# Accounting Challenges in Agriculture: diving into the Fish Pond- Evidence from Malaysia's Aquaculture Sector

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## ABSTRACT

Agriculture and food security are becoming increasingly important in the Malaysian economy, as the nation continues to focus on ensuring a stable and sufficient food supply for its growing population. Within this context, aquaculture has emerged as a crucial sub-sector that contributes significantly to the availability of affordable protein sources, supports rural livelihoods, and strengthens national food security. The expansion of aquaculture activities has not only created business opportunities but also encouraged innovation in farming methods, resource management, and market distribution. As the sector continues to grow, aquaculture entrepreneurs play an essential role in maintaining consistent production and meeting consumer demand at both local and national levels. Despite this, research on accounting challenges in the agriculture sector and the solutions provided by Accounting Information System (AIS) has limited empirical evidence, which this study aims to address by investigating AIS competency among aquaculture business owners in Malaysia. The purpose of the study is to address critical challenges in accounting management relevant to AIS competency in aquaculture. The study employs a qualitative research design using in-depth interviews with aquaculture entrepreneurs. A thematic analysis of the data was conducted to identify potential underlying weaknesses in management accounting practices. Results showed that some recurring problems include a shortage of proper record-keeping practices, ignorance of the accounting system, a lack of accounting knowledge and exposure, and poor discipline and awareness regarding record-keeping practices. Overall, these findings the need for greater investment in AIS competency among agricultural sector stakeholders, particularly aquaculture entrepreneurs, to improve accounting practices and advance sustainable business development.

**Keywords:** agriculture, aquaculture, accounting, accounting information system,

## INTRODUCTION

Agriculture has always been a vital component of the Malaysian economy, comprising a key pillar for national food security and rural economic development. Aquaculture, in turn, is gradually becoming an increasingly important sub-sector of the broader agricultural sector. Aquaculture is one of the sectors which have been growing continuously, in accordance with the world output trend showing that aquaculture production increased greatly (Tan et al., 2024). In addition, Malaysia is also among the world's major hubs for aquatic animals, capture fisheries, aquaculture products, and consumption of aquatic food (Tan et al., 2024). Although aquaculture contributes more to the agricultural sector, many aquaculture enterprises remain poorly managed. Technology could be used to systematically manage business operations and accounting. However, technology for aquaculture enterprises has not yet met actual needs, especially in accounting management.

Proper accounting records enable businesses to track production costs and profitability and to make relevant decisions (Ashley et al., 2023). However, as aquaculture operates with biological assets, in dynamic production cycles, and environmental volatility makes it difficult to account for (Brugere et al., 2025; Saha et al., 2022).

Accounting Information Systems (AIS) can assist in a more systematic and accurate management of accounting for aquaculture businesses (Ashley et al. 2023). However, the effectiveness of an AIS largely relies on the quality of business owners' understanding of how to apply accounting systems (Tran, 2025). Previous research indicates that insufficient AIS competence among aquaculture entrepreneurs may lead to poor bookkeeping, ineffective financial control practices, and the underuse of accounting information in business decision-making (Fadila et al., 2024; Le et al., 2025). Hence, the objectives of this study are to identify accounting management problems associated with AIS competency from the perspective of aquaculture entrepreneurs in Malaysia. Adopting a qualitative approach, this study investigates the issue of poor accounting in the aquaculture sector. The results help to develop a comprehensive understanding of issues associated with AIS and improve aquaculture entrepreneurs' planning for strengthening accounting management and promoting sustainable development of aquaculture systems.

## LITERATURE REVIEW

### The Complexity of Accounting in Agriculture: Evidence from Aquaculture

Agriculture is a biologically oriented production sector that supports national food security, rural livelihoods, and economic growth, especially in developing and emerging economies. It includes a diverse array of activities, such as crop production, animal husbandry, and aquaculture, that must be practiced in reliance on natural resources and biological systems. Aquaculture has become a vital component of the agricultural system in the generation of food supply, job opportunities and income.

In contrast to most industrial or service sectors, agricultural systems, in particular aquaculture activities, are reliant on organisms whose growth, persistence and yield are extremely vulnerable to environmental conditions, pathogens, seasonality, and water quality (Brugere et al., 2025). Such biological and environmental uncertainties add significant complexity to operations, which impacts financial planning and performance evaluation. In aquaculture, unforeseen mortality, growth variability, and non-uniformity in the production cycle can heavily impact production costs and expected revenues, making profitability and operational efficiency difficult to assess.

