
Bridging Financial Literacy Gaps in Informal Economies: Insights from MSMEs in the Carbon Market, Cebu City

Chaznay M. Quiros (Corresponding Author)
University of Southern Philippines – Foundation
Cebu City, Philippines
cquiros_shs@uspf.edu.ph

Jermaine S. Bustillo
University of Southern Philippines – Foundation
Cebu City, Philippines

Raiza Clarence L. Sojor
University of Southern Philippines – Foundation
Cebu City, Philippines

Jiomarie B. Jesus
University of Southern Philippines – Foundation
Cebu City, Philippines

Mark Anthony Tenedero
University of Southern Philippines – Foundation
Cebu City, Philippines

Evelyn C. Navares
University of Southern Philippines – Foundation
Cebu City, Philippines

Abstract

The study aimed to assess the self-assessed financial literacy levels of micro, small, and medium enterprise (MSME) owners operating within the Carbon Market, Cebu City—an informal economic hub characterized by low-income, limited informal education, and high entrepreneurial activity. Employing a descriptive-correlational research design, the study utilized validated survey instruments to measure financial literacy across four domains: financial management, savings, loans and investments, and financial planning. Data were gathered from 370 purposively selected respondents and analyzed using descriptive statistics, Chi-square tests, and Cramer's V to determine patterns and the strength of associations between demographic factors and financial literacy. Results revealed that while MSMEs express strong confidence in long-term planning and savings, foundational skills such as record-keeping and budgeting remained underdeveloped. Moreover, demographic variables such as age, gender, education, and income significantly influenced both literacy levels and operational challenges, yet no significant correlation was found between financial literacy and the challenges faced. These findings underscore a disconnect between knowledge and practice, suggesting that financial education alone is insufficient without supportive systems and contextual tools. The study provides

practical insights for designing inclusive, community-based interventions that integrate digital tools, mentorship, and access to financial assistance to enhance the sustainability of informal enterprise.

Keywords: *financial literacy, MSMEs, informal economy, carbon market, Cebu City*

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are the cornerstone of economic growth in developing nations, accounting for over 99% of registered businesses in the Philippines and serving as critical engines of employment, innovation, and community stability. Within informal urban economies such as Cebu City's Carbon Market, a historically significant and densely populated commercial district, MSMEs operate under conditions of constrained institutional support, limited access to formal financial systems, and significant variability in business acumen. These structural limitations exacerbate financial fragility, positioning financial literacy not merely as a developmental tool but as a fundamental mechanism for economic survival, inclusion, and upward mobility.

In response to increasing global imperatives for inclusive and sustainable economic transitions, there is a growing recognition that the financial capability of MSMEs in informal economies must be both understood and supported. Loreño & Huang (2025) argue that financial empowerment through education and innovation is essential for enabling MSMEs to contribute meaningfully to the emerging blue and green economy. However, prevailing literature has largely focused on formal-sector enterprise behavior, leaving a critical gap in our understanding of how financial literacy manifests and operates within structurally disadvantaged, informal ecosystems (Dutton et al., 2022; Mazzarol, 2022). This gap is especially evident in settings like the Carbon Market, where thousands of entrepreneurs navigate a complex terrain marked by digital transformation, socio-economic precarity, and modernization-induced disruption.

This study offers a novel empirical contribution by examining self-assessed financial literacy among informal MSME operators, using the Financial Capability Framework as an analytical lens. Specifically, it investigates four core domains—financial management, savings, loans and investments, and financial planning—while assessing the influence of demographic factors and operational challenges on financial behavior. Adopting a descriptive-correlational design, this research bridges the divide between perception and practice, and between knowledge and financial resilience. Unlike prior studies centered on formal enterprises or macro-level financial inclusion policies, this study is grounded in the lived realities of informal market actors. It thus informs localized, actionable interventions that strengthen the link between financial literacy and sustainable development, advancing both theory and policy for inclusive economic ecosystems (Thango & Obokoh, 2024; Jesus, 2024a, 2024b).

