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AI-Generated Hybrid Consulting Platform for Micro and Small Enterprises in Albay

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Abstract

This study examined the development and initial pilot implementation of an AI-generated hybrid consulting platform, combined with personalized human mentorship for micro and small enterprises in Albay, Philippines. Guided by the Resource-Based View, the Theory of Constraints, and the knowledge-based perspective of human–AI collaboration, the research sought to describe the profile of participating firms, identify the key challenges they face in marketing, operations, and finance, and use these insights to design a consulting platform tailored to their needs. A quantitative research design using descriptive statistics was employed. Data were collected through a structured online survey from thirty purposively selected registered micro and small enterprises in Albay, representing sectors such as retail, food services, creative industries, manufacturing, and professional services. The analysis combined descriptive profiling with challenge ratings and was supported by secondary sources, including academic literature and relevant government and industry reports. Findings revealed that most respondents were micro-scale, consumer-oriented businesses operating with limited capital and assets. Although many had already moved beyond the start-up stage, their operations were still shaped by informal and inconsistent systems. In marketing, business decisions were often guided by intuition rather than structured planning, with limited use of analytics and minimal diversification of marketing channels. In terms of operations, many businesses showed a "digital front, manual back" arrangement. While some online activities were present, internal processes remained largely manual, undocumented, and constrained by capacity. Financial management was another challenge, particularly in preparing formal financial statements, managing cash flow, and meeting the documentation requirements for credit applications. Despite these constraints, respondents demonstrated growing digital readiness and openness to continuous, affordable, mobile-based support. Based on these insights, the study proposes an AI-generated hybrid consulting platform that combines AI-driven diagnostics and recommendations with localized human mentorship to help micro- and small-enterprises strengthen their marketing, operational, and financial capabilities.

Keywords:

Micro and small enterprises; AI-generated hybrid consulting; Human–AI collaboration; Digital readiness; Business challenges.

1.0 Introduction

Globally, Micro, Small, and Medium Enterprises (MSMEs) are vital for inclusive economic growth and social development, emphasizing their crucial role in fostering progress and making

the audience feel valued for their contributions. They accounted for over 90% of all businesses and provided 50% and 60% of total employment (World Bank, 2025). Micro, Small, and Medium Enterprises (MSMEs) promote job creation, drive innovation, strengthen local supply chains, and provide entrepreneurial opportunities that help alleviate poverty. Recent studies by Kumar (2024) and Dasaraju & Tambunan (2023) highlighted that MSMEs not only generate employment but also foster innovation ecosystems, especially in underserved regions. Their development directly influences local economic growth, making their support essential for sustainable development.

The Philippines also represented this global trend. According to the Department of Trade and Industry (DTI, 2021), MSMEs accounted for 99.58% of all registered businesses and employed over 64.67% of the workforce. They extended to diverse industries and sectors, including retail, manufacturing, hospitality, and services, making them an essential part of the country's national economy. However, DTI indicated that their overall contribution to Gross Domestic Product (GDP) remains approximately 36%, suggesting a notable productivity gap compared to larger enterprises (DTI, 2021). Numerous reports and practitioner insights identified three main areas of constraint: marketing challenges related to weak branding, limited market reach, and under-utilization of digital channels; in operations, logistical bottlenecks, uneven technology adoption, and a lack of standardized process; and, in finance, restricted access to formal credit that pushes firms toward expensive informal lending.

In the Bicol Region, particularly Albay, the local economy relies heavily on tourism, agriculture, trade, and services, with MSMEs accounting for over 99% of businesses, especially in food processing, handicrafts, agribusiness, and hospitality (DTI, 2021). Despite their economic significance, these enterprises face persistent challenges, including operational disruptions from logistical delays, limited technology adoption, and heightened vulnerability to natural hazards such as typhoons and volcanic activity (Pacific Disaster Center, 2025). While national initiatives such as the Department of Trade and Industry's "Negosyo Centers" have improved business registration, training, and advisory services, gaps remain in personalized support and affordable consulting services. Moreover, purely digital solutions have proven inadequate for addressing the specific needs of rural MSMEs, underscoring the need for context-sensitive interventions that combine technology with tailored guidance (Juneja, 2025; Sánchez et al., 2025).

This study aimed to provide practical, affordable support to Micro and Small Enterprises (MSEs) in Albay by proposing a scalable hybrid AI consulting platform that integrates AI-generated business insights with personalized mentorship. Responding to the realities that AI tools have become increasingly capable, that digital adoption varies across industries, and that MSEs require context-specific support, the platform bridges the gap between purely digital solutions and human guidance by enabling data-driven analysis of market trends, operational challenges, and financial patterns, while ensuring recommendations are relevant and actionable. The study profiles Albay-based enterprises in terms of position, business type, capitalization, years in operation, asset size, financial performance, workforce, and primary market served, and assesses their marketing, operational, and financial challenges. By integrating quick AI diagnostics with hands-on mentorship, the platform creates opportunities for MSEs to reach more customers, optimize operations, and access fair credit, offering local governments and development partners ready-made tools and guidance to support growth cost-effectively. The findings provide insights for policymakers and researchers, demonstrating how human mentorship paired with AI can generate impactful solutions in resource-limited settings,

enhance competitiveness and resilience, and inspire scalable pathways for sustainable development across the Philippines.

2.0 Methodology

2.1 Research Design

This study used a descriptive cross-sectional survey design to profile and identify operational, marketing, and financial challenges among micro and small enterprises (MSes) in Albay, providing a comprehensive view that can inspire trust. Perception items used a five-point Likert-type scale, ranging from 1 = Not challenging to 5 = Extremely challenging, enabling computation of means and consistent quantitative interpretation across domains. The research design described patterns across small firms and allowed segmentation by profile characteristics such as sector type, years in operation, and revenue, without intervening in business processes (Saunders et al., 2023).

2.2 Research Locale

The study was conducted in Albay, a province that provides a representative context for provincial Micro and Small Enterprises (MSEs) facing challenges in operations, marketing, and finance. Because official provincial-level data were unavailable, the study used 2021 Philippine MSME Statistics for the Bicol Region as the primary reference. Regional data indicates a landscape dominated by micro-establishments, which account for 41,885 (92.44%) of the 45,312 registered businesses in the region, while small enterprises comprise 3,228 (7.12%). This regional profile justifies the study's focus on the MSE sector within the local Albay context.

2.3 Research Participants

A purposive sampling approach was employed to select 30 registered enterprises, ensuring balanced representation to mitigate potential sample bias. The respondents consisted of 24 micro-enterprises (80%) and 6 small enterprises (20%), a distribution that reflects the region's majority status of micro-businesses while allowing meaningful comparison with small businesses. These enterprises span diverse sectors, including retail, manufacturing, ICT, and professional services. To ensure data accuracy, the analysis focused on the organizational level, with respondents being owners or managers directly involved in decision-making. Classification was based on national standards (DTI and PSA), defining micro-enterprises as having 1–9 employees or assets up to ₱3,000,000, and small enterprises as having 10–99 employees or assets between ₱3,000,001 and ₱15,000,000.

2.4 Data Gathering Procedure

This section outlined the tools, instruments, procedures, and techniques used in the study. The research instrument comprised four parts: the Business Profile, including position, type of business, capitalization, years in operation, asset size, financial performance, workforce, and primary market served. The operations, marketing, and finance challenges are measured using Likert-type items with response options ranging from 'not challenging' to 'extremely challenging'. Data collection tools included structured survey questionnaires via Google Forms. Respondents are briefed on the study's purpose and the voluntary nature of participation before completing the questionnaire. Submitted survey questionnaires were checked for completeness and consistency. Tabulation and verification were performed before computing descriptive statistics.

2.5 Data Analysis Procedure

Data were analyzed using transparent descriptive statistical methods, including frequencies, percentages, means, and quantitative interpretations, to ensure the audience is confident in the study's clarity and reliability.

