INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH
2026, Vol. 7, No. 5, 1951 – 1958
http://dx.doi.org/10.11594/ijmaber.07.05.09

Research Article

Cost Management Practices in the Aquaculture Industry

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Article history:
Submission 09 February 2026
Revised 01 May 2026
Accepted 23 May 2026

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ABSTRACT

Aquaculture is a big source of income for people living near the coast. For fish farmers, keeping track of costs is really important if they want their farms to keep running and actually make money. This study looked at how fish farmers in Anda, Labrador, and Binmaley, Pangasinan manage their costs, and how these practices relate to their backgrounds and business details. The research supports SDG 8, SDG 12, SDG 14, and SDG 17. The researchers used a quantitative, descriptive approach and surveyed 30 fish farmers with a validated questionnaire based on a 4-point Likert Scale. They used frequency counts and percentages to describe the participants and the average weighted mean to measure cost management practices. Spearman's Rank-order Correlation identified significant relationships. The results showed that most farmers are careful with their money—they budget, monitor, and control their costs regularly. We also noticed that farmers with more experience and those who make more sales are usually better at managing their money. This means that learning from experienced farmers and sharing good practices could really help those who are just starting out.

Keywords: *Aquaculture, Budgeting, Cost control, Cost management, Cost monitoring, Fish farmers*

Background

Aquaculture, also known as fish farming, means raising and harvesting fish, shellfish, and seaweeds in controlled settings. It is important for food production worldwide and in local areas, and it provides income for many people, especially in coastal regions. In the Philippines, aquaculture makes up about 11.4% of all livelihoods, with seaweed, milkfish, and tilapia as the main species farmed.

Managing costs well is all about planning ahead, keeping an eye on spending, and making sure not to go over budget. If fish farmers do not pay attention to their expenses, they might end up spending too much or wasting what they have. Small fish farmers have it even

How to cite:
Carolino, A. R., Visperas, A. N., Camba, J. J. C., Castillo, K. J. S., Malapit, M. G., Nidoy, R. G., & SulaSula, L. O. (2026). Cost Management Practices in the Aquaculture Industry. *International Journal of Multidisciplinary: Applied Business and Education Research*. *7*(5), 1951 – 1958. doi: 10.11594/ijmaber.07.05.09

harder because they do not have a lot of money to start with, prices can change quickly, and they do not always get the chance to learn new things or use better equipment.

While research on aquaculture practices in the Philippines is growing, there is still a limited understanding of how the demographics and business profiles of fish farmers relate to their cost management practices. Even though there are more studies about aquaculture in the Philippines these days, we still do not really know how things like a farmer's age, experience, or the size of their farm affect the way they handle costs. Most research just looks at profits or how efficient farms are, but not at how demographic and business details connect to budgeting, monitoring, and controlling costs. This gap restricts a full understanding of cost management. This study aims to address that by examining how demographic and business profiles relate to cost management among fish farmers in Anda, Labrador, and Binmaley, Pangasinan. It looks at the relationship between these practices and the farmers' demographic profiles (age, years of experience, and sources of funding) as well as their business profiles (sales, expenses per production cycle, and size of the aquaculture area). The findings aim to provide practical insights for farmers, inform policy development, and promote the economic sustainability of local aquaculture operations.

Research Objectives

This quantitative study used a descriptive design to observe and record variables as they naturally occurred, without any modifications. The primary purpose was to describe how fish farmers in Anda, Labrador, and Binmaley, Pangasinan manage their costs. The study also examined how these practices relate to the farmers' backgrounds and business details. Using quantitative methods helped the researchers identify patterns and relationships, providing a clearer picture of current cost management in aquaculture.