Theoretical Background

Financial Management

Financial management is a foundational pillar of enterprise sustainability, particularly for micro, small, and medium enterprises (MSMEs) operating in informal economies where financial systems are fragmented and institutional support is limited. Robert et al. (2023) define financial management as the planning, organizing, and controlling of financial activities, emphasizing its role in ensuring liquidity, profitability, and long-term viability. However, these principles are often interpreted

differently in informal markets such as Cebu City's Carbon Market, where entrepreneurs function without formal accounting systems, relying instead on experience-driven decision-making. Sitinjak et al. (2023) argue that financial management in such contexts is not linear but relational, shaped by the entrepreneur's capacity to adapt, improvise, and manage limited resources. While MSMEs in the Carbon Market may grasp concepts like budgeting and cash flow, their application tends to be informal and inconsistent, leading to a gap between financial understanding and sustainable practice. This study extends the current literature by empirically examining how financial management is perceived and applied in a low-resource setting, contributing novel insights into how financial behavior is shaped not just by knowledge but by environmental constraints. Through this lens, financial management is positioned not merely as a technical skill but as a contextual competency critical to resilience and inclusive economic growth.

Savings

Savings is a critical financial behavior that influences the stability, resilience, and future investment capacity of micro, small, and medium enterprises (MSMEs), especially in informal economic settings. Challoumis (2023) underscores the dual nature of savings, distinguishing between enforced savings—those derived from necessity and economic constraints—and escape savings, which reflect proactive financial planning and economic mobility. In informal economies such as Cebu City's Carbon Market, MSMEs often operate within narrow margins, making savings both a survival mechanism and a potential growth enabler. However, the unpredictable nature of earnings and the lack of structured financial instruments in such environments often push entrepreneurs toward short-term liquidity management rather than long-term savings strategies. According to Challoumis-Kωνσταντινος Χαλλουμής (2023), the velocity of savings in low-income contexts is influenced by financial liquidity and economic pressures, leading to a tendency toward “minimum escaped savings”—a concept that illustrates the fragility of surplus accumulation in informal markets. This dynamic is especially relevant for MSMEs in the Carbon Market, where saving behaviors are shaped less by formal financial education and more by habit, income volatility, and risk aversion. This study contributes to the evolving discourse by examining how MSME owners perceive and practice saving in an informal urban economy, highlighting the interplay between behavioral intent and structural limitation. The findings are expected to inform interventions that transition MSMEs from reactive to strategic saving behaviors, thereby enhancing their financial resilience and capacity for sustainable growth.

Loans and Investments

Loans and investments are essential components of enterprise growth, particularly for MSMEs seeking to expand operations, manage risk, and improve long-term sustainability. In the formal sector, access to financial capital is typically accompanied by structured evaluation processes and institutional support; however, in informal economies, the dynamics are more complex and constrained. Lin et al. (2023) emphasized the transformative role of digital finance in improving investment efficiency among enterprises, showing that technology-driven financial access can reduce information asymmetries and enhance capital allocation. While their study is situated in China's formal economy, the principles of digital access and transparency are increasingly relevant to informal MSMEs in environments like Cebu City's Carbon Market, where access to traditional loans remains limited. In such contexts, MSME owners often rely on informal lenders or microfinance institutions, where loan terms are less regulated, and financial literacy becomes a crucial determinant of risk mitigation and return optimization. Power & Tandja (2022) argue that lenders who provide not just capital but also advisory support improve loan outcomes and project efficiency, a model that may be particularly beneficial for low-literacy, high-

risk borrowers in informal sectors. This research builds on these insights by examining the self-assessed knowledge and application of loan and investment strategies among MSMEs in an informal urban economy. By exploring how MSMEs evaluate risk, monitor investment performance, and navigate borrowing decisions without institutional advisory frameworks, this study contributes to a deeper understanding of how financial capability influences investment behavior and credit use in marginalized business environments.

Financial Planning

Financial planning is a critical function that enables individuals and enterprises to align short-term decisions with long-term goals, manage risk, and ensure financial stability. Among MSMEs operating in informal economies like Cebu City's Carbon Market, financial planning is often underdeveloped due to limited education, inconsistent income streams, and the absence of institutional support structures. Yeo, et al. (2024) argue that financial planning behavior is shaped not only by financial knowledge but also by psychological, cultural, and contextual variables, suggesting that generic approaches are insufficient for complex, informal environments. Similarly, Ghadwan et al. (2022) emphasized the mediating role of culture in retirement and long-term planning, asserting that socio-cultural norms deeply influence how individuals perceive future-oriented financial decisions. These insights are especially relevant in markets like Carbon, where many MSMEs operate on subsistence margins and prioritize daily liquidity over long-term strategies. Jesus (2024c) supports this by highlighting the importance of customized learning and capacity-building interventions in shifting behavior toward sustained organizational and financial improvement. Moreover, Jesus (2024d) notes that adaptive, context-sensitive frameworks—such as agile methodologies in enterprise operations—are critical for environments marked by uncertainty and limited formal structure. This study contributes to the growing body of financial planning literature by examining how MSMEs in informal urban markets perceive and execute planning practices, including goal setting, insurance, retirement preparation, and confidence in financial goal achievement. The findings aim to inform the development of localized, behaviorally informed interventions that move MSMEs from reactive financial habits to proactive, sustainable planning.