2.6 Ethical Considerations

The study adhered to established ethical research standards by ensuring informed consent, confidentiality, and voluntary participation. Respondents were informed of the study's objectives, procedures, and their right to withdraw at any time without consequences. All collected data were anonymized to maintain confidentiality and to protect privacy and were used solely for academic purposes. Approval from the relevant academic research ethics committee is obtained before the study is conducted. Before data collection, the study obtained approval from the academic research ethics committee, in line with the ethical frameworks described in Goldsmith's study (Goldsmith, 2021).

3.0 Results and Discussion

3.1 Business Profile of Micro and Small Enterprises in Albay

Table 1 summarizes the business profiles of Micro and Small Enterprises (MSEs) in Albay, covering aspects such as position, business type, years in operation, capitalization, asset size, monthly gross revenue, number of employees, and primary market served (n = 30). The table provided insights into the business profiles of the Albay micro and small-enterprise respondents, best understood by examining each indicator from its "highest to lowest" category. This approach facilitated clearer interpretation of how contrast influenced enterprise behavior and revealed feasible avenues for improvement.

Table 1. Profile of Respondents

Profile	Frequency	Percent	Rank
Position			
Owner/Founder	25	83.33	1
Manager	5	16.67	2
Total	30	100.00	
Type of Business			
Electronics and mobile gadgets accessories sector	2	6.67	5.5
Food & Beverage (restaurant/café/catering)	8	26.67	1
Handicraft and Craft Makers	1	3.33	7.5
ICT/Digital Services	2	6.67	5.5
Manufacturing/Processing	5	16.67	3.5
Professional Services/Consulting Services	5	16.67	3.5
Retail/Trading	6	20.00	2
Transportation/Logistics	1	3.33	7.5
Total	**30**	**100.00**	
Years in Operation			
< 1 year	2	6.67	5
1-2 years	9	30.00	2
3-5 years	10	33.33	1
5-10 years	5	16.67	3
10 and above	4	13.33	4

Total	**30**	**100.00**	
Capitalization			
< ₱ 50,000	8	26.67	1.5
₱ 50,000 – ₱ 199,999	4	13.33	5
₱ 200,000 – ₱ 499,999	8	26.67	1.5
₱ 500,000 – ₱ 999,999	5	16.67	3.5
₱ 1,000,000 – ₱ 2,999,999	5	16.67	3.5
Total	**30**	**100.00**	
Asset Size			
≤ ₱ 3,000,000	24	80.00	1
₱ 3,000,001 – ₱ 15,000,000	6	20.00	2
Total	**30**	**100.00**	
Financial Performance (Gross Revenue) per Month			
≤ ₱ 99,000.00	16	53.33	1
₱ 100,000 - ₱ 299,999	6	20.00	2.5
₱ 300,000 - ₱ 499,999	6	20.00	2.5
₱ 500,000 – ₱ 999,999	1	3.33	4.5
₱ 1,000,000 – ₱ 2,999,999	1	3.33	4.5
Total	**30**	**100.00**	
Number of Manpower			
1-2 employees	12	40.00	1
3-5 employees	4	13.33	4
5-10 employees	7	23.33	2
11-20 employees	5	16.67	3
20 or more	2	6.67	5
Total	30	100.00	
Primary Market Served			
Municipality/City-wide	9	30.00	1
National	8	26.67	2.5
Export/International	4	13.33	5.5
Province-wide	4	13.33	5.5
Barangay/Local neighborhood	6	20.00	4
Regional (Bicol)	8	26.67	2.5
Total	**30***	**100.00**	

Note: Respondents can choose multiple options.

Position

The data showed that the predominant role within the firm was "Owner/Founder accounted for 83.335 (n=25) while Manager role accounted for 16.67% (n=5) is the least represented position. This distribution indicated that most firms are "owner-managed" with key decisions related to operations, finance, and strategy likely concentrated in the entrepreneur rather than distributed across managerial staff. The sample showed greater centralization in decision-making, suggesting that performance and continuity depended largely on the owner's skills, availability, and competence. While such centralization can support speed and agile decision-making in small firms, it also increases the vulnerability to burnout, inconsistency, and operational inefficiencies in the absence of effective delegation mechanisms. This concentration can enable quick decisions in small firms, but it also increases dependence on the owner's personal capacity and time, particularly when formal delegation systems are lacking. This observation was consistent with the Philippine MSME structure, in which many enterprises remain owner-

operated, and governance arrangements remain informal. Consequently, performance often relied more on the entrepreneur's capability to apply basic control practices than on established formal managerial hierarchies (DTI, 2024a; PSA, 2023; OECD, 2023b). Furthermore, regional studies have shown that microenterprises frequently struggle to institutionalize routines when decision-making is highly centralized (ADB, 2022a; ADB, 2022b; ADB, 2023a). These findings suggested that improvement efforts should prioritize "owner-friendly, low-burden routines" such as simple weekly cash reviews, basic sales and expense tracking, and task checklists that allowed the owner to delegate consistently without requiring a formal managerial structure.

Type of Business

The largest share of respondents belonged to the Food & Beverage (restaurant/café/catering) sector, accounting for 26.67% of the sample (n=8), while the least represented sectors—Handicraft/Craft Makers and Transportation/Logistics—each comprised only 3.33% (n=1), indicating a sample concentrated in high-frequency, consumer-facing enterprises characterized by daily operational execution. In such sectors, performance is typically driven by pricing discipline, inventory turnover, and consistent service delivery. In contrast, the minimal representation of handicrafts and logistics may reflect limited respondent availability or higher operational barriers affecting their scale and visibility. Consequently, the dataset was skewed toward operationally intensive businesses, where dominant constraints centered on daily cash handling, stock management, and service reliability rather than long-term production planning, thereby shaping “good control practices” around mitigating risks of leakage, waste, and operational variability. This distribution aligns with broader MSME sectoral clustering trends in service-oriented and demand-driven activities with lower entry barriers (DTI, 2024a; PSA, 2023; ADB, 2022a; ADB, 2023a), while comparative SME research underscores that sector structure influences operational risk, resilience, and capability demands, particularly in system-intensive environments (OECD, 2023b; Di Bella et al., 2023; Katsinis et al., 2024). From a program design standpoint, these findings highlight the need for sector-specific support mechanisms, with Food & Beverage enterprises benefiting from practical operational tools, including cost and portion-control systems, reorder-point systems, waste tracking, and quality checks. At the same time, lower-frequency sectors require more specialized interventions, including product standardization and packaging for handicrafts, and route costing, scheduling, and dispatch systems for logistics enterprises.

Years in Operation

The analysis of years in operation revealed that the largest proportion of respondents fell within the 3–5-year category (33.33%, n=10). In comparison, the smallest group consisted of firms operating for less than one year (6.67%, n=2), indicating that most enterprises had progressed beyond the start-up phase and were in a consolidation stage. At this point, businesses typically prioritize strengthening cash discipline, refining operational processes, and establishing consistent routines rather than expanding rapidly, suggesting that the sample largely comprised early-established firms ready for structured interventions such as the development of standard operating procedures (SOPs), monitoring systems, and basic operational controls. This highlights that the key developmental challenge was not business initiation but system strengthening to reduce owner dependency and improve operational predictability. Supporting this, regional studies identified routine-building and operational adaptability as critical performance differentiators among early-stage enterprises (ADB, 2023a; Bianchini & Lasheras, 2025; Di Bella et al., 2023), reinforcing that firms in the dominant 3–5-year cohort were well-

positioned for formalization efforts, including SOPs and monitoring tools such as daily sales tracking, stockout recording, and cash variance checks, whereas firms operating for less than one year required more foundational support in compliance, pricing consistency, and early record-keeping to prevent the development of weak practices.

