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EMPOWERING SUSTAINABLE BUSINESS: A MINIBIZ DIGITAL COST MANAGEMENT SOLUTION FOR COMMUNITY ENTERPRISES IN SOUTHERN THAILAND

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Abstract

Disadvantaged community enterprises (CEs) in Thailand's Southern Border Provinces urgently need accessible digital tools to support effective cost management, profit determination, and competitive pricing strategies. This research addresses this gap by developing and evaluating 'miniBiz,' a mobile application designed for cost-of-production and sales analysis that integrates managerial accounting principles tailored to these CEs. Adopting a rigorous Research and Development (R&D) methodology, miniBiz was systematically developed using the ADDIE model, with its software quality assessed against ISO/IEC 25010 standards and user acceptance evaluated through the Technology Acceptance Model (TAM). The app was piloted with a plastic-woven basketry group and expanded to nine other diverse community businesses. Evaluation revealed high system usability, robust quality, and exceptional user satisfaction. Participants proficiently recorded costs, analyzed profitability, set prices, and monitored operational performance. This study underscores miniBiz's potential to empower local CE management through practical digital solutions, enhancing business resilience and decision-making. It also contributes to sustainable economic development and resource optimization in this underserved Asian context.

Keywords: Community Enterprises, Cost Management, Digital Business Tools, Business Sustainability, Regional Development

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Introduction

Community-Based Enterprises (CBEs) play an indispensable role in driving Thailand's grassroots economic development by stimulating local employment and adding sustainable value to regional products (Nakhonsong & Chamruspanth, 2024). Despite their socio-economic importance, many CBEs struggle to maintain long-term viability because of persistent weaknesses in systematic business management. A critical gap lies in effective cost planning, accurate profit calculation, and dynamic pricing strategies. In an increasingly competitive commercial landscape, the inability to accurately track production expenses and determine optimal price points severely limits these enterprises' ability to expand their market reach. Furthermore, while digital transformation has become a cornerstone of modern operational efficiency, micro-entrepreneurs frequently lack access to appropriate technological tools, leaving them structurally disadvantaged compared to their larger, more digitally integrated competitors (Khiawnoi et al., 2025; Pranee et al., 2024).

These operational challenges are particularly pronounced in Thailand's three southern border provinces—Yala, Pattani, and Narathiwat. Characterized by rich cultural and ethnic diversity, this region also faces substantial economic disparities and infrastructural constraints (Pranee et al., 2024). Empirical research highlights that local micro-enterprises and Thai-Muslim Small and Medium-sized Enterprises (SMEs) frequently lack systematic financial record-keeping, relying instead on informal methods that obscure true profitability and break-even points (Binisris & Payo, 2022; Sangkaew, 2021). Although recent years have seen a surge in digital accounting applications for small businesses, most commercial solutions cater exclusively to users with foundational accounting literacy and stable technological environments (Ariyapim, 2022; Jankeaw et al., 2024). Consequently, these generic tools often feature complex interfaces that misalign with the operational realities and digital readiness of marginalized community enterprises, creating a distinct gap in accessible technological support.

To bridge this critical technological and managerial divide, this research aims to develop and systematically evaluate 'miniBiz,' a specialized mobile application tailored specifically for disadvantaged community enterprises. Focused primarily on production and sales cost analysis, the application integrates simplified managerial accounting principles and practical pricing strategies accessible to non-accountants. By testing this digital intervention in the real-world context of Thailand's southern border provinces, the study rigorously assesses both the system's operational efficiency and its acceptance among local micro-entrepreneurs. This research makes a novel contribution by moving beyond generic financial software and offering a context-specific digital solution that empowers local enterprises to make confident, data-driven decisions. Ultimately, deploying such tailored digital business tools is expected to significantly enhance local market competitiveness, laying a robust foundation for long-term economic resilience and sustainable regional development.