Biological assets are unpredictable and subject to change in value, hence, it becomes difficult for entrepreneurs to keep financial records that are up to standard and in time. Fadila (2024) observed that the variability of outputs in aquaculture production makes financial forecasting and allocation of costs difficult, hence systematic accounting and financial management are both necessary and challenging. Additionally, aquaculture products are highly perishable (Beveridge, 2001) compared to outputs in most manufacturing sectors and frequently need to be marketed as quickly as possible, which places considerable pressure on entrepreneurs to make quick financial decisions, often based on limited or incomplete information (Saha et al., 2022).

Moreover, due to its seasonal and small scale, many aquaculture enterprises face these challenges in an even worse way. The limitations of human and financial resources in small and medium enterprises (SMEs), constrain the ability of SMEs to adopt systematic management and record-keeping activities (Ashley et al., 2023). Consequently, such organizations often employ informal or ad-hoc approaches which may be adequate for day to day monitoring but inadequate for purposes such as strategic planning, investment assessment, or loan applications (Ochieng et al., 2025). This feature of biological uncertainty in agricultural production, plus the resource constraints of small scale aquaculture entrepreneurs, points to more appropriate and tailored management approaches within the agricultural sector.

### Record-Keeping Practices in Aquaculture

Record-keeping is a key element of accounting management for agriculture because it allows producers to record all of their production and financial transactions systematically. Specifically, within agricultural practices, aquaculture needs to trace all inputs like feed, labour, energy, and chemicals but also outputs like harvested fish, mortality, and sales. Detailed records enable business owners track the efficiency of their production processes. Still, previous research has consistently shown that aquaculture SMEs are likely to keep financial records that are incomplete, inconsistent, or informal (Ashley et al., 2023).

In reality, most agripreneurs use memory or handwritten instead of a structured system. These actions make errors easier to happen and reduce the reliability of financial information for internal use and external reporting purposes (Basir et al., 2024). Careless record-keeping similarly hampers access to formal financing since financial institutions and government agencies need accurate documentation on performance and creditworthiness in order to issue loans and aid (Tran, 2025). Such factors have included the lack of systematic monitoring of prices for feed and available feed stock, limiting banks' willingness to provide credit and potential growth of aquaculture firms.

Informal record-keeping practices also impede the adoption of technological solutions such as AIS. Most agricultural entrepreneurs have not recorded structured historical data, and therefore the standardisation and validation of the existing data must be performed before effective processing can take place, which poses a challenge in their transition from traditional to digital systems (Aladetohun et al., 2024). Thus, there is a need for synergies for record-keeping practices, technology adoption and accounting skills development, all of which are essential for ensuring agricultural and aquaculture sustainability in the long-term.

**Cost Management and Profit Measurement**

Feed is well known to be the most costly operational expenditure in aquaculture, with estimated representation of total production costs commonly being in the range of 50–70% (Gutiérrez et al., 2020). Evaluating production efficiency and profitability are therefore dependent upon accurate tracking of feed consumption and appropriate allocation of feed costs (Ashley et al., 2023). On the other hand, a great portion of aquaculture entrepreneurs use an estimated feed usage instead of systematically tracking real consumption that leads to incorrect cost reporting and distorted profit information (Basir et al. 2024).

Biological and environmental factors, such as uneven fish growth, disease and parasites, and sudden changes in water conditions, further complicate such cost management (Kumar et al., 2025). Lack of formal bookkeeping practices may result in entrepreneurs miscalculating production costs thereby encouraging less than ideal pricing and resource allocation decisions (Ochieng et al, 2025). This information restricts access to external finance and government support, as funders rely on up to date records to determine a business' profitability and progress (Mesioye et al., 2024).

Effective cost management, which is essential in aquaculture, involves not only technical competencies but also a sound grasp of basic accounting principles. It is extremely important for entrepreneurs to be able to translate biological and operational information into monetary values, unit cost, and to track changes in cost over time (Aladetohun et al., 2024; Adobo et al., 2020). These activities are strongly related to AIS competence, which provides a systematic approach to data collection and accurate financial report generation (Ashley et al., 2023). Low levels of integrated AIS skill can make profit assessment unviable especially in aquaculture (De Lange et al., 2025).

**Accounting Management and AIS Competency**

Limited accounting management among aquaculture entrepreneurs is a leading factor preventing them from implementing sound accounting and financial management in the agriculture industry. Most SMEs businesses operate without formal education and structured training about accounting principles, thus limiting their capability to keep accurate financial records, analyse financial statements, and utilise accounting information in the decision-making process at the strategy level (Fadila et al., 2024). As a result, aquaculture financial management practices tend to be informal rather than systematic.