Capitalization

The table revealed a clear polarization in capital distribution, with the highest proportions equally shared by firms in the <₱50,000 category and those in the ₱200,000–₱499,999 range (both 26.67%; n=8), while the smallest group fell within the ₱50,000–₱199,999 bracket (13.33%; n=4), indicating uneven reinvestment capacity across enterprises. This pattern suggested the existence of two distinct operating realities: firms with minimal capital that relied heavily on strict daily liquidity management and waste reduction for survival, and firms with moderate capital that could support selective productivity investments and process improvements. Such disparity likely contributed to uneven performance even among businesses within similar sectors or locations, as capital availability directly influenced inventory levels, equipment quality, marketing reach, and the adoption of stabilizing operational tools. Consistent with MSME finance literature, thin capitalization is associated with financing constraints due to limited documentation and collateral, restricting access to formal credit and hindering growth (IFC, 2023; GPFI, 2024; World Bank, 2025), while microenterprises under persistent capital limitations tend to prioritize incremental improvements over large-scale investments (OECD, 2023b; OECD, 2024a; ADB, 2023a). In response, a two-track support approach is recommended: guiding low-capital firms (<₱50,000) toward disciplined purchasing, waste control, and cash management, while enabling moderate-capital firms (₱200,000–₱499,999) to adopt low-cost productivity enhancements such as basic POS or sales tracking systems, bookkeeping applications, and small equipment upgrades monitored through simple payback analysis.

Asset Size

The asset size distribution underscored the predominantly micro-scale nature of the sample, with the majority of firms falling within the ≤₱3,000,000 category (80.00%; n=24) and a smaller portion in the ₱3,000,001–₱15,000,000 range (20.00%; n=6), indicating limited collateral capacity and constrained investment buffers for most enterprises. This concentration suggests that many firms face restrictions in technology adoption, upgrading, and shock resilience, making low-cost, incremental improvements more feasible than capital-intensive modernization. At the same time, the smaller group with higher asset levels has relatively greater capacity for formalization and controlled growth. Such patterns are consistent with evidence that microenterprises encounter persistent barriers to accessing formal finance and upgrading capabilities due to low asset bases and information asymmetries (OECD, 2024a; IFC, 2023; World Bank, 2025), with regional studies further emphasizing that limited resources hinder upgrading unless supported by targeted capability-building and practical system adoption (ADB, 2022a; ADB, 2023a; OECD, 2023b). Accordingly, recommendations should prioritize low-cost control upgrades for the dominant ≤₱3M group—such as basic bookkeeping discipline, inventory monitoring, and simple purchasing controls—while directing the higher-asset minority toward strengthened governance practices, including regular financial reviews, clearer role definitions, and improved documentation standards to manage scaling risks better.

Financial Performance

Analysis of financial performance showed that the majority of enterprises fell within ≤₱99,000 monthly gross revenue bracket (53.33%; n=16), while the lowest results are tied between the ₱500,000–₱999,999 (3.33%; n=1) and ₱1,000,000–₱2,999,999 (3.33%; n=1). This indicated that most enterprises operated with modest throughput and likely thin buffers, making them sensitive to stockouts, cost swings, and demand variability. The distribution indicated a sample in which most enterprises were margin- and stability-sensitive, with even minor issues such as stockouts, leakage, waste, and pricing errors significantly affecting performance. The small number of high-revenue outliers likely faced a different risk profile, as sustaining performance required tighter controls to avoid growth-driven breakdowns. The literature on micro-enterprise productivity emphasizes that revenue constraints often reflect limited capacity, weak operational routines, and restricted market reach, and that sustaining higher performance typically requires improvements in standardization and financial visibility (ILO, 2024a; ILO, 2024b; Bianchini & Lasheras, 2025; ADB, 2023b). Studies on digital and financial inclusion also point to transaction recording and basic digital tools as practical enablers of decision quality and consistency in micro firms (BSP, 2023; BSP, 2024; OECD, 2024b; Martini et al., 2023). Thus, the dominant ≤₱99,000 group was most strongly supported in margin and stability measures, including costing accuracy, waste reduction, repeat-customer routines, and inventory control. While high-revenue outliers focused on scaling controls to strengthen forecasting, they also standardized procedures and risk management to protect and sustain their performance.

Number of Manpower

The distribution of workforce further reflects the micro-scale nature of operations, with most firms employing only 1–2 workers (40.00%; n=12) and very few having 20 or more employees (6.67%; n=2), indicating limited role specialization and a reliance on owners and small teams to perform multiple functions. In such settings, productivity is driven less by formal departmental structures and more by consistent routines, multitasking, and process simplicity, suggesting that performance gains are more likely to come from clarifying responsibilities, streamlining workflows, and minimizing errors rather than expanding staff. The rarity of larger workforces also implies that labor scaling is constrained by revenue, operational funding, and the managerial systems required to coordinate more complex teams, with evidence showing that microenterprises typically operate with small, flexible labor structures but face coordination challenges as team size increases without corresponding systems (ILO, 2024a; ILO, 2024b; OECD, 2023b; ADB, 2023a). Supporting this, management research emphasizes that as staffing grows, the need for role clarity and structured routines becomes more critical (Bianchini & Lasheras, 2025; Di Bella et al., 2023; OECD, 2023b), highlighting that most firms would benefit from productivity-per-worker interventions such as SOPs, scheduling routines, and basic sales and inventory tracking, while the few larger firms should prioritize strengthening HR and process foundations, including defined job roles, training systems, performance monitoring, and internal controls to mitigate growth-related inefficiencies.

Primary Market Served

The analysis of the "primary market served" shows that the highest category is "Municipality/City-wide at 30.00% (n=9), while the lowest is tied between "Export/International and "Province-wide" (13.33%; n=4). The table notes that respondents could select "multiple market options". This trend indicates that demand is predominantly focused on local and domestic markets, where micro firms find distribution and compliance

more manageable. In contrast, their involvement in wider geographic markets, particularly exports, is noticeably limited. This limitation likely stems from challenges related to volume capacity, standardization, documentation, and logistics. The findings suggest that many businesses operate in simpler operational environments, local or city-wide, and that only a few are equipped to handle the complexities of export markets. Many enterprises are in the process of enhancing their reliability and documentation, key factors needed for expanding beyond local territories. This aligns with evidence that most MSMEs remain domestically oriented and that export participation is typically limited to a minority due to capability thresholds and compliance requirements (ADB, 2023a; Bianchini & Lasheras, 2025; Di Bella et al., 2023; Katsinis et al., 2024). Further literature on financial inclusion and business upgrading emphasizes that transaction visibility and basic digital records can enhance credibility for financing and support broader market participation (BSP, 2023; BSP, 2024; OECD, 2024a; GPFI, 2024). Therefore, market development recommendations should prioritize strengthening local-to-domestic competitiveness through strategies like customer retention systems, consistent quality, local partnerships, and sales tracking. In comparison, export-readiness initiatives should be offered selectively to firms that demonstrate stable capacity, product standardization, and documentation readiness.

Moreover, Table 1 provides a glimpse of enterprise profiles, but cannot confirm trends over time or establish causal relationships between firm characteristics and performance outcomes. To strengthen the evidence framework, future research should aim for increased scale and depth. A more extensive, stratified sampling based on municipality, sector, and firm size would enable statistical analysis to determine whether factors such as revenue, growth ambitions, or resilience vary significantly across sector groups, age cohorts, and asset sizes. Incorporating qualitative interviews could also shed light on underlying issues reflected in the data, including reasons some businesses refrain from seeking formal loans, obstacles to digital adoption, and the decision-making processes of owner-founders under resource limitations. Finally, longitudinal follow-ups are recommended to assess whether operational “micro-leaps”, such as implementing SOPs and adopting basic digital tools, actually precede measurable improvements in revenue stability, productivity, and employment over time.