Literature Review

Community Enterprises and Cost Management

Community-Based Enterprises (CBEs) serve as vital catalysts for grassroots economic development, yet they consistently encounter profound systemic management barriers, particularly regarding cost accounting and strategic pricing (Nakhonsong & Chamruspanth, 2024). Across emerging economies, structural disparities, limited access to capital, and reliance on informal, unsystematic financial record-keeping often exacerbate the operational fragility of micro-enterprises (Binisris & Payo, 2022; Sangkaew, 2021). While contemporary business models increasingly depend on digital transformation to secure a competitive edge, marginalized CBEs—such as those operating in Thailand's culturally diverse but economically challenged southern border provinces—remain severely constrained by infrastructural deficits and low digital literacy (Khiawnoi et al., 2025; Pranee et al., 2024). Although recent academic

efforts have produced various digital accounting tools for micro-entrepreneurs, most are designed for users with pre-existing financial acumen and stable technological infrastructure (Ariyapim, 2022; Jankeaw et al., 2024). Consequently, a critical literature gap persists in developing context-specific managerial accounting interventions that move beyond generic commercial software and directly address the unique socio-economic realities and digital readiness of disadvantaged community enterprises.

Applications Supporting Cost Management in Community Enterprises

The recent trend of mobile applications and digital accounting systems to support small and medium enterprises (SMEs) has been steadily growing. These tools aim to reduce data-recording burdens, improve the accuracy of financial information, and give entrepreneurs quick access to data for decision-making. Several studies indicate that accounting applications or electronic record-keeping apps can make financial data management more systematic and are positively correlated with access to formal financial services for small businesses. However, users still face challenges in understanding how to use these applications, the relevance of functions to their actual operations, and their digital skill readiness. These issues often lead to inconsistent application usage among some entrepreneurs (Shbeilat & Al-Hajaia, 2022). This finding aligns with Andayani et al.'s (2024) research on accounting application usage among micro-entrepreneurs, which found that despite the apps helping to systematize financial records, many users were unable to fully utilize cost data for profit analysis and pricing due to the complex structure of the apps and difficult-to-understand accounting concepts for community-level entrepreneurs. Similarly, Sari et al. (2024) noted that generic digital accounting apps often do not align with the operational models of small businesses and community enterprises, leading entrepreneurs to use only limited functions or abandon the apps after initial use due to the learning burden and time/resource constraints.

From the perspectives of cost management and administrative decision-making, the literature on technology use in small businesses indicates that when businesses systematically collect and process cost and operational data, entrepreneurs gain clearer information for decision-making and can control operations more effectively. Al-Hattami et al. (2025) highlighted the role of digital accounting systems in improving SMEs' ability to use financial data for planning and management, particularly by keeping data current and linking it to strategic decision-making. However, these studies also highlight limitations related to system complexity, learning burdens, and contextual differences for small businesses, which can impede smooth practical implementation. Therefore, the benefits of an accounting application are realized only when the system aligns with user readiness and daily operational patterns, emphasizing simplicity, data comprehensibility, and practical utility (Ratmono et al., 2023; Begum & Begum, 2025).

Conceptual Framework for Application Development and Evaluation

Developing an effective accounting intervention for disadvantaged community enterprises necessitates a multidimensional conceptual framework that integrates system design, software quality, and end-user acceptance. The developmental architecture is grounded in the ADDIE model (Seels & Glasgow, 1998), which provides a structured, iterative approach encompassing Analysis, Design, Development, Implementation, and Evaluation. This model suits micro-entrepreneurs because it supports continuous refinement based on actual user capabilities and operational constraints (Samsudin et al., 2021; Spatioti et al., 2022). To rigorously assess the resulting prototype, the study uses the ISO/IEC 25010 software quality standards, focusing on Functional Suitability, Performance Efficiency, Usability, Reliability, and Security—dimensions critical to establishing user trust and practical viability (Debnath et al., 2021; Panduwiyasa et al., 2021). Finally, to evaluate practical adoption, the framework incorporates the Technology Acceptance Model (TAM) (Davis, 1989) alongside the System Usability Scale (SUS) (Brooke, 1996). This combination effectively captures users' perceptions of ease of use

and perceived usefulness, which are paramount for technology adoption in digitally underserved regions (Cheah et al., 2023; Khan et al., 2025; Moreno et al., 2024; Mujalli et al., 2024). Integrating these robust methodologies forms the cohesive research framework illustrated in Figure 1.

