by other predictors in the model.

Table 2: Hypotheses

Hypothesis	Statement	Key Numeric Indicators	Conclusion
H1	Assess to Loans impact success & client wellbeing	R^2 (Microfinance Services) = 0.472; Cronbach's α = 0.795	Supported
H2	Assess to Savings impact success & well-being	Cronbach's α = 0.829; AVE = 0.740; Correlation (SA–FL) = 0.896	Supported
H3	Assess to Insurance impact success & wellbeing	Cronbach's α = 0.922; AVE = 0.746; Correlation (INS–FL) = 0.899	Supported
H4	Education in Business characteristics correlate with client wellbeing	Correlation (EDU–BC) = 0.261	Supported
H5	Experience in Business characteristics correlate with client wellbeing	Correlation (EXP–BC) = 0.738	Supported

H6	Technology Adoption in Business characteristic correlate with the client wellbeing	Correlation (TECH–BC) = 0.900	Supported
H7	Production capacity relates to client wellbeing	Correlation (PC–BC) = 0.839	Supported
H8	Loans usage in financial literacy influence client wellbeing	R^2 (Financial Literacy) = 0.752; Correlation (FL–LS) = 0.937	Supported
H9	Savings usage in financial literacy influenced client wellbeing	Correlation (FL–SA) = 0.753	Supported
H10	Insurance usage in financial literacy influence client wellbeing	Correlation (FL–INS) = 0.899	Supported
H11	Education in Business Management Skills influences client wellbeing	Correlation (EDU–BMS) = 0.084	Not Supported
H12	Experience in Business Management Skills influences client wellbeing	Correlation (EXP–BMS) = 0.523	Supported
H13	Technology in Business Management Skills influences client wellbeing	Correlation (TECH–BMS) = 0.736	Supported
H14	Production capacity in Business Management Skills influences client wellbeing	Correlation (PC–BMS) = 0.848	Supported

Table 2 illustrates the direct results for the hypotheses for this study. The findings of this study provide compelling evidence that microfinance services, when tailored to the unique needs of the aquaculture sector, can significantly enhance both entrepreneurial success and client well-being. Consistent with the observations of Abd Rahman, Ahmad, and Ismail (2022), loans, savings, and insurance products were found to play critical roles in enabling farmers to meet operational costs, manage production risks, and improve their livelihoods. This suggests that policymakers and financial institutions should develop targeted financing programs with flexible repayment schedules, lower interest rates, and advisory support in order for farmers can adopt innovative farming techniques, manage risks more effectively, and increase productivity and income. These interventions not only strengthen the economic viability of individual farms but also enhance the overall sustainability and competitiveness of Malaysia's aquaculture industry, contributing to rural development and national food security. The strong relationships between these services and financial literacy further support the assertion by Hamid, Omar, and Mohd (2019) that access to finance, combined with adequate knowledge, is vital for sustaining aquaculture businesses in Malaysia. It is also consistent with the vision presented by Bank Negara Malaysia (2023) that focuses on improving financial inclusion by providing special programs to underserved groups, such as aquaculture entrepreneurs.

Conclusion

Business characteristics emerged as another critical determinant of microfinance success. Experience, access to technology, and production capacity demonstrated strong positive associations with both success and well-being, corroborating the insights of Hassan, Rahman, and Ali (2019), who emphasized that technology adoption and production efficiency drive competitiveness in the sector. Similarly, the importance of aligning business characteristics with market demand and supply, as reflected in the supported moderating effects, is in line with the findings of Belton and Little (2011), who noted that market responsiveness is essential for sustaining profitability in aquaculture ventures. In Malaysia, this approach can help farmers reduce losses, optimize resource use, and respond effectively to domestic and export market trends. However, education alone showed limited influence on business management

skills, echoing Kaminski, Christy, and Wang's (2020) conclusion that training and applied skills development may be more impactful than formal education in driving entrepreneurial outcomes.