3.2 Challenges Faced by Micro and Small Enterprises in Terms of Marketing

This part discusses the main marketing challenges faced by micro and small enterprises (MSEs). Many struggle with limited budgets, a lack of marketing expertise, strong competition, restricted market reach, and difficulty adapting to digital marketing tools.

Table 2. Challenges Faced by Micro and Small Enterprises in Albay in Terms of Marketing

Indicators	Mean	Interpretation	Rank
1. Our target customers are clearly defined.	3.07	Sometimes Challenging	4
2. We have a documented marketing plan.	3.20	Sometimes Challenging	2
3. We consistently measure marketing ROI (e.g., cost per lead/sale).	3.10	Sometimes Challenging	3
4. We effectively use digital channels (social media, marketplaces, website) to drive sales.	3.03	Sometimes Challenging	5
5. We have adequate marketing skills in-house.	3.27	Sometimes Challenging	1
Overall	3.13	Sometimes Challenging	

Note: 4.51 - 5.00 = Extremely Challenging, 3.51 - 4.50 = Challenging, 2.51 - 3.50 = Sometimes Challenging, 1.51 - 2.50 = Slightly Challenging, 1.01 - 1.50 = Not Challenging

The results in Table 2 show that the most salient marketing challenge among Micro and Small Enterprises (MSEs) in Albay is having adequate in-house marketing skills (M = 3.27; Rank 1; "Sometimes Challenging"), while the least-rated—though still moderately challenging—is the effective use of digital channels (M = 3.03; Rank 5; "Sometimes Challenging"). This pattern indicates that the core constraint lies not in access to tools but in the competencies required to use them strategically. When marketing skills are limited, key functions such as identifying customer needs, refining value propositions, targeting markets, and evaluating promotional effectiveness are often performed inconsistently or intuitively, resulting in fragmented, reactive efforts with weak continuity and limited learning. Marketing is thus often treated as an ad hoc response to immediate pressures rather than a structured, repeatable process, leading to reliance on basic activities like posting and promotions without clear decision logic or measurable outcomes. In small firms with limited managerial layers, this capability gap is amplified, as owners must simultaneously manage operations, finance, and marketing without structured tools, making outcomes dependent on personal intuition and available time rather than systematic routines.

Meanwhile, the relatively lower challenge rating for digital channel use suggests that many MSEs already maintain an online presence, particularly through social media and marketplaces, but struggle with converting engagement into actual sales. This highlights that the difficulty lies in performance-related skills—such as targeting, offer design, campaign planning, and basic analytics—rather than access to digital platforms. This finding aligns with broader evidence that MSMEs often rely on informal marketing practices and face capability constraints, with effective value capture from digitalization depending on skills, processes, and measurement systems (DTI, 2022; OECD, 2021; UNCTAD, 2021c). Accordingly, interventions should prioritize capability-building focused on practical, "minimum viable" marketing skills, including customer profiling, positioning, offer development, and simple campaign planning, alongside sales-oriented digital routines such as clear calls to action, improved content and messaging, basic targeting, and tracking key performance indicators (e.g., inquiries, conversions, repeat customers). Strengthening these foundational competencies can enable MSEs to make more deliberate decisions, use both traditional and digital channels more strategically, and translate marketing efforts into sustained sales growth.

3.3 Marketing Challenges

Table 3 shows the marketing challenges across the parameters below.

Table 3. Marketing Challenges

Parameter	Frequency	Percent	Rank
Marketing Challenges			
Competition	16	53.33	1
Content creation	14	46.67	2
Limited market data	6	20.00	7.5
Customer retention/loyalty	3	10.00	10.5
Lead generation	6	20.00	7.5
Pricing strategy	12	40.00	3
Customer retention/loyalty	3	10.00	10.5
Limited budget	9	30.00	4
Weak online presence	7	23.33	6
Low brand awareness	8	26.67	5
Limited budget	4	13.33	9

Poor Product Market Fit	1	3.33	12
Total Respondents	**30***	**100.00**	
SME with Monthly Marketing Budget			
Yes	17	56.67	1
No	13	43.33	2
Total	**30**	**100.00**	
Monthly Fund of SME with Marketing Budget			
0–₱2,999	21	70.00	1
₱3,000–₱9,999	4	13.33	2.5
₱10,000–₱29,999	4	13.33	2.5
≥ ₱60,000	1	3.33	4
Total	**30**	**100.00**	
Sales Channel Used			
B2B/Contracts	2	6.67	4
Physical store	15	50.00	1
Resellers/Affiliates	1	3.33	5.5
Social media selling	8	26.67	2
Website/e-commerce	3	10.00	3
Wholesaling/Distributors	1	3.33	5.5
Total	**30**	**100.00**	
Primary Digital Channels Used			
Facebook	29	96.67	1
Email/SMS	6	20.00	2.5
Google/SEO	2	6.67	6
Instagram	6	20.00	2.5
TikTok	5	16.67	4.5
Marketplaces (Shopee/Lazada)	5	16.67	4.5
Website	1	3.33	7
Total Respondents	**30***	**100.00**	

Note: Respondents can choose multiple options.

Marketing Challenges

Highlights that "competition (53.33%)" is the most commonly reported marketing challenge faced by MSEs in Albay, while "poor product-market fit (3.33%)" is the least reported issue. This trend indicates that businesses largely perceive marketing difficulties as stemming from "market pressure" rather than "market mismatch." When the capability gaps identified in Table 2 remain, competition becomes more restrictive, requiring firms to enhance their positioning, clarify their value propositions, and establish effective customer-retention strategies. The minimal mention of product-market fit challenges may signal a "lack of diagnostic practices," in which companies attribute weak demand to competition rather than conducting systematic customer research. This interpretation is consistent with findings that MSMEs outside Metro Manila face constraints not only in finance but also in analytical capabilities, which weaken the quality of marketing decisions even after adopting online platforms (Shinozaki & Rao, 2021). Consistent with research emphasizing routine experimentation and feedback loops in marketing analytics (Saura et al., 2023; Hossain et al., 2022; Petrescu & Krishen, 2023b), the platform should prioritize support for differentiation and diagnostic guidance. This includes standardizing how firms articulate a defensible value proposition and embedding simple, repeatable market-learning routines such as guided offer testing and structured documentation of customer objections to shift competitive responses from reactive discounting to evidence-based adjustments.

SME with a monthly marketing budget

In Table 3, a slight majority of Albay MSEs report "having a monthly marketing budget (56.67%)", while a substantial minority report "having none (43.33%)". This split indicates uneven institutionalization of marketing as a planned function. From a capability perspective (Table 2), non-budgeting likely reflects not only limited funds but also uncertainty regarding what activities to fund and how to evaluate return conditions that sustain episodic, reactive marketing. SMEs often operate with underfunded and informal marketing functions, which limit their ability to systematically learn from campaigns (Saura et al., 2023). Therefore, budgeting should be treated as a foundational framework that reduces the cognitive and technical challenges associated with financial planning. It should guide businesses in setting a modest, realistic monthly budget or time allocation when financial resources are limited, and be linked to a few measurable outcomes. In this way, budgeting becomes a tool for structured learning rather than merely a record of expenses (Saura et al., 2023).

Monthly fund for SME with marketing budget

Among those allocating marketing funds, the dominant spend level is ₱0–₱2,999 per month (70.00%), while ≥₱60,000 (3.33%) has the smallest share. This distribution suggests that most firms operate with micro-level marketing resources, limiting access to paid reach, professional creative services, and advanced tools. In such contexts, marketing often becomes “high activity, low learning” unless firms adopt structured, low-cost experimentation routines. Evidence indicates that underfunded SME marketing functions rely heavily on organic strategies (Saura et al., 2023) and that strengthening marketing analytics capabilities improves performance when experimentation and routine learning are embedded in practice (Hossain et al., 2022; Petrescu & Krishen, 2023a). Therefore, marketing initiatives should prioritize optimizing “learning per peso” through guided micro-experiments such as controlled comparisons of messaging strategies or bundled offers and basic performance tracking. Incorporating a consulting component can further support interpretation and application of insights, ensuring that even minimal expenditures contribute to continuous improvement rather than isolated promotional activities (Saura et al., 2023; Hossain et al., 2022; Petrescu & Krishen, 2023a).