Inputs	Process	Outputs
- Background data of disadvantaged community enterprises - Business needs and challenges - Cost data: raw materials, labor, expenses - Mobile application development technology - ADDIE Model for development - Experimental Group: Plastic-woven basketry group, Po Seng Sub-district, Mueang District, Yala Province - Extended Group: Disadvantaged community enterprises in the three southern border provinces	- Analysis - Design - Development - Implementation - Evaluation	- Mobile application for production and sales cost analysis - User manual - Application usage efficiency evaluation results - User satisfaction evaluation results with the application

Figure 1 Conceptual Framework

Research Methodology

Population and Sample

This study used a Research and Development (R&D) methodology with a sequential mixed-methods approach (qualitative followed by quantitative) to support the development, trial implementation, and evaluation of the miniBiz application. Qualitative data captured user experiences, identified problems, gathered suggestions, and informed refinements to suit the community enterprise context better. Quantitative data evaluated the application's performance and user satisfaction, reflecting its suitability for widespread adoption.

The research population comprised disadvantaged community enterprises in Thailand's three southern border provinces (Yala, Pattani, and Narathiwat), totaling approximately 1,986 enterprises (Department of Community Enterprise Promotion, 2024). The initial trial phase (experimental group) sample was purposively selected (Selvi, 2019) and comprised 35 members of a plastic-woven basketry group in Po Seng Sub-district, Mueang District, Yala Province. Inclusion criteria for this group were: (1) being a community enterprise engaged in actual production activities, (2) having previously recorded costs and sales in an unsystematic manner, (3) members possessing basic mobile device usage skills, and (4) voluntarily consenting to participate in the application trial and evaluation throughout the research period. For qualitative data collection within the experimental group, the researchers selected 12 key informants directly involved in production or cost management for in-depth interviews. The researchers determined this number using the principle of data saturation: data collection

stopped when no new themes emerged, and issues began to repeat. After refining the application based on trial results, the study expanded implementation to an additional 9 disadvantaged community enterprise groups, totaling 90 members, in the three southern border provinces. The study selected these groups based on similar production activities and operational contexts to further evaluate the application's performance, efficiency, and user satisfaction. For qualitative data collection in the extended group, 9 key informants were interviewed in depth to gather feedback on their experience using the application.

Data Collection Procedures and Instrumentation

The empirical investigation utilized three primary research instruments to ensure comprehensive data collection. The central intervention was the miniBiz mobile application, an iteratively developed tool featuring specialized modules for operational overviews, product management, sales tracking, dynamic reporting, and shop configuration. To rigorously evaluate this intervention, we deployed an Application Performance Evaluation Questionnaire using a 5-point Likert scale to measure functional suitability, performance efficiency, usability, reliability, and security in accordance with ISO/IEC 25010 standards (Nunnally, 1978; Yaghmaie, 2003). Concurrently, a User Satisfaction Questionnaire measured perceived ease of use, perceived usefulness, and system usability, integrating metrics from the Technology Acceptance Model (TAM) and the System Usability Scale (SUS). During the initial trial phase, researchers introduced the miniBiz application to the experimental plastic-woven basketry group and guided users to record actual production costs, sales, and analytical reports. Following this hands-on implementation, researchers systematically collected quantitative evaluations using the standardized questionnaires and conducted in-depth qualitative interviews to capture contextual feedback. After integrating this user-driven feedback to refine the application, the researchers subsequently executed the same data collection protocol across the extended cohort of community enterprises throughout the three southern border provinces.