AIS facilitate systematic methods of obtaining accounting transactions by providing tools for generating financial statements and analysing financial data. However, the effective use of AIS depends on adequate AIS competencies, which encompasses technical and core dimensions. Technical skills refer to proficiency in the use of accounting tools and systems, including recording transactions, producing reports, and handling electronic data. Core competencies ensure that these tools are applied ethically, consistently, and purposefully and help underpin sound judgement and ongoing advancement in accounting practices (Roshali et al., 2025). Without

these competencies, aquaculture entrepreneurs often underutilise the systems available or revert to manual systems that are fragmented to inaccuracies (Basir et al., 2024; Ashley et al., 2023).

In addition, small-scale agribusiness research shows that access to technology does not necessarily lead to good accounting (Fadila et al. 2024). Although most entrepreneurs have a smartphone or a computer and are accustomed to using digital technology for communication, social media, or marketing, they often lack the confidence, experience, and contextual knowledge needed to implement those technologies for accounting purposes. These challenges indicate a gap in competency development in the agricultural sector, especially in AIS skill.

Therefore, strengthening accounting management in aquaculture requires a selective approach that improves both accounting knowledge and system operation skills. This calls for a shift from just exposing entrepreneurs to technology through training programmes into creating AIS capability that empowers entrepreneurs to generate reliable financial information from operational and financial data. Filling this gap is critical to improving the quality of decision-making and increasing financial transparency improving the sustainability of aquaculture sustainability across the agricultural sector.

**Research Gap**

More generally, previous studies identify several accounting issues that aquaculture faces, such as weak record-keeping, inadequate cost accounting, low accounting awareness, and slow adoption of accounting systems (Igbani et al., 2025; Norizan et al., 2022). Such challenges are commonly discussed among SMEs and are widely recognised as significant barriers to efficient financial management. However, most previous research is conducted on a general level in agricultural accounting and devotes limited attention to farmers' competencies within agriculture.

Current based research focuses on the availability of accounting tools, instead of investigating competence related conditions that drive how accounting actually implemented (Demillo, 2022; McDonald et al., 2024). More specifically, competency concepts associated with AIS that comprise technical skills, accounting knowledge and behavioural attributes such as discipline and consistency have not been considered in aquaculture-specific contexts. Therefore, there is a challenge in exploring the role of AIS competency in accounting issues, rather than merely perceiving it as accounting tools and digital solutions only.

Moreover, most of the available research applies quantitative or survey type research strategies, thus lacking the depth of understanding of qualitative aspects of aquaculture entrepreneurs. The scant qualitative research available tends to focus on the challenges faced by entrepreneurs, while neglecting the role of competencies. Overall, the necessity of extensive qualitative research that responds to accounting issues in aquaculture while framing AIS competency as a conceptual lens. Thus, this study is designed to investigate the accounting management problems experienced by aquaculture entrepreneurs with regard to AIS competences that contribute to a major gap in the agricultural accounting literature and directly respond to the suggested topics.

**Resource-Based View Theory**

The theoretical foundation of this study is the Resource-Based View (RBV). According to RBV, sustainable competitive advantage is attained by the discovery of valuable, rare, inimitable, and non-substitutional (VRIN) internal resources and capabilities that can be leveraged by firms (Barney, 1991; Grant, 1991). In the field of agriculture, more specifically aquaculture, AIS competency signifies the key internal capabilities that either directly or indirectly provide an organisational advantage by enabling effective accounting management, decision-making, and performance (Roshali et al., 2025; Litty et al., 2025).

Strategic resources in the context of RBV are represented by human capital, knowledge and technological capabilities. Those aquaculture entrepreneurs who have accounting knowledge and related skills can more effectively input and trace financial transactions, allocate their costs and make decisions on operation and investment (Fadila et al., 2024). On the other hand, limited AIS competency is manifested in the form of poor record-keeping practices, lack of knowledge of accounting systems, and low accounting awareness, which

represents a lack of internal resources and limits efficiency and development potential (Fadila et al., 2024; De Lange et al., 2025).

This study uses RBV, to conceptualise accounting problems as a manifestation of capability gaps, rather than solely as a technical problem based on the integration of RBV with the literature on accounting challenges in aquaculture. This theoretical perspective has led to a better comprehension of the reasons why accounting dilemmas continue and specific directions for research on how enhancing AIS capacity can assist in realizing better accounting practices and in addressing sustainability challenges in aquaculture.