Population and Locale of the Study

The study was conducted in Anda, Binmaley, and Labrador in Pangasinan. Anda relies heavily on aquaculture, Binmaley is known as the 'Seafood Capital of Pangasinan' for its numerous fishponds, and Labrador, though smaller, also depends on aquaculture for its economy. These towns were selected because they are active in aquaculture, allowing the study to assess different cost management practices. There were 30 respondents, a suitable number given the small number of fish farmers and some challenges in contacting everyone. Some farmers were unavailable, declined, or were located in hard-to-reach areas, resulting in a final sample of 30. The researchers used purposive sampling, selecting participants who were actively involved in aquaculture and knowledgeable about cost management. Three experts checked the questionnaire to ensure the questions were clear and relevant, including two from the university with business and accounting backgrounds and one municipal agriculturist.

Data Gathering Tool

The primary tool for data collection was a checklist questionnaire divided into three parts. The first part focused on the fish farmers' age and years of experience. The second part included business details such as funding sources, estimated sales and expenses per production cycle, and the size of the aquaculture area. The third part explored how farmers manage costs, covering budgeting, monitoring, and control.

Data Gathering Process

Before data collection, the researchers obtained approval from the College Dean and the mayors of the selected towns to adhere to ethical guidelines. Experts reviewed the questionnaire for clarity and relevance. Data was gathered through in-person surveys with fish farmers in Anda, Labrador, and Binmaley, allowing researchers to provide instructions and address questions. The process involved collaboration with local government, securing informed consent, respectfully delivering the questionnaire, and collecting the completed forms for analysis.

Statistical Analysis

Frequency counts and percentages illustrated the respondents' demographic and

business profiles, while the Average Weighted Mean evaluated their cost management practices. Spearman Rank-Order Correlation was used to assess the association of cost management with demographic and business factors. SPSS software facilitated data organization and analysis.

Results and Discussions

Table 1. Demographic Profile of the Respondents

n = 30

Variables	Indicators	Frequency	Percentage
Age	30–34	4	13.3
	35–39	1	3.3
	40–44	1	3.3
	45 and above	24	80.0
Years of Experience	1–5 years	6	20.0
	6–10 years	4	13.3
	11–15 years	4	13.3
	16–20 years	2	6.7
	More than 20 years	14	46.7

Most respondents are 45 years old and above, with 24 fish farmers (80%) in that group. The smallest age brackets, 35–39 and 40–44, each contain only one fish farmer (3.33%). This age distribution indicates that older individuals dominate the aquaculture industry, particularly in fishpond operations, contributing to experience-based management. A study in Barangay Day-asan, Surigao City found that a significant number of aquaculture farmers were 50 years or older, confirming the presence of older individuals in this sector (International Journal of Agronomy and Agricultural Research [IJAAR], 2023).

Most respondents have over 20 years of experience in fish farming, with 14 individuals (46.7%). The group with 16–20 years of experience has only two respondents (6.7%). This distribution shows that many fish farmers in the study area are long-established practitioners with extensive experience. Sarker, Rahman, and Hossain (2023) observed a similar trend among pond fish farmers in Bangladesh, where 46% of respondents had over 16 years of farming experience, indicating that the sector is often dominated by long-term practitioners.

Table 2. Business Profile of the Fish Farmers

n = 30

Variables	Indicators	Frequency	Percentage
Main Source of Financing	Own Savings	22	73.4
	Loans from Cooperatives	4	13.3
	Bank loan	1	3.3
	Others	3	10.0
Estimated Sales Per Production Cycle	₱100,000 and below	7	23.3
	₱100,001–150,000	8	26.7
	₱150,001–200,000	3	10.0
	₱250,001–300,000	2	6.7
	More than ₱300,000	10	33.3
Estimated Expenses Per Production Cycle	₱50,000 and below	10	33.3
	₱50,001–100,000	7	23.3
	₱100,001–150,000	3	10.0
	₱200,001–250,000	3	10.0

Variables	Indicators	Frequency	Percentage
	More than ₱250,000	7	23.3
Size of the Aquaculture Area	Less than 1 hectare	11	36.7
	1–5 hectares	10	33.3
	6–10 hectares	4	13.3
	More than 10 hectares	5	16.7

Most respondents primarily rely on their savings for financing, with 22 fish farmers (73.3%). In comparison, only one respondent (3.3%) received financial assistance through bank loans. This shows that self-financing is the most common practice among fish farmers, where personal funds serve as the main capital for their aquaculture operations. Limited access to formal credit reinforces this reliance on savings, making self-financing a common approach to managing production cycles. Similarly, a study in Frontiers in Aquaculture (2023) noted that fish farmers in Bulacan heavily depend on personal savings or informal lending due to the unavailability of formal credit options.