Null Hypotheses

H₀₁: There is no significant relationship between the demographic profile of MSME owners and their level of financial literacy and challenges encountered in business operations.

H₀₂: There is no significant relationship between the financial literacy levels of MSME owners and the financial challenges they encounter in the Carbon Market, Cebu City.

METHOD

Research Design

This study utilized a descriptive-correlational research design to assess the financial literacy of MSME owners in the Carbon Market, Cebu City. The descriptive component aimed to quantify and summarize respondents' self-assessed financial behaviors across four domains: financial management, savings, loans and investments, and financial planning, using mean scores and frequency distributions. Meanwhile, the correlational component sought to determine the statistical relationships between

demographic variables and both financial literacy levels and encountered challenges, employing chi-square tests and correlation analysis to identify significant patterns and associations within the data.

Environment

The research was conducted in Carbon Market, Cebu City, one of the oldest and largest public markets in the Philippines. As a major commercial hub for micro, small, and medium enterprises (MSMEs), Carbon Market hosts a diverse range of informal traders engaged in trading, manufacturing, and service-based businesses. The market serves as a livelihood center for thousands of low- to middle-income entrepreneurs, many of whom operate outside formal financial systems and possess varying levels of education and business experience. This environment is ideal for the study as it captures the complexities of informal economies, where financial literacy plays a critical role in business sustainability, yet remains underdeveloped due to limited access to formal education and institutional support. Given the socio-economic diversity and high volume of MSME activity within the Carbon Market, it offers a representative setting to examine how financial literacy manifests in real-world, grassroots economic contexts and to identify practical gaps and policy opportunities for financial inclusion.

Respondents

This study involved 370 MSME owners from Carbon Market, Cebu City, selected through purposive sampling. This non-probability sampling method was deemed appropriate because the research specifically targeted participants who actively manage micro, small, or medium enterprises within the market—individuals who are directly involved in financial decision-making and possess firsthand experience in operating within an informal economy. Purposive sampling ensured that only qualified respondents, with relevant business experience and knowledge of financial practices, were included in the study. The selection of 370 respondents was guided by the need to achieve sufficient representation across various business types (trading, manufacturing, services), age groups, and educational backgrounds to allow for meaningful statistical analysis. The inclusion criteria required that respondents be: (1) current MSME owners operating within the Carbon Market; (2) directly responsible for their business's financial decisions; and (3) willing to participate voluntarily with informed consent. This sampling approach allowed the researchers to focus on the specific population relevant to the study's objectives and ensure the validity of insights drawn from the data.

Data Analysis

The data collected from the 370 MSME owners were analyzed using both descriptive and inferential statistical techniques. Before full deployment, the survey instrument underwent expert validation by three professionals in finance and business research to ensure content relevance, clarity, and appropriateness to the informal MSME context. A pilot test was conducted with 30 respondents from a comparable informal market outside Carbon to assess the instrument's reliability and internal consistency. The resulting Cronbach's alpha coefficient was 0.86, indicating a high level of reliability across the four financial literacy domains: financial management, savings, loans and investments, and financial planning. Descriptive statistics, including frequency counts, percentages, and mean scores, were utilized to summarize respondents' demographic characteristics and assess their self-assessed financial literacy. These measures offered a clear profile of financial behaviors and perceptions among MSME operators in the Carbon Market. For inferential analysis, Chi-square tests were employed to evaluate associations between key demographic variables (e.g., age, gender, educational attainment, type of business, monthly revenue, and financial level) and both financial literacy levels and the

challenges encountered. To assess the strength and practical significance of these associations, Cramer's V was calculated as a post-test measure of effect size. This multi-layered statistical approach enhanced the robustness of the analysis and reinforced the reliability and interpretive validity of the study's findings.