Data Analysis

Quantitative data were analyzed using descriptive statistics, including mean ($\bar{x}$) and standard deviation (S.D.). For qualitative data, the researchers used thematic analysis, involving repeated readings of interview transcripts to understand the content. The researchers then grouped data with similar characteristics and summarized them into key research themes (Thematic Analysis). The researchers cross-referenced and compared these qualitative findings with the quantitative analysis results. Additionally, the researchers conducted member checking by validating the summarized findings with selected participants to ensure the interpretations accurately reflected their perspectives and experiences.

Ethical Considerations

This research received ethical approval from the Institutional Review Board (ALPS-IRB) of the Association of Legal & Political Studies under protocol number ALPS-IRB-2025-01-0001, dated February 1, 2025. All participants provided voluntary informed consent, and the researchers kept their data confidential and used them solely for academic purposes.

Research Results

Design and Development of the miniBiz Application

The architectural design and systematic development of the miniBiz application yielded a comprehensive system structured around three integrated operational modules. The foundational Shop Settings module lets users define their enterprise profiles, configure low-stock alerts, and securely manage data backups, providing the essential infrastructure needed before starting commercial activities (as illustrated in Figure 2). Building on this foundation, the Production and Sales Process module lets entrepreneurs enter specific product recipes, raw material costs, and batch quantities. As users record sales transactions, this module automatically computes cumulative costs, optimal selling prices, and net profits, facilitating

precise, itemized financial tracking (as shown in Figure 3). Finally, the Performance Tracking and Report Summary module features dynamic dashboards that visualize sales trajectories and inventory levels across daily, monthly, and annual parameters. By enabling data export in standard .csv formats, this comprehensive reporting tool elevates the financial management and analytical capabilities of community professional groups (as detailed in Figure 4).