Sales channel used

Table 3 shows that "physical stores (50.00%)" are the dominant sales channel, while "resellers/affiliates (3.33%)" and "wholesaling/distributors (3.33%)" are the least used. This offline-heavy pattern can stabilize sales, yet it also intensifies local rivalry and limits scalability when firms rely primarily on foot traffic. The minimal use of intermediary channels suggests constrained network-based growth pathways, consistent with research noting that SMEs often struggle to coordinate multiple channels and develop integrated customer pathways (Tueanrat et al., 2021). From a customer-journey standpoint, frameworks such as RACE (Reach–Act–Convert–Engage) highlight that converting offline requires systems that integrate digital interactions with in-store visits, purchases, and repeat customers (Chaffey & Ellis-Chadwick, 2022; Kingsnorth, 2022). In this scenario, it is crucial to connect online inquiries to offline sales by standardizing how queries are managed and followed up, introducing easy ways to track conversions, and testing partnerships through pilot programs (such as micro-reseller initiatives) with the support of structured guidelines and consultant validation.

Primary digital channels used

Table 3 indicates near-universal reliance on "Facebook (96.67%)", while "websites (3.33%)" are the least used. This pattern signals substantial adoption but strong platform concentration, reflecting platform dependence rather than diversified, owned digital infrastructure. The platform literature warns that over-reliance on a single platform increases vulnerability to algorithm shifts, policy changes, account restrictions, and rising paid visibility costs (Cavallo et al., 2020; Saura et al., 2023). At the same time, shifting toward analytics, CRM, or AI-assisted targeting can increase process complexity in micro-enterprises; this matters because entrepreneurial stress is exacerbated in settings where business and household boundaries blur, with work–family balance shaping how pressure is experienced (Choi & Kessler, 2023). Consistent with evidence that AI-CRM improves outcomes when integrated into processes and supported by training and decision rules (Chatterjee et al., 2022; Saura et al., 2023), it should target "resilience with low burden", enabling gradual development of owned assets (e.g., basic landing-page presence) and lightweight customer management routines, while embedding privacy-by-design guidance so that digital upgrading improves performance without creating unsustainable workload or weakening trust.

Supporting evidence suggests that AI-CRM improves outcomes when it is effectively integrated into processes and supported by training and decision-making guidelines (Chatterjee et al., 2022; Saura et al., 2023). Strategies should focus on fostering “resilience with low burden”, promoting the gradual development of owned digital assets (e.g., a basic landing page) and simple customer management practices, all while incorporating privacy-by-design principles to enhance performance without creating excessive workloads or eroding trust.

As micro and small enterprises (MSEs) explore AI tools or CRM systems to navigate competition and limited resources, recommendations must include ethical data practices. Companies should minimize data collection, implement clear consent protocols, secure data storage, and establish straightforward access rules to prevent misuse and foster customer trust. Creating a basic governance checklist that outlines who collects data, where it is stored, who has access, and the duration of data retention helps ensure accountability, even in small businesses. Furthermore, training staff to handle customer data should be considered essential before introducing AI and CRM systems, to ensure that digital upgrades do not create privacy risks that might compromise the long-term advantages of analytics-driven marketing.

3.4 Challenges Faced by Micro and Small Enterprises in Albay in Terms of Operation

Table 4 revealed that the foremost operational challenge faced by Micro and Small Enterprises (MSEs) in Albay was the use of appropriate technology and tools, including POS systems, inventory management systems, CRMs, and accounting software.

Table 4. Challenges Faced by Micro and Small Enterprises in Albay in Terms of Operation

Indicators	Mean	Interpretation	Rank
1. Our supply chain is stable and reliable.	2.63	Sometimes Challenging	3
2. We have documented SOPs/process flows.	2.70	Sometimes Challenging	2
3. We track inventory accurately and in real time.	2.53	Sometimes Challenging	5
4. We meet on-time delivery/production schedules consistently.	2.40	Slightly Challenging	6
5. Our quality control system reduces defects/returns.	2.60	Sometimes Challenging	4

6. We use appropriate technology/tools (POS, inventory, CRM, accounting).	2.97	Sometimes Challenging	1
Overall	**2.64**	**Sometimes Challenging**	

Note: 4.51 - 5.00 = Extremely Challenging, 3.51 - 4.50 = Challenging, 2.51 - 3.50 = Sometimes Challenging, 1.51 - 2.50 = Slightly Challenging, 1.01 - 1.50 = Not Challenging

The results indicate that the most prominent operational challenge among Albay MSEs is the use of technology and tools (M = 2.97; "sometimes challenging"), followed by the lack of documented Standard Operating Procedures (SOPs) and process flows (M = 2.70), while the ability to meet on-time delivery and production schedules is the least challenging (M = 2.40; "slightly challenging"). The relatively high difficulty associated with technology suggests that although digital adoption is underway, many firms struggle to effectively configure, utilize, and sustain these systems, often reverting to manual processes or basic spreadsheets due to familiarity and lower skill requirements; however, this limits operational visibility, consistency, and coordination as businesses grow. Closely linked to this is the challenge of weak process documentation, as reliance on tacit, person-dependent procedures reduces stability and makes operations vulnerable to disruptions, staff turnover, and demand fluctuations, while also making technology adoption more difficult since digital systems depend on consistent underlying processes to function effectively. In contrast, the lower difficulty in meeting delivery schedules indicates that most firms can generally fulfill commitments, with delays arising only occasionally due to supply variability or operational constraints, suggesting that improvements in delivery performance can be achieved through simple resilience strategies and enhanced process visibility rather than through immediate investment in complex systems.

The trends observed in Table 4 are consistent with broader SME digitalization research, which indicates that smaller firms lag not only in adopting technology but also in developing the capabilities needed to integrate digital tools effectively into business processes and models, often resulting in superficial use of systems such as POS, inventory, and CRM rather than full operationalization. Evidence suggests that digital transformation enhances SME performance more when aligned with business model innovation than when simply automating existing routines (Merín-Rodríguez et al., 2024), implying that Albay MSEs may not fully benefit from digital tools if they are used merely as faster substitutes for traditional practices. This is closely linked to the role of SOPs (M = 2.70), which reflects the sequencing logic emphasized in lean and Industry 4.0 literature, where process stabilization and standardization should precede digitization for optimal results (Buer et al., 2020; Fatorachian & Kazemi, 2020; Kamble et al., 2020). Supporting this, research shows that digitizing poorly defined processes does not resolve inefficiencies but instead amplifies them, contributing to the operational challenges and frustrations commonly experienced by smaller firms when technology adoption outpaces organizational readiness (Buer et al., 2020; Fatorachian & Kazemi, 2020; Kamble et al., 2020).

The findings in Table 4 suggest that Albay MSEs would benefit from a "practical technology-first" yet carefully sequenced approach, beginning with the adoption of low-cost, high-impact tools such as barcode-based inventory systems, basic analytics for exception reporting, and simple monitoring devices, which have been shown to improve information quality without requiring heavy investment or training (Kamble et al.). However, as technology becomes more embedded in operations, its effectiveness depends on strong data governance practices—such as clear data ownership, aligned definitions, and structured update routines—to ensure reliability and usability of information (Fadler & Legner, 2021). This is particularly important

in constrained environments, where studies show that digital adoption alone does not guarantee performance gains due to limitations in connectivity, resources, and skills, thereby supporting the use of mobile-first, offline-capable solutions like sync-on-signal systems, SMS alerts, and lightweight digital tools (Shinozaki & Rao, 2021). As firms gradually build capability and confidence, more advanced tools, including selective digital twin applications, may be explored, following the principle of "pilot small, scale smart," to ensure value and usability are established before wider implementation.