Ethical Consideration

This study adhered to established ethical standards to ensure the integrity, confidentiality, and voluntary participation of all respondents. Before data collection, informed consent was obtained from all MSME participants in the Carbon Market, Cebu City. Participants were briefed on the study's objectives, their right to withdraw at any time, and the confidentiality of their responses. No personal identifiers were collected, and all data were anonymized to protect participants' privacy. Moreover, the research design ensured non-coercive participation, with no form of compensation or incentive that could unduly influence responses. The study also maintained cultural sensitivity, particularly given the socio-economic vulnerability of informal economy actors. Researchers took care to avoid any language or inquiry that could be perceived as judgmental or intrusive. The study received ethical clearance from the University of Southern Philippines Foundation's Research Ethics Committee. All procedures were conducted following the ethical principles outlined in the Declaration of Helsinki and relevant national guidelines governing social science research in the Philippines.

RESULTS

Table 1. Profile of the respondents

Demographic Profile	Frequency	Percentage
Gender		
<i>Male</i>	191	51.62
<i>Female</i>	179	48.38
Age		
<i>Under 18</i>	0	0.00
<i>18-24</i>	0	0.00
<i>25-34</i>	58	15.68
<i>35-44</i>	0	0.00
<i>45-54</i>	227	61.35
<i>55-64</i>	41	11.09
<i>65 or older</i>	44	11.89
Educational Attainment		
<i>Elementary School</i>	203	54.86
<i>High School</i>	142	38.38
<i>College Graduate</i>	25	6.76
<i>Postgraduate</i>	0	0.00
Type of Business		
<i>Manufacturing</i>	33	8.92
<i>Service</i>	35	9.46
<i>Trading</i>	302	81.62
Monthly Revenue		
<i>Below 5,000</i>	204	55.14

<i>5001-10,000</i>	87	23.51
<i>10,001-15,000</i>	32	8.65
<i>15,001-20,000</i>	22	5.95
<i>More than 20,000</i>	25	6.76
Self-Assessed Financial Literacy Level		
<i>Very Low</i>	18	4.86
<i>Low</i>	32	8.65
<i>Average</i>	181	48.92
<i>High</i>	95	25.68
<i>Very High</i>	44	11.89

Table 1 reveals that most MSME owners in Cebu’s Carbon Market are middle-aged (61.35% aged 45–54), have low educational attainment (93.24% with only elementary or high school education), and earn less than ₱5,000 monthly (55.14%), indicating deep-rooted challenges in financial knowledge and capacity. Despite 48.92% rating their financial literacy as “average” and 37.57% as “high” or “very high,” the gap between perceived and actual financial competence suggests overconfidence and limited access to formal education and services. These findings underscore the need for targeted, community-based financial literacy programs that are culturally and contextually adapted. This study contributes practical value by identifying structural, perceptual, and access-related gaps and offering direction for inclusive policies tailored to informal economies (Biore et al., 2024; Quimba et al., 2024).

Table 2. Self-assessed Financial Literacy of MSMEs in Carbon Market, Cebu in Terms of Financial Management

Indicators	Mean	Interpretation
1. I maintain accurate and up-to-date financial records for my business.	3.48	Neutral
2. I regularly monitor my business's cash flow.	3.55	Agree
3. I understand the concept of profit margins and how they affect my business.	3.68	Agree
4. I have a budget in place for my business expenses.	3.65	Agree
5. I have strategies in place to manage financial risks.	3.78	Agree
Aggregate Mean	3.63	Agree

Legend: 1.00-1.49: *Strongly Disagree [SD]*; 1.50-2.49: *Disagree [D]*; 2.50-3.49: *Neutral [N]*; 3.50-4.49: *Agree [A]*; 4.50- 5.00: *Strongly Agree [SA]*

Table 2 shows that MSMEs in Cebu’s Carbon Market generally agree with key financial management practices, with an aggregate mean of 3.63, yet a neutral score (3.48) on maintaining accurate and up-to-date financial records reveals a critical operational gap. While respondents demonstrate awareness of concepts like cash flow, profit margins, budgeting, and risk management, the lack of consistent record-keeping undermines informed decision-making, loan eligibility, and business growth. This gap reflects limited access to structured financial training and overreliance on informal knowledge, common in low-income, informal economies. As Alperovych et al. (2024) emphasize, entrepreneurs’ self-assessment often overstates actual capability, which reinforces the need for verification-based financial education. Addressing this requires tailored capacity-building programs, integrating practical accounting tools, and localized mentoring. The practical value of this study lies in identifying core

weaknesses in financial operations and proposing solutions that empower MSMEs to improve fiscal discipline and sustainability, aligned with national goals for financial inclusion and enterprise development (Lamboglia & Travaglino, 2022).