## METHODOLOGY

A qualitative research design is applied in the current study to investigate the challenges associated with Accounting Information System (AIS) competency to control accounting practice in the aquaculture industry. A qualitative approach is employed to explore aquaculture entrepreneurs and relevant stakeholders in detail in capturing the contextual and operational complexities of accounting management in a biologically driven agricultural sub-sector (Creswell, 2009).

A purposive sampling method was chosen to interview participants who had relevant knowledge and direct experience in accounting practices and AIS usage in aquaculture (Yin 2003). Participants in the study consisted of five aquaculture entrepreneurs running small to medium scale businesses, two information technology experts with knowledge of accounting software, three fisheries officers with an understanding of aquaculture business, and three professional accountants with experience in agricultural financial management. The participation of different stakeholder groups allowed for data triangulation, thus increasing the trustworthiness and rigour of the findings.

Semi-structured interviews were used to allow participants to describe their challenges and experiences using their own words, whilst ensuring similarity between interviews. Interviews were face-to-face or online interviews depending on the timing of participants to provide the best accessibility of the participants to the researcher, with each taking about 45–60 min. The interview guide included four main sections: (1) current accounting and record keeping practices, (2) awareness of AIS and usage of AIS, (3) problems experienced in accounting and financial management and (4) perceived deficiencies in accounting knowledge, skills or system competency. With the consent of the participants, all interviews were audio-recorded and transcribed verbatim for analysis.

Thematic analysis was used for data analysis. It comprised of reading and re-reading the interview transcripts, coding, aggregating codes into candidate themes, reviewing themes, defining and naming final themes, and generating an analytical narrative that related outcomes to study aims and the RBV. This systematic analytical approach captured themes common to the entire set of interviews, as well as the unique local context surrounding cues and challenges related to AIS competency. The study was conducted with strict adherence to ethical considerations. All participants gave informed consent before data collection, and confidentiality and anonymization of participants were guaranteed. All data were kept in a secure location and used for academic research only. Data saturation was used as the guiding principle to determine the adequacy of the sample size. Saturation was reached when no new insights emerged from the interviews and participant's responses became repetitive across different participant groups. This occurred after interviews with the selected stakeholders, indicating that the data collected were sufficient to address the research objectives. Therefore, the final sample size was considered appropriate to rigor in this qualitative study.

## RESULTS

The results show that SMEs within aquabusiness industry face diverse threats, primarily arising from accounting and management issues. This issue describes the difficulties faced by aquaculture entrepreneurs in implementing accounting practices within their businesses and AIS-related activities. The participants indicated that they struggled to maintain accurate records due to their inability to use accounting tools and to apply sound financial management practices. These troubles also indicate insufficient competence in AIS in record-keeping and accounting, which hampers appropriate financial monitoring and decision-making in the company.

Three main themes are presented under this challenge, which are unfamiliarity with the accounting system, limited accounting understanding, and incompetence in accounting tasks. These issues which collectively could affect the aquabusiness decision-making and the sustainability of individual businesses.

**Unfamiliar with the accounting system**

One of the challenges that emerges from the findings is that the participants had little experience with formal accounting, leading to informal and often inconsistent record-keeping systems. Several business owners used handwritten methods, such as jotting down transactions notes and maintaining ledger books because it was easier than using a digital accounting system. As illustrated by one participant,

“At this point, I do not set up any formal accounting system, but I just maintain a ledger manually to record transactions and account balances”. Business owner 3

The reliance on manual processes here shows a lack of experience and training with digital accounting systems. A few attempted to fill the gap by using basic digital tools such as Microsoft Excel, but those solutions were still not as systematic and effective as proper accounting software. A business owner said that they built a personalised system on top of spreadsheets,

“I created my own accounting records in Excel as a way to track my business activities.” Business owner 4

In many instances, WhatsApp conversations were used to store business related information, suggesting an incredibly poor record-keeping. Instead of keeping any sort of documentation, they would retain chat histories for reference, and this left key business information vulnerable to loss or disorganisation, with confusion on what was exactly being done and who was meant to do it. As one participant explained about this practice:

"There is no official record, no official file. Business references are all limited to Whatsapp, there is no hard copy’’. Business owner 1

The use of informal digital platforms was particularly connected with low computer literacy of some business owners. Numerous participants reported discomfort and low competence interacting with computers or digital accounting systems, which limited them from utilising more formal, efficient forms of record-keeping.