Building on this, a "sequenced operational development approach" is recommended, where firms first stabilize core processes through simple SOPs, visual work standards, and basic problem-solving routines before introducing technology that reinforces these practices rather than replaces them. Once operational clarity is achieved, targeted technologies—such as POS configurations, mobile inventory logs, and reorder alerts—can enhance discipline and visibility. At the same time, digitalization efforts should also support business model innovation (e.g., CRM-based loyalty programs or data-driven customization) to drive competitiveness (Merín-Rodríguez et al., 2024). Complementary to this is the adoption of lightweight data governance embedded in SOPs to ensure alignment between system outputs and actual operations (Fadler & Legner, 2021), alongside context-sensitive solutions such as offline-capable tools tailored to local infrastructure constraints (Shinozaki & Rao, 2021). Given that on-time delivery is only slightly challenging, firms can further strengthen reliability through simple resilience measures such as safety stocks, secondary suppliers, and basic forecasting. Overall, the evidence underscores that the primary barrier is not the absence of technology but the lack of process discipline and governance, making a phased strategy—focused on standardization, selective digitization, data reliability, and cautious scaling—the most practical pathway toward sustained performance improvement.

3.5 Operations Challenges

Table 5 characterized the operational realities of Albay micro and small enterprises (MSEs) by showing how exposure to disruption, service reliability, payment behavior, and internal digitization interact to shape day-to-day performance. Interpreting the "highest versus lowest" results across the table is particularly useful because it clarifies both the dominant pressures that most firms must manage and the weakest areas where capability gaps remain most visible, thereby indicating where an "AI–hybrid consulting approach" can generate the fastest and most scalable operational gains.

Table 5. Operations Challenges

Parameter	Frequency	Percent	Rank
Operations Challenges			
Supplier Delays/Stock-outs	13	43.33	2
Capacity Constraints	11	36.67	3
Disaster Risks (typhoon/volcano)	15	50.00	1
Compliance/Permits	3	10.00	9.5
Equipment Breakdowns	6	20.00	6
Inventory Inaccuracies	5	16.67	7.5
Logistics/Last-mile	3	10.00	9.5

Wastage/Shrinkage	5	16.67	7.5
Equipment Breakdowns	9	30.00	4
High Input Costs	7	23.33	5
Total Respondents	**30***	**100.00**	
Average On-time Fulfillment Rate (for the last 3 months)			
< 70%	4	13.33	3
70-84%	9	30.00	2
85–94%	14	46.67	1
≥ 95%	3	10.00	4
Total	30	100.00	
Payment Methods Used			
Cash	27	90.00	1
E-wallets	24	80.00	2
Bank transfer	23	76.67	3
Cash on Delivery	14	46.67	4
Credit/Debit card	3	10.00	5
Total Respondents	**30***	**100.00**	
Process Digitization			
CRM	6	20.00	5
Project Management	6	20.00	5
HR/Timekeeping	11	36.67	2
Inventory System	10	33.33	3
Production Scheduling	4	13.33	7
POS	6	20.00	5
None	12	40.00	1
Total Respondents	**30***	**100.00**	

*Note: Respondents can choose multiple options

Operations Challenges

The most frequently reported constraint is "disaster risk (typhoon/volcano) at 50.00% (n=15)", while the least reported are "compliance/permits (10.00%; n=3)" and "logistics/last-mile (10.00%; n=3)". This contrast suggests that the primary operational risk is not merely routine inefficiency but "exogenous disruption" that can interrupt supply access, mobility, and customer flow. The prominence of disaster risk implies that many firms likely operate with limited buffers and minimal contingency capacity, making continuity planning a practical necessity rather than an "advanced" management feature. This interpretation was consistent with research on SME resilience, which showed that smaller firms were particularly vulnerable to disruptions due to constrained financial, human, and infrastructural resources, and that they

benefited substantially from practical continuity strategies such as contingency planning, redundancy, and flexible capacity (Queiroz et al., 2022; Ali et al., 2021; Büyüközkan & Göçer, 2018). Furthermore, the literature on operational improvement emphasized that basic process discipline and preparedness routines significantly enhanced recovery potential in resource-limited firms (Buer et al., 2020; Fatorachian & Kazemi, 2020; De Marchi et al., 2024). In practical terms, the appropriate recommendation is to operationalize a resilience package consisting of AI-guided "BCP-in-a-box" templates, disruption checklists, and scenario prompts (e.g., managing 1–3 day closures), paired with short consultant-led resilience sprints to configure enterprise-specific buffer rules (critical input lists, supplier alternates, minimum stock/cash thresholds), tracked through downtime days and recovery-to-normal time.

Average On-time Fulfillment Rate (for the last 3 months)

The distribution of on-time fulfillment performance shows that most firms fall within the 85–94% range (46.67%; n=14), while a smaller group performs below 70% (13.33%; n=4), indicating generally functional reliability alongside a subset experiencing significant delivery failures due to uneven operational control and exposure to bottlenecks. The dominance of the mid-range suggests that many firms rely on informal coping mechanisms—such as ad hoc scheduling, workarounds, and personal supplier relationships—to maintain operations. Still, these approaches are insufficient to achieve consistently high reliability, while firms in the lowest bracket likely face disruptions, capacity constraints, and limited inventory and scheduling visibility that exceed the effectiveness of such informal practices. This aligns with operations research, which emphasizes that reliable fulfillment depends on stable workflows, clear prioritization, and an explicit understanding of operational constraints, and that SMEs benefit more from process stabilization before adopting digital solutions (Buer et al., 2020; Fatorachian & Kazemi, 2020; OECD, 2023b). Additionally, evidence shows that simple buffering strategies and structured exception management can improve service levels more effectively than reactive expediting, particularly in smaller firms (Queiroz et al., 2022; Ali et al., 2021; Kamble et al., 2020). Based on these insights, a fulfillment reliability package is recommended, incorporating tools such as AI-assisted promise-date setting, basic capacity planning, and automated alerts for at-risk orders, complemented by targeted diagnostics for low-performing firms to address bottlenecks, refine scheduling rules, and improve reorder practices, all reinforced through regular monitoring via weekly reliability reports tracking performance, delay causes, and operational risks.

Payment Methods Used

Table 5 shows that cash dominates as the primary payment method among Albay MSEs, with 90.00% of respondents (n = 27) relying on it. In comparison, credit and debit card usage remains minimal at 10.00% (n = 3), indicating that financial management and reconciliation are largely manual and vulnerable to leakage, with limited structured transaction records. The low adoption of card-based payments reflects challenges related to merchant infrastructure, transaction costs, and customer preferences, highlighting the need for digital payment initiatives tailored to predominantly cash-based environments rather than assuming widespread electronic payment use. This aligns with MSME digitalization research, which shows that front-end payment adoption alone does not strengthen internal controls unless paired with disciplined record-keeping and reconciliation practices (Shinozaki & Rao, 2021; BSP, 2023; BSP, 2024; OECD, 2024b), and with data governance literature emphasizing that decision value derives from consistent capture, shared definitions, and routine reconciliation rather than additional channels (Fadler & Legner, 2021; GPFI, 2024; OECD, 2024b). Accordingly, a workflow linking

payment activities to cash flow management is recommended, including AI-assisted daily cash logs, automated weekly summaries, alerts for unusual withdrawals, and integrated reconciliation procedures for cash and digital receipts, complemented by consultant-led "bank readiness" clinics to separate business and personal finances and generate basic financial summaries, with flexible payment options for consulting fees to facilitate access without requiring full upfront payment.