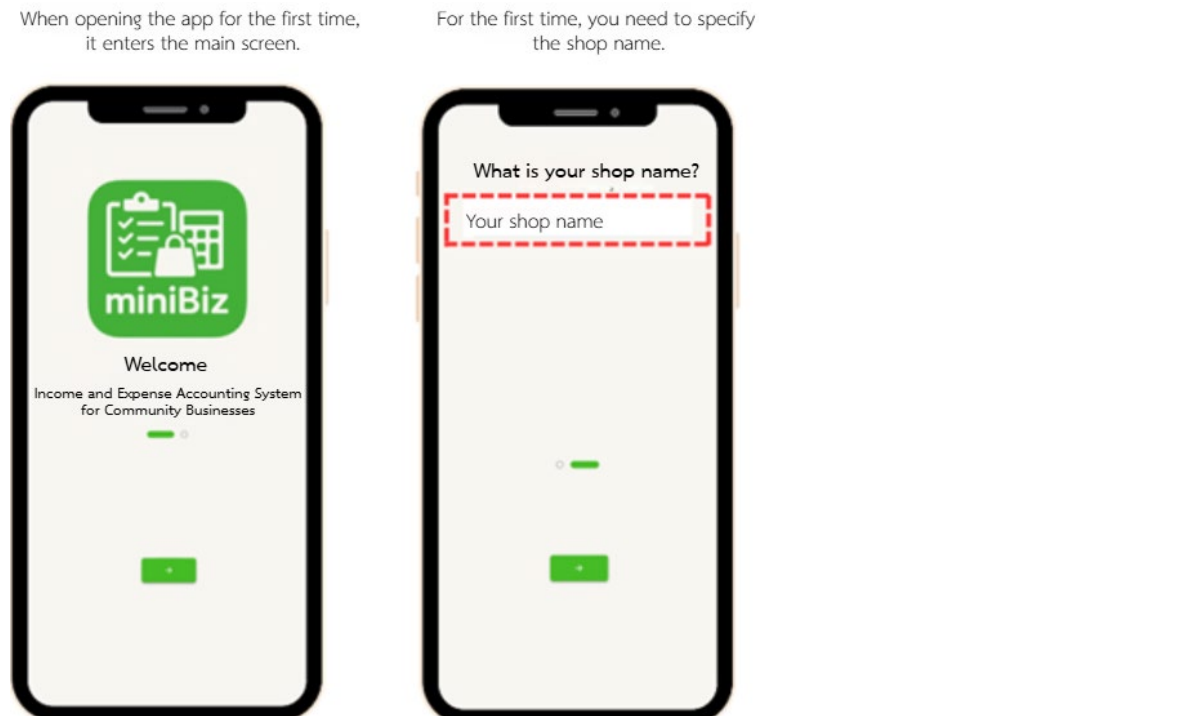


Figure 2 Screenshot of the miniBiz Shop Settings Menu

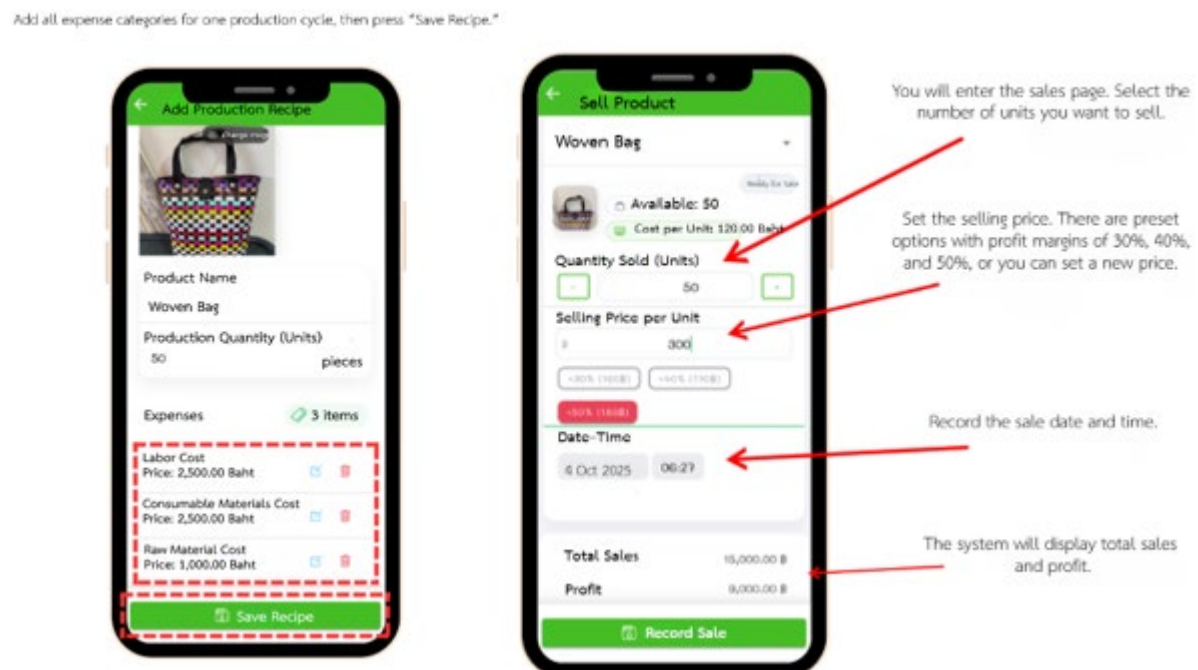


Figure 3 Screenshot of the miniBiz Product Recipe and Sales Entry, with Automatic Cost and Profit Calculation