Table 3. Self-assessed Financial Literacy of MSMEs in Carbon Market, Cebu in Terms of Savings

Indicators	Mean	Interpretation
1. I regularly set aside a portion of my business earnings for savings.	4.63	Strongly Agree
2. I understand the importance of having an emergency fund for my business.	4.35	Agree
3. I actively seek out ways to maximize interest in my business savings.	4.32	Agree
4. I have a clear savings goal for my business.	4.63	Strongly Agree
5. I regularly review and adjust my business savings plan.	4.40	Agree
Aggregate Mean	4.46	Agree

Legend: 1.00-1.49: *Strongly Disagree [SD]*; 1.50-2.49: *Disagree [D]*; 2.50-3.49: *Neutral [N]*; 3.50-4.49: *Agree [A]*; 4.50- 5.00: *Strongly Agree [SA]*

Table 3 indicates that MSMEs in Carbon Market, Cebu, exhibit strong financial behavior in terms of savings, with an aggregate mean of 4.46, reflecting a disciplined approach to setting aside earnings and establishing clear savings goals. Respondents strongly agree on regularly saving (4.63) and setting savings targets (4.63), suggesting high self-motivation and forward-thinking financial habits. However, slightly lower scores on emergency fund awareness (4.35) and interest maximization (4.32) highlight moderate gaps in strategic savings and investment literacy. These gaps imply a need for deeper education on how to optimize savings for business continuity and growth. As noted by Nursjanti & Amaliawiati (2024), while financial habits are shaped by socio-economic factors, sustained financial wellness requires reinforcing knowledge with strategic tools. Moreover, Adhikari & Sharma (2025) argue that behavioral confidence must be matched with structured financial plans to avoid complacency. The practical value of these findings lies in guiding financial institutions and local policymakers to design interventions that move MSMEs beyond basic saving practices toward more sophisticated, goal-oriented financial planning, thereby strengthening resilience and long-term business viability.

Table 4. Self-assessed Financial Literacy of MSMEs in Carbon Market, Cebu in Terms of Loans and Investments

Indicators	Mean	Interpretation
1. I am knowledgeable about the different types of business loans available to me.	4.80	Strongly Agree
2. I understand the terms and conditions of loans before applying for them.	4.58	Strongly Agree
3. I assess the potential return on investment before making business investments.	4.39	Agree
4. I am knowledgeable about the risks when loaning.	4.65	Strongly Agree
5. I regularly review my business investments to ensure they are performing well.	4.91	Strongly Agree

Aggregate Mean **4.66** **Strongly Agree**

Legend: 1.00-1.49: *Strongly Disagree [SD]*; 1.50-2.49: *Disagree [D]*; 2.50-3.49: *Neutral [N]*; 3.50-4.49: *Agree [A]*; 4.50- 5.00: *Strongly Agree [SA]*

Table 4 demonstrates that MSMEs in Carbon Market, Cebu, display high self-assessed literacy in managing loans and investments, with an aggregate mean of 4.66, indicating strong agreement across all indicators. Respondents show advanced understanding of loan types (4.80), risk assessment (4.65), and investment performance monitoring (4.91), reflecting a proactive financial mindset. However, the slightly lower score for evaluating return on investment (4.39) suggests a gap in analytical financial skills, which may limit strategic growth. While these MSMEs show commendable awareness, real-life applications may still lack depth without technical guidance. As Aristei et al. (2024) argue, financial literacy must be paired with ethical and sustainable decision-making, especially in micro-firm contexts. Additionally, Amijaya et al. (2024) emphasize that structured, culturally aligned financial training, similar to Sharia models, can elevate practical decision-making. The study's practical value lies in identifying that while MSMEs in informal economies may be confident in their loan and investment knowledge, reinforcing this with hands-on training and risk-return simulations is essential for truly sustainable financial growth.