Process Digitization

Table 6 shows that the majority of Albay MSEs remain largely undigitized, with 40.00% of firms (n=12) reporting no digital adoption, and production scheduling being the least digitized area (13.33%; n=4), highlighting continued reliance on manual processes with limited operational visibility. Even among firms with some digital adoption, core planning activities such as production and service scheduling remain largely manual, suggesting that the primary challenge is not advanced technology but the lack of visibility into operational issues like inventory control, delivery commitments, and workload balancing. This underscores the importance of sequencing: digitizing unstable processes too quickly can amplify errors, whereas stabilizing workflows first allows digital tools to deliver sustained gains, consistent with SME digital transformation research advocating phased, "pilot small and scale smart" approaches and process redesign (Kamble et al., 2020; Merín-Rodrigáñez et al., 2024; OECD, 2023b). Complementary evidence underscores the importance of foundational data governance—including ownership, shared definitions, and routine updates—for making digital tools actionable (Fadler & Legner, 2021; Büyüközkan & Göçer, 2018; De Marchi et al., 2024). Accordingly, a lean-to-digital sequencing approach is recommended, beginning with AI-assisted SOP building and simple workflow mapping, followed by starter digitization packs for order tracking, inventory visibility, and basic scheduling, reinforced by consultant-led stabilization workshops on standard work, visual controls, and bottleneck removal. Progress should be tracked by moving firms from "none" to at least one core process digitized, linking adoption to outcome metrics such as stockout reduction and on-time fulfillment improvement. Once foundational processes and data governance are in place, firms can prudently explore more advanced analytics or "digital twin–lite" approaches, starting with simple spreadsheet-based scenario analyses for supplier delays, demand variability, and downtime, and scaling only when pilot applications demonstrate measurable improvements and user acceptance (Büyüközkan & Göçer, 2018; De Marchi et al., 2024; Fadler & Legner, 2021).

3.6 Challenges Faced by Micro and Small Enterprises in Albay in terms of Finance

Table 6 suggests that the key financial management pain point for Albay micro and small enterprises is not compliance per se, but the ability to convert everyday transactions into "decision-grade financial information".

Table 6. Challenges Faced by Micro and Small Enterprises in Albay in Terms of Finance

Indicators	Mean	Interpretation	Rank
1. We keep accurate and timely financial records.	2.53	Sometimes Challenging	4
2. We prepare and review monthly financial statements (P&L, balance sheet, cash flow).	2.67	Sometimes Challenging	1
3. We have adequate cash flow to meet obligations.	2.57	Sometimes Challenging	3
4. We separate business and personal finances.	2.30	Slightly Challenging	5

5. We have access to affordable financing/credit when needed.	2.60	Sometimes Challenging	2
6. We are compliant with tax and regulatory requirements.	2.07	Slightly Challenging	7
7. The owner/manager has adequate financial management skills.	2.20	Slightly Challenging	6
Overall	2.42	Slightly Challenging	

Note: 4.51 - 5.00 = Extremely Challenging, 3.51 - 4.50 = Challenging, 2.51 - 3.50 = Sometimes Challenging, 1.51 - 2.50 = Slightly Challenging, 1.01 - 1.50 = Not Challenging

The results indicate that the most challenging financial task for Albay MSEs is preparing and reviewing monthly financial statements (P&L, balance sheet, cash flow) with a mean score of M = 2.67 ("Sometimes Challenging"). At the same time, compliance with tax and regulatory requirements is rated least challenging (M = 2.07, "Slightly Challenging"). This contrast highlights a "routine gap": owners can meet external obligations but struggle to maintain consistent internal reporting processes, including transaction recording, categorization, reconciliation, and interpretation. Difficulties in producing monthly financial statements stem from both process weaknesses—irregular recording, inconsistent categorization, delayed reconciliations—and sense-making limitations, such as interpreting financial outputs for pricing, purchasing, expense control, or cash flow allocation. Low compliance difficulty likely reflects reliance on filing routines or external support, which does not enhance the internal visibility needed for daily financial control and forward-looking planning. These findings align with MSME finance literature emphasizing that financial fragility is often driven by information limitations rather than credit availability alone (Singh, 2025), and that expanding digital payment or account access does not automatically improve outcomes without consistent transaction capture and reporting (World Bank, 2025; Berg et al., 2020; Cornelli et al., 2020; Feyen et al., 2021). Capability-focused research further underscores the importance of structured "learning loops" that transform raw data into actionable decisions (Kannan & Li, 2017; Fadler & Legner, 2021), indicating that the primary constraint is the discipline of generating and using monthly financial information, which directly affects liquidity management and access to credit.

These results support a targeted "AI-generated hybrid consulting platform" for Albay MSEs that addresses the highest difficulty item—monthly financial statements—while leveraging compliance as a practical entry point. The platform would embed an AI-guided monthly close workflow that prompts transaction capture and reconciliation, generates standardized monthly packs (P&L, cash flow summary, balance sheet snapshot), and provides "interpretation-by-default" guidance with plain-language explanations and decision prompts, such as cost-spike checks, cash-pressure warnings, and pricing reviews. Short human coaching sessions would validate AI outputs, correct classifications, and build owner confidence in financial interpretation. Because compliance is less challenging, the same infrastructure could simultaneously fulfill regulatory reporting requirements, reducing duplication. Effectiveness could be measured via output indicators (regular production and review of monthly financial packs) and quality metrics (record completeness, reconciliation rates, frequency of owner decisions linked to reports), ensuring that financial reporting evolves from sporadic, compliance-driven activity into a sustained operational routine that strengthens both internal control and access to financing.

3.7 Finance Challenges

Table 7 indicates that the primary financial challenge faced by micro and small enterprises (MSEs) in Albay.

Table 7. Finance Challenges

Parameter	Frequency	Percent	Rank
Finance Challenges			
Cash flow gaps	20	66.67	1
Record-keeping	9	30.00	5
Financial analysis/decision-making	11	36.67	2
Budgeting/forecasting	7	23.33	6.5
Pricing/costing	10	33.33	3.5
High borrowing costs	4	13.33	8
Late customer payments	10	33.33	3.5
Limited access to credit	1	3.33	9
Tax compliance	7	23.33	6.5
Total Respondents	**30***	**100.00**	
Primary Financing Sources Used (in the last 12 months)			
Personal savings	23	76.67	1
Family/Friends	11	36.67	2
Bank loan	10	33.33	3
Government program	2	6.67	7.5
Supplier credit	6	20.00	4
Credit card/BNPL	5	16.67	5.5
Microfinance/Cooperative	5	16.67	5.5
None	2	6.67	7.5
Total Respondents	**30***	**100.00**	

Note: Respondents can choose multiple options

Finance Challenges

Table 7 indicates that the primary financial challenge for Albay micro and small enterprises (MSEs) is cash flow gaps, reported by 66.67% of respondents. In contrast, limited access to credit is the least significant concern at 3.33%. This contrast suggests that the core problem is not the availability of credit but the ability to manage timing mismatches between cash inflows and outflows, which can disrupt essential operations such as inventory procurement, payroll, and timely payment of obligations, even when sales are strong. The low reporting of credit constraints likely reflects firms' reluctance to borrow due to repayment uncertainty or the lack of formal financing pursuit stemming from weak internal cash management, forecasting, and financial documentation. This framing aligns with literature showing that working-capital

instability is a primary SME constraint and that strengthening liquidity routines and information quality can be as critical as expanding credit supply (OECD, 2023b; World Bank, 2025; GPFI, 2024), and that data-driven or alternative-data lending benefits thin-file borrowers only when firms maintain stable, interpretable transaction histories and decision routines (Berg et al., 2020; Shinozaki & Rao, 2021; Fadler & Legner, 2021). In response, a recommended "cash-flow-first" AI-driven hybrid consulting platform could include AI-assisted weekly cash planning, automated alerts for emerging cash gaps, and receivables management tools such as standardized invoicing templates and payment reminders, complemented by short human coaching cycles to reinforce practices like weekly cash reviews, buffer target setting, and payables prioritization, with progress measured through operational indicators such as reduced cash-gap frequency, improved accounts receivable turnover, and enhanced cash flow predictability rather than attendance-based metrics.