As a result, lack of knowledge about digital tools led to unproductive and disorganized accounting techniques. Without a proper accounting system, financial information was sporadically captured and poorly documented, making it difficult for business owners to measure financial performance or do any future planning. Another openly admitted that their records were messy and that without an official system, they relied on memories rather than systematic recording as explained by one of the owners.

Significantly, information from an accounting practitioner indicates that the problem is not merely technology in the broadest sense. However, many business owners use digital devices for day-to-day work, such as mobile phones and social media applications. However, they experience difficulties in learning accounting software. This complexity is mainly due to the technical nature of such systems and the accounting jargon that these systems use. As one of the practitioners explained, although business owners are competent in using technology, difficulties emerge when dealing with accounting software, resulting in inaccuracies in accounting reports, with an estimated proportion of affected businesses reported to be around 30 percent.

Overall, limited familiarity with accounting systems appears to be driven not only by insufficient exposure but also by low confidence, restricted technical skills, and perceptions of complexity associated with formal accounting tools. These factors contribute to inconsistent record-keeping practices and compromise the reliability and accuracy of financial reporting.

**Lack of accounting understanding**

The second theme uncovers a more formidable problem which is lack of knowledge of the principles of accounting and the significance of accurate financial records. During our exploratory discussions with various

participants, many individuals felt that formal accounting practices were unnecessary when they were first starting out in business, particularly where operations were small or a profit had not yet been realised. This results in poor recognition of the role of accounting in business sustainability over the long period of time. One business owner, for example, described,

“I have not hired any accountant because the business is still new and not yet profitable”. Business owner 3

Thoughts like these suggest that accountants are viewed only in terms of their scorekeeping, predictive capabilities, and how their numbers facilitate future growth. Finally, many participants showed erratic record-keeping behaviour, indicating that accounting was treated as optional activity rather than a compulsory activity. One participant admitted,

“I used to record my expenses before, but once I forgot to record, I just kept leaving it”. Business owner 1

This inconsistency is symptomatic of a disciplinary failure in record keeping often dictated by lack of awareness about the significance of accounting. Financial management tasks are often deprioritised in the absence of a strong understanding of accounting principles.

One of the reasons that this gap in knowledge exists is because training programmes give very little exposure to financial management. Many participants described training by relevant agencies to be more geared towards the operational aspects of aquaculture, such as fish farming, instead of financial literacy. One participant noted,

“None of the seminars I went to taught financial training. Few seminars only taught basic fish farming but no finances". Business owner 4

More evidence to back this up came from a representative of a government agency who said,

"A lot of our training is in pond management. The business owners generally manage it themselves for accounting purposes”. Government officer 2

Lack of formal guidance around accounting and finance forces business owners to rely on their limited knowledge. Further compounding on this matter, an accounting professional noted that a number of entrepreneurs seemed oblivious to the fact that this is just a core part of having a business, commenting:

“Many aren’t even aware that they have to maintain records. One of them came with zero records, the bank statements were messy, and they had used a personal account instead of a company account". Accountant 4

In conclusion, limited accounting understanding amongst aquaculture SMEs is not due to mismanagement, but systemic failures by the education system to deliver financial training, and prevailing myths around accounting not being required.

**Incompetent in accounting tasks**

The third theme indicates that participants are unable to perform accounting-related tasks. Most of the business owners admitted that they did not have a background in accounting and promptly faced the challenges in any finance-related issues. These issues tended to relate around the lack of knowledge of simple calculations, financial documents, and accounting practices. As one participant admitted,

“Well, I'm really good at building the business but terrible at the math," he said. “I just run it as long as there's money”. Business owner 3

What this quote aims to convey is a preference for operational continuity over structured financial control. Although some participants identified these limitations, they still completed their accounting independently, mostly due to financial or business reasons. Some felt that financial management should be handled personally because the business belonged to them, as reflected by one participant who stated,

"It is my business and so I take care of all the accounting and systems myself, I did not hire anyone to do it". Business owner 4

However, assuming full responsibility for both operational and administrative tasks significantly increased their workload, leading to accounting activities being deprioritised due to other business pressures. Several reported challenges in finding time to maintain records, which created backlogs in accounting or led to missing records altogether. Time constraints sometimes led to difficulties in consistently recording transactions, and accounting duties were sometimes neglected. In other instances, some business owners report difficulty finding or retaining workers with accounting experience, which makes delegating financial tasks problematic.