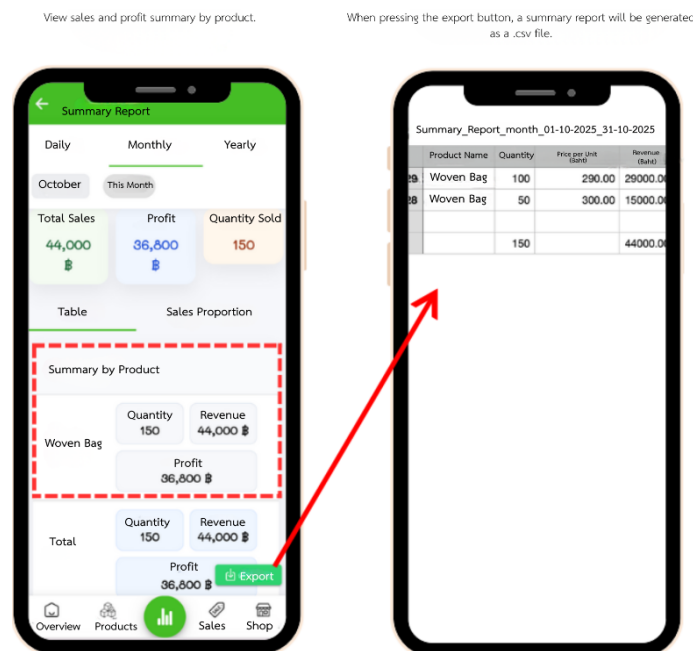


Figure 4 Screenshot of the miniBiz Sales and Profit Report Summary, with User-Selectable Data Range and Export Functionality

Evaluation of miniBiz Application Usability and User Satisfaction (Experimental Group)

The evaluation of the miniBiz application's usability and user satisfaction among the experimental group showed excellent results across all dimensions, as presented in Tables 1 and 2.

Table 1 Evaluation of miniBiz Application Usability (Experimental Group)

Evaluation Aspect	$\bar{x}$	S.D.	Level
1) Functional Suitability	4.56	0.48	Excellent
2) Performance Efficiency	4.48	0.50	Excellent
3) Usability	4.45	0.52	Excellent
4) Reliability	4.42	0.53	Excellent
5) Security	4.39	0.53	Excellent
Total	4.46	0.51	Excellent

Table 2 Evaluation of User Satisfaction with miniBiz Application (Experimental Group)

Evaluation Aspect	$\bar{x}$	S.D.	Level
1) Perceived Ease of Use (PEOU)	4.62	0.46	Excellent
2) Perceived Usefulness (PU)	4.55	0.48	Excellent
3) System Usability Scale (SUS)	4.43	0.50	Excellent
4) Overall Satisfaction	4.36	0.52	Excellent
Total	4.49	0.49	Excellent

Post-Implementation Interview Results (Experimental Group)

Post-implementation interviews with the experimental cohort demonstrated that the miniBiz application substantially enhanced operational accuracy and historical data tracking. Rather than relying on traditional, error-prone manual ledgers, participants reported that the digital interface provided immediate, precise visibility into actual production costs and profitability, significantly strengthening their strategic decision-making. Furthermore, replacing easily misplaced notebooks with a dedicated mobile platform notably reduced calculation errors and

cultivated a profound sense of organizational pride among the community members. Ultimately, these qualitative insights show that beyond improving technical cost management, the application fosters a positive, community-wide reception to digital technology, laying a vital foundation for more transparent, systematic, and sustainable enterprise management.

Evaluation of miniBiz Application Usability and User Satisfaction (Extended Group)

After further development and testing, the evaluation of the miniBiz application's usability and user satisfaction among the extended group showed excellent overall performance, as presented in Tables 3 and 4.

Table 3 Evaluation of miniBiz Application Usability (Extended Group)

Evaluation Aspect	$\bar{x}$	S.D.	Level
1) Functional Suitability	4.53	0.46	Excellent
2) Performance Efficiency	4.49	0.48	Excellent
3) Usability	4.45	0.51	Excellent
4) Reliability	4.41	0.50	Excellent
5) Security	4.37	0.52	Excellent
Total	4.45	0.49	Excellent

Table 4 Evaluation of User Satisfaction with miniBiz Application (Extended Group)

Evaluation Aspect	$\bar{x}$	S.D.	Level
1) Perceived Ease of Use (PEOU)	4.55	0.49	Excellent
2) Perceived Usefulness (PU)	4.47	0.51	Excellent
3) System Usability Scale (SUS)	4.42	0.52	Excellent
4) Overall Satisfaction	4.38	0.53	Excellent
Total	4.46	0.51	Excellent