The highest estimated sales per production cycle exceeded ₱300,000, reported by 10 fish farmers (33.3%). The lowest estimated sales fell within the ₱200,001–₱250,000 range, with only two respondents (6.7%). These results indicate that aquaculture operations with higher estimated sales per cycle showcase significant profitability and economic potential. According to the Bureau of Fisheries and Aquatic Resources (2024), aquaculture production in the Philippines reached 2.38 million metric tons valued at ₱124.02 billion, highlighting the industry's lucrative and expanding nature nationwide.

The largest share of respondents reported estimated expenses of ₱50,000 or less, with 10 fish farmers (33.3%). The smallest proportions were seen in the ₱100,001–₱150,000 and ₱200,001–₱250,000 ranges, each with three respondents (10%). This distribution suggests that most fish farmers incur relatively low production expenses per cycle, while only a few deal with higher operating costs. Rayos and Macaraeg (2024) noted that aquaculture operators who efficiently manage production resources like feeds, labor, and maintenance can lower their overall operating expenses.

The largest group of respondents operates aquaculture areas smaller than 1 hectare, consisting of 11 fish farmers (36.7%). The smallest group manages areas between 6 to 10 hectares, with only four respondents (13.3%). These findings show that most aquaculture operators in the region engage in small-scale fish farming. This reflects limited production capacity and resources compared to those managing larger areas. This observation matches the report by Rayos and Macaraeg (2024), which found that many small-scale fish farmers in the Philippines use cost-conscious management strategies due to limited production areas and access to capital.

Table 3. Budgeting

Indicators	Weighted Mean	Descriptive Equivalent
I prepare a budget before the start of each aquaculture cycle.	3.40	Always
I allocate funds separately for feeds, fingerlings, labor, and other major expenses.	3.47	Always
I consider past expenses when making a budget.	3.33	Always
I adjust my budget based on current market prices of inputs.	3.37	Always
I set aside emergency funds for unexpected expenses.	2.93	Often

Indicators	Weighted Mean	Descriptive Equivalent
I, update or revise my budget if my expected income changes.	3.33	Always
I keep a written or recorded copy of my aquaculture budget.	3.17	Often
I use my budget as a guide for daily or weekly spending decisions.	3.37	Always
Average Weighted Mean	3.2958	Always

The statement "I allocate funds separately for feeds, fingerlings, labor, and other major expenses" received the highest mean score of 3.47 (Always), indicating that farmers regularly set aside money for key costs to manage their finances effectively and avoid overspending. Conversely, the statement "I set aside emergency funds for unexpected expenses" scored the lowest at 2.93 (Often). This suggests that, while farmers understand the importance of being financially prepared, many struggle to save for emergencies. Lacking regular emergency funds can lead to issues during unexpected events like fish deaths, disease outbreaks, or price changes. Meliko et al. (2021) found that variable costs such as feed, inputs, and labor account for more than half of total production costs, highlighting the necessity of planning and monitoring spending to maintain profitability.

Table 4. Cost Monitoring

Indicators	Weighted Mean	Descriptive Equivalent
I regularly record my daily or weekly aquaculture expenses.	3.37	Always
I keep receipts, invoices, or logs for aquaculture-related purchases.	3.27	Always
I monitor whether my actual expenses match my planned budget.	3.27	Always
I monitor feed usage to ensure it matches the number and size of fish stocked.	3.87	Always
I use a logbook, notebook, or app to track all aquaculture expenses.	3.33	Always
I review records to check if I overspent in certain areas.	3.47	Always
I update my expense records immediately after making a purchase.	3.43	Always
I identify spending patterns over time to adjust my future financial plans.	3.37	Always
Average Weighted Mean	3.4208	Always

The statement "I monitor feed usage to ensure it matches the number and size of fish stocked" received the highest mean score of 3.87 (Always), showing that farmers pay close attention to feed because it represents a major cost and is crucial for profitability. Other indicators also scored highly, indicating that farmers consistently track their spending and maintain good records. Firdaus et al. (2020) pointed out that feed accounts for about 60–70% of total production costs in tilapia farming, so managing and monitoring feed use is vital for staying profitable.