From a professional perspective, an accounting practitioner observed that some business owners held unrealistic expectations regarding the role of accountants. There was an assumption that accountants could reconstruct financial records regardless of the absence of proper documentation, reflecting a limited understanding of accounting processes. As noted by the practitioner,

“They assume accountants can somehow fix everything, even when no records have been kept for a long time”. Accountant 3

The overall findings regarding the lack of accounting competency among aquaculture SME can be attributed to absence of formal training, low technical skills and a high burden of workload from business. As a result, relatively poor financial management practices limit the businesses ability to operate successfully over the long term.

## DISCUSSION

This study identifies accounting management issues as the most prominent challenge faced by aquabusiness SMEs. This finding is consistent with Fadila et al. (2024), who reported that accounting related problems among aquabusiness entrepreneurs primarily stem from limited accounting knowledge, leading to inconsistent and informal record-keeping practices. From a Resource-Based View perspective, these gaps can be classified into human, technical, and organisational capabilities, which each contributing to ineffective accounting practices. Entrepreneurs who possess basic accounting knowledge tend to demonstrate greater awareness of financial management, particularly in understanding the importance of preparing and utilising financial reports for business monitoring and decision making. Such awareness enables more informed and accurate decisions, thereby supporting long term business sustainability (Ashley et al., 2023).

Human capability gaps are evident in the limited accounting knowledge and low awareness of financial management principles among entrepreneurs. Many participants relied on informal or inconsistent record-keeping, treating accounting as optional rather than essential, and often underestimated the importance of financial reports for decision-making and long-term sustainability. This aligns with findings from Ashley et al. (2023) and Mang’ana et al. (2025), indicating that insufficient exposure to financial literacy and the perception that accounting is unnecessary for small-scale operations hinder the development of human capital. Limited accounting knowledge among aquaculture entrepreneurs represents a deficiency in human capital**,** which constrains their ability to systematically record transactions, monitor financial performance, and utilise accounting information for decision-making. Although entrepreneurs may recognise the importance of financial management, the absence of sufficient accounting competencies limits their capacity to transform accounting activities into value-creating organisational routines. Consequently, SMEs are unable to fully leverage accounting knowledge as a valuable and rare internal resource.

The reliance on basic tools such as Excel spreadsheets and mobile applications should not be interpreted as resistance to technology adoption. Instead, under RBV, this practice reflects limitations in technical capabilities**,** particularly the ability to operate and integrate formal accounting systems into daily business operations. While digital tools are available, their effectiveness as strategic resources depend on complementary accounting skills. Without adequate technical and accounting competencies, these tools fail to generate reliable financial information and thus cannot function as value-enhancing resources. As noted by Rizki et al. (2025), even basic digital tools can support effective record-keeping when users have adequate accounting knowledge. The

preference for simplified accounting tools indicates that technological resources alone are insufficient to create competitive advantage. RBV suggests that resources must be effectively combined with human capabilities to become productive (Barney, 1991; Grant, 1991). In this context, the lack of confidence in using integrated accounting systems highlights an inability to leverage existing technological resources due to weak internal capabilities rather than outright technological exclusion.

In addition to human and technical limitations, the findings indicate deficiencies in organisational capabilities. Organisational capability gaps are reflected in the lack of formal routines, role allocation, and structured accounting processes. Many participants faced difficulties maintaining regular records due to workload pressures, time constraints, and limited access to skilled personnel, particularly in rural settings. This is consistent with prior studies emphasizing labour shortages and rural constraints as barriers to proper accounting practices (Oosthuizen et al., 2020; Fadila et al., 2024). Weak organisational resources prevent SMEs from transforming accounting information into actionable insights, limiting both credibility and operational decision-making.

Finally, the study suggests that the rural location of many aquabusiness SMEs contributes to these accounting management challenges. Qualified accounting professionals are often concentrated in urban areas. This scenario led to a reduction in access to skilled personnel in rural settings. While collaboration with external accounting firms represents a viable alternative, such arrangements require consistent cooperation and the timely provision of financial documents. Prior research indicates that businesses that engage external professionals exhibit higher compliance with accounting standards, improve financial accuracy, and greater transparency (Oosthuizen et al., 2020). However, participants frequently reported difficulties providing complete documentation due to time constraints and disorganised records, thereby limiting the effectiveness of such collaborations. Consequently, weaknesses in accounting management continue to undermine the completeness and reliability of financial reports, which are essential for loan applications and financial assistance assessments by government and private agencies.