The results also indicate that the use of non-financial support is important in the microfinance systems, which is encouraged by FAO (2018) and Fowler (2013). Financial literacy, in particular, was found to be a central mediating factor linking microfinance usage to improved outcomes, supporting the premise of González-Vega, Mesbah, and Amudha (2017) that knowledge-based interventions enhance the effectiveness of financial services. The observed interconnections between microfinance services, business characteristics, and market adaptability suggest that holistic interventions combining credit provision, capacity building, and market facilitation are more likely to achieve sustainable impacts, as envisioned by Maxwell (2012) and Yunus (2006) in their advocacy for inclusive and innovative financing models. In Malaysia, programs that combine financial assistance with capacity-building initiatives eg. government-led workshops or extension services which covers helping the small-scale aquaculture farmers overcome operational challenges, adopt modern technologies, and enhance productivity.

In conclusion, this study bridges a critical knowledge gap by empirically demonstrating how the interplay between microfinance service design, business characteristics, and market dynamics shapes aquaculture sector outcomes in Malaysia. The findings emphasize the need for microfinance institutions to adopt a sector-specific approach that not only provides tailored financial products but also embeds training, technology access, and market integration strategies. This type of integrated platform would enhance loan repayment, operational performance, and build resilience and long-term sustainability among aquaculture entrepreneurs. Based on such findings, future research can be carried out by examining the longitudinal effects and generalizing to the other agricultural sub-sectors with high potential and underserved.

Based on the result obtained, this study offers empirical insights into the relationship between financial constraints and industry growth, helping to fill gaps in current literature. This study offers valuable insights for policymakers, financial institutions, and industry stakeholders. It highlights the need for tailored financing schemes, improved credit access, and supportive policies to assist farmers. Apart from that, the findings have highlighted the importance of training programs and strategic planning, ultimately enhancing productivity, sustainability, and economic outcomes in the aquaculture industry.

Limitations and Future Studies

This study has several constraints such as the sample size and geographic scope, which could affect the generalisability of the findings to all aquaculture farmers in Malaysia. Other than that, thus study focuses primarily on financial constraints, potentially overlooking other important factors such as environmental, technological, or regulatory challenges, that could restrict the depth of analysis. These limitations suggest the need for further research with broader scope and more diverse data sources.

References

Abd Rahman, N., Ahmad, S., & Ismail, N. (2022). Microfinance products tailored for aquaculture: Addressing unique financial needs in Malaysia. *Journal of Aquaculture Finance, 15*(3), 123-137.

Bank Negara Malaysia. (2023). Financial inclusion and microfinance initiatives in Malaysia. Kuala Lumpur: Bank Negara Malaysia.

Belton, B., & Little, D. C. (2011). Does certification improve farm performance? Evidence from aquaculture in Asia. *Food Policy, 36*(3), 239-249.

Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.

Cohen, W. A. (1988). Small business management: Essential steps for success. *Business Journal, 22*(4), 112-118.

FAO (Food and Agriculture Organisation). (2018). *Financial literacy and capacity building for smallholder farmers*. Rome: FAO.

Fowler Jr., A. (2013). Microfinance for aquaculture: Opportunities and challenges. *Aquaculture Economics & Management, 17*(1), 25-42

González-Vega, C., Mesbah, D., & Amudha, P. (2017). Microfinance interventions in rural fisheries and aquaculture. *Development Policy Review, 35*(5), 567-586.

Hamid, S., Omar, A., & Mohd, N. (2019). The impact of financial literacy on microfinance success: Evidence from Malaysian aquaculture entrepreneurs. *International Journal of Business and Society, 20*(2), 560-579.

Hassan, M., Rahman, A., & Ali, S. (2019). Technological adoption and productivity in Malaysian aquaculture. *Journal of Fisheries Science, 13*(4), 201-210.

Julious, S. A. (2005). Risk management and business sustainability. *Journal of Business Research, 58*(1), 35-42.

Kaminski, J., Christy, R., & Wang, S. (2020). Education and loan repayment: Evidence from microfinance borrowers. *World Development, 126,* 104731.

Maxwell, S. (2012). Public-private partnerships in microfinance: Supporting aquaculture growth. *Development in Practice, 22*(3), 453-464.

Salim, R., Zainuddin, R., & Karim, F. (2024). Business size, age, and creditworthiness in microfinance: The Malaysian aquaculture context. *Journal of Small Business Finance, 18*(1), 77-95.

Yunus, M. (2006). Banker to the poor: *Micro-lending and the battle against world poverty*. PublicAffairs.