Table 5. Cost Control

Indicators	Weighted Mean	Descriptive Equivalent
I look for cheaper but quality alternatives for aquaculture inputs.	3.50	Always
I reduce unnecessary expenses to increase profit.	3.50	Always
I reuse or recycle materials when possible.	3.50	Always
I schedule and plan purchases to avoid impulse buying.	3.47	Always
I conduct regular maintenance to avoid costly repairs.	3.53	Always
I buy inputs in bulk to get discounts and save on transportation.	3.33	Always
I minimize wastage of inputs like feeds, water, and energy.	3.30	Always
I assess whether an expense will give a good return before spending.	3.60	Always
Average Weighted Mean	3.4667	Always

The statement "I assess whether an expense will give a good return before spending" received the highest mean of 3.60 (Always), showing that fish farmers are careful with their finances and consider the value of their expenditures. This reflects their understanding of cost–benefit principles and commitment to making profitable financial decisions. The statement "I minimize wastage of inputs like feeds, water, and energy" had the lowest mean of 3.30 (Always). Although most farmers do this consistently, some could improve resource usage, perhaps due to limitations in technology or facilities. Musa et al. (2025) noted that maintaining cost control and financial discipline helps small-scale fish farmers use resources more efficiently, boost productivity, and sustain their businesses over time.

Table 6. Significant Relationship Between the Demographic Profile and the Cost Management Practices

Demographic Profile		Budgeting		Cost Monitoring		Cost Control		OVERALL (Cost Management Practices)	
Age	Correlation Coefficient	-.081		-.274		.061		-.129	
	Sig. (2-tailed)	.669	NS	.143	NS	.748	NS	.496	NS
Years of experience	Correlation Coefficient	.478		.141		.334		.434	
	Sig. (2-tailed)	.007	S	.457	NS	.071	NS	.017	S

The analysis showed a significant connection between years of experience and fish farmers' budgeting practices. A moderate positive correlation ($r = 0.478$, $p = 0.007$) indicates that more experienced farmers are better at planning and managing their financial resources. This finding suggests that practical knowledge gained over years improves cost management skills.

Table 7. Significant Relationship Between the Business Profile Variables and the Cost Management Practices

Business Profile		Budgeting		Cost Monitoring		Cost Control		OVERALL (Cost Management Practices)	
Main source of financing	Correlation Coefficient	-.253		.195		-.216		-.154	
	Sig. (2-tailed)	.178	NS	.303	NS	.253	NS	.415	NS
Estimated sales per production cycle	Correlation Coefficient	.500		.237		.494		.481	
	Sig. (2-tailed)	.005	S	.207	NS	.006	S	.007	S
Estimated expenses per production cycle	Correlation Coefficient	.348		.215		.098		.268	
	Sig. (2-tailed)	.060	NS	.254	NS	.606	NS	.152	NS
Size of the Aquaculture Area	Correlation Coefficient	.249		.162		.328		.274	
	Sig. (2-tailed)	.184	NS	.394	NS	.077	NS	.143	NS

Analysis of the respondents' business profiles indicated that estimated sales per production cycle are significantly linked to cost management practices. Moderate positive correlations were found for budgeting ($r = 0.500$, $p = 0.005$) and cost control ($r = 0.494$, $p = 0.006$). These results suggest that the possibility of higher income encourages fish farmers to manage their operational costs more carefully, highlighting the impact of financial expectations on effective aquaculture management.

Conclusion

The study shows that fish farming in the focus areas is mostly run by farmers with over twenty years of experience. Most farmers rely on their savings rather than formal loans, indicating limited access to external funding. Regularly setting aside money for significant expenses shows that these farmers have developed strong financial planning skills over time. They also closely monitor feed and other essential costs and thoughtfully evaluate expenses before spending, which helps keep their businesses profitable and sustainable.