**Implications**

The findings offer several important practical implications. First, human capability competency building that emphasises accounting literacy and AIS competency. The competency should be systematically integrated into existing aquaculture training programmes with the purpose of equipping entrepreneurs with appropriate financial management knowledge and skills. Second, awareness efforts are crucial to highlight the importance of accurate and systematic record keeping from the beginning of business development. Third, access to professional accounting support, such as advisory services or external accountants, may provide a better platform for SMEs to implement and maintain appropriate accounting systems. Finally, promoting the adoption of user friendly digital accounting tools could nurture entrepreneurs' ability to overcome barriers related to limited computer literacy and the perceived complexity of accounting software, thereby enhancing financial monitoring and operational efficiency.

## RECOMMENDATIONS FOR FUTURE RESEARCH

Future studies could expand the sample size of local businesses to a medium to large scale and geographic scope to enhance the generalisability of the findings. In addition, evaluating the effectiveness of targeted training interventions or simplified digital accounting solutions in improving AIS competency would provide valuable insights for policymakers, practitioners, and industry stakeholders. Longitudinal studies may also be useful in examining how improvements in AIS competency influence business performance over time.

In conclusion, strengthening AIS competency and encouraging the adoption of structured accounting practices are essential for improving financial management, supporting informed decision-making, and fostering sustainable growth within Malaysia's aquaculture SME sector.

## CONCLUSION

This study examined the accounting management challenges faced by aquaculture SMEs in Malaysia, with particular emphasis on AIS competency. The findings demonstrate that aquaculture entrepreneurs encounter a range of interrelated barriers, including unfamiliarity with formal accounting systems, limited understanding of fundamental accounting principles, and inadequate capability in performing accounting-related tasks. Collectively, these challenges result in inconsistent record-keeping practices, inaccuracies in financial reporting, and weakened decision-making processes, ultimately constraining business performance and operational efficiency.

The study underscores the critical role of AIS competency in supporting effective financial management within aquabusiness SMEs. Entrepreneurs with low AIS competency tend to rely on informal or manual record-keeping methods, which are more susceptible to errors, data loss, and inefficiency. Furthermore, insufficient accounting knowledge and limited exposure to structured training programmes exacerbate these challenges, particularly in rural and resource-constrained contexts where access to professional accounting support is limited. These findings suggest that AIS competency is not merely a technical requirement but a foundational capability that influences the sustainability and growth potential of aquaculture enterprises.

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## REFERENCES

1. Adobor, H. (2020). Entrepreneurial failure in agribusiness: evidence from an emerging economy. Journal of Small Business and Enterprise Development, 27(2), 237–258. https://doi.org/10.1108/jsbed-04-2019-0131
2. Aladetohun, N. F., Eyo, V. O., & Eriegha, O. J. (2024). A Review of Farm Record-Keeping Practices Among Fish Entrepreneurs in Nigeria. International Journal Of Maritime And Interdisciplinary Reasearch (IJMIR), 6(2), 32-49.
3. Ashley-Dejo, S. S., Oyetunji, O. T., Sule, S. O., & Fabiyi, O. O. (2023). Factors Influencing choice of record keeping among small-scale fish entrepreneurs in Osun State Nigeria. Nigerian J. Anim. Sci, 25(3), 47-56.
4. Basir, M. S., Buckmaster, D., Raturi, A., & Zhang, Y. (2024). From pen and paper to digital precision: a comprehensive review of on-farm recordkeeping. Precision Agriculture, 25(5), 2643-2682.
5. Brugere, C., Kumar, G., & Bondad-Reantaso, M. G. (2025). Bridging aquatic organism health and economics in the analysis of disease impacts and biosecurity strategies in aquaculture: a conceptual framework. Critical Insights in Aquaculture, 1(1), 2441506.
6. De Lange, W. J., van der Bank, F., Volscheck, M. E., & Kleynhans, T. E. (2025). Entrepreneur competencies for successful farming in Sub-Sahara Africa. Journal of Rural Studies, 114, 103549.
7. Demillo, G. M. (2022). Financial Management System of Small-scale Agricultural Industries: Basis for a Training Scheme. Asian Journal of Economics, Business and Accounting, 22(11), 44-64.
8. Fadhil, F. N., Roshali, A., Foziah, N., Abdullah, H., & Zain, F. (2025, October 26–27). Unrecorded Potential: Lack of Accounting Information System (AIS) Competencies as a Hidden Threat to Agriculture Businesses [Conference presentation]. ICDFB'2025, Amman - Jordan
9. Fadila, F., Rahmi, A., AG, B. D., & Yusof, M. (2024). Developing accounting knowledge in a sustainable local agribusiness: Akuafarm in Kundasang, Sabah, Malaysia. International Journal of Social Science and Human Research, 7(12), 9124-9128.
10. Gutiérrez-Leyva, R., Ulloa, J. A., Ramírez-Ramírez, J. C., Bautista-Rosales, P. U., Rosas-Ulloa, P., Silva-Carrillo, Y., ... & Camarena-Herrera, M. E. (2020). Evaluation of the intensive production of juvenile tilapia under greenhouse conditions: Profitability analysis and aspects of its applicability. Revista bio ciencias, 7. https://doi.org/10.15741/revbio.07.e584