Primary Financing Sources Used (in the last 12 Months)

The financing behavior of Albay MSEs is heavily anchored in personal savings, with 76.67% of respondents reporting this. In comparison, institutional pathways such as government programs or no financing were reported by only 6.67%, indicating low penetration of formal financing. This reliance on self-financing reflects constrained investment capacity, limiting growth and stability. At the same time, the minimal uptake of government programs suggests barriers such as awareness gaps, perceived complexity, eligibility constraints, documentation burden, or limited trust, consistent with international evidence that MSMEs often self-finance and underutilize formal channels when documentation and information requirements are difficult to meet (OECD, 2021a; UNCTAD, 2021a; World Bank, 2025). Systemically, this "personal savings dominance with low institutional uptake" contributes to persistent liquidity stress, as firms bridge cash gaps internally but struggle to absorb shocks or timing mismatches without structured working-capital instruments or smoother financing channels, aligning with data portability and open finance research emphasizing reduced repeated documentation and improved firm-provider matching efficiency (GPFI, 2024; Bank of England, 2024). For an AI-driven hybrid consulting platform, a recommended approach is a "finance readiness and navigation layer" that combines an AI eligibility screener to match firms with suitable options (bank loans, supplier credit, microfinance/co-ops, government programs), automated generation of simplified document packs (cash flow summaries, financial snapshots, transaction logs), and step-by-step application checklists, supplemented by targeted human support for first-time applicants or weak-record cases to correct documentation gaps and strengthen the financial narrative, with success measured through increased completion of application-ready documents, reduced time-to-apply, higher approval rates, and gradual diversification away from exclusive reliance on personal savings.

Table 7 indicates that relationship lending and human coaching are critical for Albay MSEs, particularly in contexts of incomplete data and high volatility, as local knowledge and relationship-based assessment can bridge capability gaps while firms strengthen their financial records. A hybrid AI-based diagnostics model, combined with sustained mentoring, is well-suited to these provincial constraints because it scales basic screening while preserving the human support necessary for behavior change and operational discipline (De Marchi et al., 2024; Bensmaine et al., 2014). Effective implementation requires monitoring a focused set of indicators tied to the key constraints, including reductions in cash-gap occurrences, improved receivables turnover, clearer profit margins, timely tax compliance, increased engagement with formal and semi-formal financing channels, and higher credit approval rates, ensuring that firm-

level practices translate into broader ecosystem outcomes and embedding financial and digital transformation processes rather than isolated tools (Buer et al., 2020; Ali et al., 2021). Overall, the analysis suggests that Albay MSEs' challenges extend beyond access to finance, encompassing their ability to manage, interpret, and deploy resources effectively, and supports a sequenced, hybrid strategy that begins with liquidity management and decision-grade financial records, then progresses toward portable data systems, transparent scoring mechanisms, and lower-risk working capital solutions, all reinforced by sustained human mentorship and context-appropriate local implementation.

3.8 AI-Generated Hybrid Consulting Platform for Micro and Small Enterprises in Albay

This section discusses the development of the proposed AI-Generated Hybrid Consulting Platform for Micro and Small Enterprises (MSEs) in Albay, using the IPO (Input–Process–Output) framework and drawing on research findings. By identifying key resources and outlining systematic development steps, this platform is designed to empower MSEs to improve overall business performance through a combination of AI-driven tools and human mentorship consulting support.

Input

Primary Resources. The platform was developed using data gathered from micro- and small-enterprise owners in Albay through surveys and interviews. A total of 30 MSE owners or managers participated, providing insights into their business profiles, marketing, operations, and finance challenges. Their responses highlighted pain points across financial management, marketing, and operations, which directly informed the functional requirements and design of the consulting platform.

Secondary Resources. Related literature was used to further the platform, including academic articles, government reports, and case studies on MSE development, digital transformation, and AI-enabled business tools. These resources helped contextualize the local findings within broader trends in technology adoption, consulting practices, and policy support for MSEs. They strengthened the analysis of the MSE landscape in Albay. They guided the formulation of features, support mechanisms, and hybrid (AI + human) consulting strategies to ensure that the platform is practical, inclusive, and scalable.

Processes

The development of the AI-Generated Hybrid Consulting Platform underwent several significant steps as follows:

Step 1. Surveys were distributed among participating MSEs in Albay to gather data on their profiles, operational, marketing, and financial challenges. Surveys are conducted to gather more qualitative insights into how enterprise owners currently face challenges in their business.

Step 2. The questionnaire results were compiled and evaluated to identify the most critical challenges faced by MSEs in Albay across marketing, operations, and finance. These findings served as the foundation for defining the platform's core service areas, such as finance, marketing, operations, and profile, and for identifying the types of AI-generated recommendations that are most relevant and valuable.

Step 3. Qualitative data from survey questionnaires were categorically analyzed using thematic analysis. Recurring themes included the affordability of consulting services, a preference for

localized examples, and the need for step-by-step guidance. These themes served as effective reference points for developing platform modules, user flows, and the hybrid structure that combines automated AI suggestions with optional human consultant support.

Step 4. The analysis of tables and summaries outlining business profiles and challenges revealed key patterns across sectors. These insights informed the platform's personalization logic, such as tailoring recommendations to develop the platform. This step ensured that the platform design directly addressed the specific needs of MSEs in Albay by offering context-aware recommendations, localized content, and sector-relevant toolkits.

Step 5. Once the essential data were identified and thoroughly analyzed, the researchers conducted additional research to gather up-to-date information relevant to AI tools, consulting models, and government support programs for MSEs. This included exploring current AI platforms, chatbot frameworks, analytics tools, and existing online consulting portals, as well as policies and initiatives that could be integrated or linked to the platform. This step ensured that the proposed system would be technologically feasible, aligned with current best practices, and capable of connecting users to external resources where appropriate.

Step 6. With additional information from recent literature and the analyzed local data, the researchers designed a comprehensive AI-Generated Hybrid Consulting Platform tailored to the needs of MSEs in Albay. The platform architecture was conceptualized to include: (1) an AI-driven diagnostic tool to assess business status, (2) automated, data-informed recommendations and action plans, and (3) an optional layer of human consulting support for complex issues.

Output

This section presents the proposed AI-Generated Hybrid Consulting Platform for Micro and Small Enterprises in Albay, developed based on the gathered data and supporting literature. Each component of the platform highlights specific strategies, features, and support mechanisms designed to effectively address the challenges faced by MSEs, particularly in accessing timely, affordable, and practical business advice. The platform aims to enhance decision-making, promote digital adoption, and strengthen the overall resilience and competitiveness of micro and small enterprises in Albay through an integrated blend of AI-generated insights and human consulting expertise.

4.0 Conclusion

The findings indicate that most Albay MSEs are owner-managed, operate in consumer-facing, low-barrier sectors such as Food & Beverage and Retail/Trading, and rely on limited capitalization and micro-level assets, reflecting highly centralized decision-making, constrained financial capacity, and reliance on effective asset and liquidity management. Most firms are relatively young (1–5 years), have modest revenue and small workforce, and serve primarily local markets, suggesting that performance is driven by operational efficiency, cost discipline, and process stability rather than by large-scale production, technology adoption, or geographic expansion. Consequently, sustainable growth for these enterprises depends on incremental improvements, margin optimization, productivity enhancements, workflow standardization, and strengthened operational readiness, rather than on capital-intensive scaling or headcount expansion.

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