Post-Implementation Interview Results (Extended Group)

Qualitative feedback from the extended implementation phase strongly corroborated the application's high contextual relevance and practical utility. Users emphasized that the automated cost and profit calculation mechanisms decisively eliminated the need for specialized accounting expertise, thereby bridging a critical local skills gap. By instantly transforming raw input into actionable financial insights, the system enabled entrepreneurs to establish competitive market prices with unprecedented confidence. Participants also noted that switching to mobile-based record-keeping reduced the risk of lost data and manual miscalculations traditionally associated with paper-based methods. Consistent with the strong quantitative results across all dimensions, these findings confirm that the miniBiz application streamlines complex managerial accounting tasks, ultimately empowering marginalized entrepreneurs to use digital technology for resilient, confident business planning.

Conclusion and Discussion

The iterative development of the miniBiz application demonstrates that integrating managerial accounting principles into an accessible digital platform significantly empowers disadvantaged community enterprises in Thailand's southern border provinces. Evaluated against ISO/IEC 25010 standards, the application consistently achieved "excellent" performance ratings across functional suitability, efficiency, usability, reliability, and security for both the experimental and extended cohorts. These robust technical outcomes validate the ADDIE model's ability to bridge complex system design and practical, grassroots user needs (Aydin et al., 2023; Samsudin et al., 2021; Spatioti et al., 2022). Furthermore, the intervention's success aligns strongly with Barney's (1991) Resource-Based View (RBV), showing that an appropriately

designed information system serves as a critical internal resource that structurally enhances an organization's operational capabilities (Al-Hattami et al., 2025; Tongsrisk & Chaisri, 2023). Beyond technical proficiency, the application earned high user satisfaction scores, particularly for perceived usefulness and ease of use, confirming its effectiveness in enabling accurate cost control, profit analysis, and strategic pricing without imposing a heavy learning burden. This seamless integration of accessible cost data into daily operations operationalizes Porter's (1985) Value Chain Theory, showing how tailored technology can eliminate inefficiencies in core production and sales activities (Kajal et al., 2021; Susilowati, 2023). In stark contrast to previous studies in which generic accounting tools failed because of excessive complexity and misalignment with local practices (Andayani et al., 2024; Sari et al., 2024; Shbeilat & Al-Hajaia, 2022), the miniBiz platform shows that simplicity and contextual relevance are paramount for sustained technology adoption. Ultimately, these findings underscore the principles of Community Economic Development (CED), confirming that equipping local micro-entrepreneurs with practical digital management tools is a crucial catalyst for establishing long-term economic resilience and business sustainability (Al-Hattami et al., 2025; Brenton, 2023; Haq, 2021; Ratmono et al., 2023).

The research findings indicate that the miniBiz application not only possesses high technical quality and offers an excellent user experience but also effectively addresses the practical operational needs of CBEs with limited accounting knowledge and digital skills. This demonstrates the application's potential for broader policy and practical implementation. At the governmental and vocational development agency level, miniBiz can serve as a valuable tool to support community enterprise promotion projects and micro-entrepreneurs, strengthening their cost management skills and systematic use of financial data. For entrepreneurs, the application empowers them to utilize cost data for informed product pricing and more effective operational control. From the perspective of developers and system architects, this research provides a foundational dataset for future technological advancements, such as integrating automation or artificial intelligence to enhance data analysis capabilities.

It is important to acknowledge certain limitations: some users' initial unfamiliarity with digital technology may necessitate additional training to maximize system utilization. Furthermore, as an R&D study focused on design, trial, and quality evaluation in a real-world context, it did not include a control group throughout all stages of the research, which might limit the ability to draw definitive causal relationships. However, the repeated evaluations in the extended group and the multi-dimensional assessment of system quality reaffirm the application's stability and suitability in diverse contexts. This study primarily reflects initial and short-term post-implementation outcomes. Long-term follow-up studies would help clarify the app's contribution to the sustainable growth of community businesses.

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