Table 5. Self-assessed Financial Literacy of MSMEs in Carbon Market, Cebu in Terms of Financial Planning

Indicators	Mean	Interpretation
1. I have a long-term financial plan for my business.	4.85	Strongly Agree
2. I understand the importance of retirement planning for myself as a business owner.	4.95	Strongly Agree
3. I have insurance coverage to protect my business from unforeseen events.	4.89	Strongly Agree
4. I actively seek out financial advice to improve my business's financial health.	4.76	Strongly Agree
5. I am confident in my ability to achieve my business's financial goals.	4.83	Strongly Agree
Aggregate Mean	4.86	Strongly Agree

Legend: 1.00-1.49: *Strongly Disagree [SD]*; 1.50-2.49: *Disagree [D]*; 2.50-3.49: *Neutral [N]*; 3.50-4.49: *Agree [A]*; 4.50- 5.00: *Strongly Agree [SA]*

Table 5 reveals that MSMEs in Carbon Market, Cebu, exhibit strong self-assessed competence in financial planning, with an aggregate mean of 4.86, indicating widespread agreement on having long-term plans, retirement preparation, insurance coverage, and confidence in achieving financial goals. These high ratings suggest a commendable level of awareness and intention toward business continuity and risk management. However, this confidence may conceal a critical gap: while MSME owners report strong planning behaviors, the absence of data validating the implementation or success of these plans raises concerns about the depth of actual financial competency. As Kyriacou et al. (2024) emphasize, self-perception often overstates functional financial literacy, particularly when planning is not coupled with technical understanding or performance tracking. Similarly, Soomro et al. (2025) argue that entrepreneurial success in developing economies hinges not just on goal-setting but on the integration of measurable competencies and execution. The practical implication of this study lies in

recognizing that while MSMEs may appear financially prepared, interventions must focus on translating planning intentions into outcomes through skills training, mentoring, and accessible monitoring tools. This ensures that financial planning becomes not only aspirational but operationally effective in informal economies.

Table 6. Summary of the Self-assessed Financial Literacy of MSMEs in Carbon Market, Cebu

Indicators	Mean	Interpretation
1. Financial Management	3.63	Agree
2. Savings	4.46	Agree
3. Loans and Investments	4.66	Strongly Agree
4. Financial Planning	4.86	Strongly Agree
Aggregate Mean	4.40	Agree

Legend: 1.00-1.49: *Strongly Disagree [SD]*; 1.50-2.49: *Disagree [D]*; 2.50-3.49: *Neutral [N]*; 3.50-4.49: *Agree [A]*; 4.50- 5.00: *Strongly Agree [SA]*

Table 6 presents a consolidated view of MSMEs’ self-assessed financial literacy in Carbon Market, Cebu, with an aggregate mean of 4.40, indicating general confidence across financial domains. While respondents show strong agreement in financial planning (4.86) and in managing loans and investments (4.66), weaker scores in financial management (3.63) and savings (4.46) highlight practical gaps in day-to-day fiscal operations. These results suggest that while MSMEs possess strategic intentions and high-level financial confidence, their foundational skills—such as accurate record-keeping and disciplined saving—remain underdeveloped. In real-life terms, this limits their ability to manage cash flow, withstand financial shocks, and scale operations effectively. As Somova (2024) notes, structural barriers, such as limited access to resources or institutional guidance, can impede SMEs from operationalizing financial strategies. Furthermore, the disparity mirrors what Lee et al. (2025) describe as the “skill mismatch” between perceived competency and actionable capability, especially in under-resourced communities. To resolve this, MSMEs require capacity-building interventions that go beyond general awareness, incorporating mentorship, simulation-based learning, and digital literacy integration. This study’s practical value lies in its clear mapping of financial literacy dimensions, allowing policymakers, NGOs, and financial institutions to target capacity gaps with precision, especially in informal economies where strategic awareness often masks executional weaknesses.

Table 7. Challenges Encountered by the MSME Owners in the Carbon Market Cebu

Indicators	Mean	Interpretation
1. Limited access to financial education resources.	3.83	Agree
2. Lack of understanding of financial concepts and terminology.	3.98	Agree
3. Difficulty in managing cash flow effectively.	4.19	Agree
4. High levels of debt are affecting business operations.	2.23	Disagree
5. Challenges in creating and sticking to a budget.	3.88	Agree
6. Lack of awareness about government financial assistance programs.	3.39	Neutral
7. Difficulty in forecasting and planning for future financial needs.	4.14	Agree
Aggregate Mean	3.68	Agree

Legend: 1.00-1.49: *Strongly Disagree [SD]*; 1.50-2.49: *Disagree [D]*; 2.50-3.49: *Neutral [N]*; 3.50-4.49: *Agree [A]*; 4.50- 5.00: *Strongly Agree [SA]*