Acknowledgement

The researchers sincerely extend their deepest gratitude and appreciation to all individuals who generously shared their knowledge, expertise, resources, and unwavering support, contributing to the successful completion of this research:

To the ALMIGHTY GOD, for His divine wisdom, strength, guidance, and grace. Without Him, the completion of this study would not have been possible;

Their beloved parents, for their unconditional love, trust, moral and financial support, and the sacrifices they made that allowed the researchers to persevere and succeed;

Dr. Arly N. Visperas, their research adviser and editor, for his valuable guidance, insightful suggestions, and unwavering support throughout the preparation of this manuscript, which significantly improved the quality of the study;

Ms. Remedios A. Palaganas, CPA, MBA, their Research 2 Instructor for her valuable guidance, patience and encouragement;

Ms. Michelle P. Castañaga, DBA, Chairperson of the Committee on Oral Examination, for her thoughtful comments, constructive recommendations, and encouraging words that contributed to the quality of the study;

Mr. Floyd Alexis G. Rafanan, CPA, MBA, Member of the Committee on Oral Examination, for his valuable input and ideas that contributed to the enhancement of the study;

Mr. Marco Gabriel R. Benin, MICB, RCA, CPA, MBA, Member of the Committee on Oral Examination, for his insightful advice and perspectives that enriched the study;

Ms. Jessica V. Pascua, LPT, their Statistician, for her assistance in analyzing and interpreting the data that greatly contributed to the completion and accuracy of this study; and

Dr. Pelilia C. Veloso, CPA, LLB, Dean of the College of Business Management and Accountancy (CBMA), for her continued support and encouragement throughout the development of this study.

References

Bureau of Fisheries and Aquatic Resources [https://www.bfar.da.gov.ph/2024/10/01/da-bfar-launches-five-year-plan to-advance-ph-aquaculture-industry/], 2025

Frontiers in Aquaculture [https://www.frontiersin.org/articles/10.3389/faquc.2023.1106416/full], 2025

Firdaus, R. M., Mulyono, M., & Farchan, M. (2020). Technical Study and Financial Analysis of Red Tilapia Cultivation (Oreochromis niloticus) in Running Water System Using Different Feeds at PT Ikan Bangun Indonesia (IWAKE) Bogor, West Java. Journal of Aquaculture Science, 5(2), 88–98. https://doi.org/10.31093/joas.v5i2.97

Global Goals - UN 2030 Agenda| Reused Remade – Reusedremade [https://reusedremade.com/pages/global-goals], 2025

International Journal of Agronomy and Agricultural Research (IJAAR) [https://zenodo.org/records/10899914 IJAAR, 23(1), 23–27.], 2025

Meliko, Majory & Ngoh, Siri & Okolle, Justin. (2021). Cost-benefit analysis for small-scale aquaculture production systems: A case of South West Region of Cameroon, Africa. International Journal of Fisheries and Aquaculture. 13. 56-66. 10.5897/IJFA2021.0785.

Musa, S., Aura, C. M., Tómasson, T., Sigurgeirsson, Ó. I., Kubiriza, G. K., &

Rahman, M. M., Hasan, M. S., & Uddin, M. N. (2023). Traditional fish farming based on indigenous knowledge in homestead ponds in Bangladesh. Sustainability, https://www.mdpi.com/2071-1050/15/18/13583

Rayos, J. C. C., & Macaraeg, N. A. (2024). Determinants of Production and

Technical Efficiency of Tilapia Farming in the Philippines. Asian Journal of Fisheries and Aquatic https://doi.org/10.9734/ajfar/2024/v26i6771

Thorarensen, H. (2025). The influence of various feeding and pond fertilization strategies on Nile tilapia (Oreochromis niloticus L.) production and the selectivity for natural versus supplementary diet in semi-intensive aquaculture systems. Aquaculture, Fish and Fisheries, 5(1), Article 70031. https://doi.org/10.1002/aff2.70031