11. Igbani, Flourizel & Idume, Ken & Nwobueze, Awuse & Okere, Akpevwe. (2025). The Etiquette of Financial Management in Aquaculture Business. International Journal of Fisheries and Aquaculture Research. 11. 18-30. 10.37745/ijfar.15/vol11n11830.
12. Kumar, S., Paul, T., Sarkar, P., & Kumar, K. (2025). Environmental Factors Affecting Aquatic Animal Health. In Management of Fish Diseases (pp. 171-188). Singapore: Springer Nature Singapore.
13. Le, N.-B.-V., Liu, Y., Thai, H.-D., Ko, H.-J., & Huh, J.-H. (2025). Decision Making Support Framework for Aquaculture Using Multi Source Data Hub. Applied Sciences, 15(24), 13124. https://doi.org/10.3390/app152413124
14. Litty, A., Oladele, S., & Ahsun, A. (2025). Organizational Change Management Strategies for the Successful Adoption of Automated Financial Reporting Systems.
15. Mang'ana, K. M., & Nade, P. (2025). Financial management practices and Agri-SME performance in Tanzania: The mediating role of digital literacy. SSRN. https://doi.org/10.2139/ssrn.5660766
16. McDonald, N., Lovric, K., & Cosby, A. (2024). Skill Development in Current and Future Workers to Thrive in the Digital Aquaculture Industry. Aquaculture Journal, 4(1), 15-27.
17. Mesioye, O., & Bakare, I. A. (2024). Evaluating financial reporting quality: Metrics, challenges, and impact on decision-making. Int J Res Public Rev, 5(10), 1144-1156.
18. Mintah, C., Gabir, M., Aloo, F., & Ofori, E. K. (2022). Do business records management affect business growth?. Plos one, 17(3), e0264135.
19. Norizan, S., Kadri, M. H., Bakar, Z. A., & Amin, J. M. (2022). Examining the Accounting Practice for Biological Assets among Malaysian Listed Companies: The Case of Aquaculture. International Journal of Academic Research in Accounting Finance and Management Sciences, 12(3), 741–749.
20. Ochieng, O. K., Nyamita, M. O., & Lucas, S. O. (2025). Effects of Accounting Information Systems on Financial Performance of Micro, Small and Medium Enterprises in Kenya. EuroEconomica, 44(1), 69-87.
21. Oosthuizen, A., van Vuuren, J., & Botha, M. (2020). Compliance or management: The benefits that small business owners gain from frequently sourcing accounting services. The Southern African Journal of Entrepreneurship and Small Business Management, 12(1). https://doi.org/10.4102/sajesbm.v12i1.330
22. Rizki, I. F., & Vidyasari, R. (2025, August). Dashboard Data Analysis and Financial Reporting Based on Google Spreadsheet (Case Study of Bam's Barbershop MSME). In Proceeding of International Conference on Economics, Technology, Management, Accounting, Education, and Social Science (ICETEA) (Vol. 1, pp. 959-975).
23. Roshali, A. A. S., Fadhil, N. F. M., & Mohamad, R. (2025). Accounting Information System (AIS) Competency for Record-keeping of SMEs Agribusinesses. Information Management and Business Review, 17(2), 107-115.
24. Saha, P., Hossain, M. E., Prodhan, M. M. H., Rahman, M. T., Nielsen, M., & Khan, M. A. (2022). Profit and loss dynamics of aquaculture farming. Aquaculture, 561, 738619.
25. Tan, S. Y., Sethupathi, S., Leong, K. H., & Ahmad, T. (2024). Challenges and opportunities in sustaining aquaculture industry in Malaysia. Aquaculture International, 32(1), 489-519.
26. Tantra, A. R. (2023, December). Financial Recording Training at Rahayu Fisheries, Semarang Regency. In The Virtual International Conference on Economics, Law and Humanities (Vol. 2, No. 1, pp. 343-349).
27. Tran Thanh Thuy, N. (2025). Effect of accounting information system quality on decision-making success and non-financial performance: does non-financial information quality matter?. Cogent Business & Management, 12(1), 2447913.