Table 7 outlines the challenges MSME owners in Carbon Market, Cebu face, with an aggregate mean of 3.68, indicating a general agreement that critical barriers impede their financial literacy and management. Key issues include difficulty managing cash flow (4.19), forecasting financial needs (4.14), and understanding financial concepts (3.98), reflecting a systemic gap in applied financial skills. Although debt is not perceived as a major issue (2.23), the low awareness of government assistance (3.39) signals underutilization of support systems that could alleviate financial pressure. These challenges suggest that while MSMEs are engaged in financial activities, they lack structured education and guidance to translate knowledge into sound practice. Lim (2022) contextualizes this within the broader socio-political constraints of the Carbon Market, where modernization efforts often overlook grassroots-level capacity-building. Caboverde (2022) adds that regulatory complexity further strains MSMEs, especially those with limited financial planning capacity. Resolving these issues requires a multi-layered approach: embedding localized financial literacy programs, simplifying access to government aid, and integrating real-time financial planning tools tailored for low-income, informal entrepreneurs. The study's practical value lies in diagnosing these friction points, offering a roadmap for public and private sector interventions that are both responsive and inclusive, essential for lifting informal economies into long-term financial resilience.

Table 8. Relationship Between the Profile, Literacy, and Challenges

Variable	Chi- Square Value	df	Cramer's V	p-value	Significance	Decision
Age						
Financial Literacy	377.22571	12	0.58217	0	Significant	Reject Ho
Challenges	376.13065	20	0.50345	0	Significant	Reject Ho
Gender						
Financial Literacy	372.07641	6	0.70813	0	Significant	Reject Ho
Challenges	374.50356	10	0.71044	0	Significant	Reject Ho
Educational Attainment						
Financial Literacy	374.27086	9	0.57989	0	Significant	Reject Ho
Challenges	378.16561	15	0.5829	0	Significant	Reject Ho
Type of Business						
Financial Literacy	376.174	9	0.58136	0	Significant	Reject Ho
Challenges	378.29246	15	0.583	0	Significant	Reject Ho
Monthly Revenue						
Financial Literacy	375.49942	15	0.58084	0	Significant	Reject Ho
Challenges	384.81359	25	0.45546	0	Significant	Reject Ho
Financial Level						

Financial Literacy	374.22729	12	0.57986	0	Significant	Reject Ho
Challenges	385.70835	20	0.50981	0	Significant	Reject Ho

Table 8 illustrates statistically significant relationships between MSME owners’ demographic profiles and their financial literacy and challenges, with all p-values at 0.000 and Cramer’s V values indicating moderate to strong associations. Age, gender, educational attainment, type of business, monthly revenue, and financial level all show significant correlations with both financial literacy and the challenges encountered. These results confirm that financial capability and vulnerability are not uniform but shaped by socio-economic and demographic factors. For instance, younger or less-educated owners may lack the foundational knowledge to manage risks effectively, while gender disparities may reflect broader structural inequities in access to training and capital. As Aithal (2024) emphasizes, financial empowerment efforts must account for these heterogeneities to be effective. Similarly, Kyeyune and Ntayi (2025) argue that localized interventions—especially in informal and rural sectors—must reflect the lived experiences of target populations to ensure inclusive development. The real-life implication is that a one-size-fits-all approach to financial education is insufficient. Programs must be stratified by demographic variables, offering differentiated tools and support. The practical value of these findings lies in guiding policy design and microfinance programs to enhance resilience and economic stability in marginalized business communities, echoing Katnic et al.’s (2024) call for data-driven and demographic-sensitive literacy strategies.

Table 9. Relationship Between Financial Literacy and Challenges

Pair of Variables	<i>R</i>	<i>N</i>	<i>p-value</i>	<i>Significance</i>	<i>Decision</i>
Financial literacy and challenges	-0.05058	370	0.33188	Not significant	Fail to Reject

Table 9 reveals that the correlation between financial literacy and the challenges encountered by MSMEs in the Carbon Market, Cebu, is not statistically significant ($r = -0.05058$, $p = 0.33188$), indicating that higher financial literacy does not necessarily reduce the challenges faced. This finding suggests a critical gap between knowledge acquisition and its practical application within complex, resource-constrained informal environments. Despite MSMEs reporting moderate to high financial literacy in previous tables, the persistence of challenges such as cash flow issues, budgeting difficulties, and limited awareness of support programs indicates that financial capability alone is insufficient to overcome systemic barriers. Iftikhar et al. (2024) argue that social capital and institutional support must accompany financial literacy to foster meaningful inclusion and empowerment. Likewise, Chibesa & Mwangi (2025) emphasize the importance of digital and contextual financial tools, particularly for informal entrepreneurs. The real-life implication is clear: capacity-building must move beyond education to include system-level interventions, such as simplified access to financial services, mentorship networks, and policy reforms. The practical value of this finding lies in highlighting the limits of standalone financial education, reinforcing the need for integrated solutions that convert literacy into resilience and actionable financial behavior.

Conclusion

This study reveals that while MSME owners exhibit strong self-confidence in areas such as savings, financial planning, and loan management, critical gaps remain in foundational financial practices,

particularly in accurate record-keeping, budgeting, and day-to-day cash flow management. The findings indicate that although respondents rate themselves highly in strategic financial planning and goal setting, they fall short in executing basic financial operations, a disconnect that can hinder access to credit, informed decision-making, and long-term growth. This gap between perceived literacy and functional competence is further compounded by demographic factors such as age, gender, education, and income level, which significantly influence financial capability and the extent of challenges encountered.

Moreover, the study finds no significant correlation between financial literacy levels and the challenges MSMEs face, implying that knowledge alone does not reduce financial strain in informal settings without the necessary tools and institutional support. Real-world implications are profound: even financially literate MSMEs may continue to struggle unless they are supported by accessible financial systems, practical tools, and policy environments that enable the effective application of knowledge. Addressing these gaps requires an integrated approach that combines contextualized financial education with mentorship, digital tools, government support awareness, and simplified access to financial services.

The practical value of this research lies in its clear diagnosis of the structural and behavioral challenges faced by informal entrepreneurs and its utility as a roadmap for stakeholders aiming to enhance financial inclusion and resilience. By aligning capacity-building interventions with the lived realities of MSMEs, this study contributes to building a more inclusive and sustainable financial ecosystem for underserved sectors in developing economies.

Recommendations

Based on the findings of this study on MSMEs in the Carbon Market, Cebu City, the following targeted recommendations are proposed to bridge the gap between financial literacy and its real-world application:

1. **Implement Community-Based Financial Training Programs.** Develop localized, culturally relevant financial education programs that focus on foundational skills such as record-keeping, budgeting, and cash flow management. These should be delivered in native languages and simplified formats to accommodate varying literacy levels and should involve hands-on simulations for practical learning.
2. **Establish Mobile Mentorship and Advisory Services.** Deploy trained financial advisors or local mentors who can provide MSMEs with ongoing, personalized guidance in applying financial concepts, especially in budgeting, managing savings, and evaluating return on investments. This can be facilitated through mobile outreach or barangay-based mentoring stations.
3. **Integrate Financial Tools and Digital Solutions.** Introduce user-friendly mobile apps and accounting tools tailored for low-literacy entrepreneurs, enabling them to track income, expenses, and savings more effectively. Digital literacy modules should be coupled with training to empower MSMEs to confidently navigate mobile banking, online loan applications, and e-wallet services.
4. **Promote Access to Government Financial Assistance Programs.** Increase MSME awareness and utilization of existing government programs (e.g., DTI financing, DOLE livelihood assistance) by simplifying requirements and dissemination strategies. Local government units

(LGUs) should collaborate with cooperatives and microfinance institutions to facilitate enrollment and compliance.

5. **Demographic-Specific Interventions.** Design financial literacy modules based on age, gender, income, and educational background. For instance, older or less formally educated MSME owners may benefit from more visual or narrative-based teaching, while youth- or female-led enterprises may need content that addresses their unique financial constraints and empowerment strategies.
6. **Embed Financial Literacy in Market Governance Reforms.** As the Carbon Market undergoes modernization, financial education should be integrated into vendor accreditation, lease agreements, or cooperative membership requirements to institutionalize learning and practice. This ensures sustainability beyond external training interventions.
7. **Strengthen Public-Private Partnerships for Financial Inclusion.** Encourage collaboration between LGUs, NGOs, banks, and universities to co-create and evaluate impact-driven financial inclusion models tailored to informal economies. This ensures that interventions are both scalable and responsive to evolving business environments.

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