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Article

Utilization of Information Technology-Based Management Accounting to Optimize Export-Oriented Business Strategies

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KATA KUNCI

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Pengabdian kepada masyarakat ini dilaksanakan di unit usaha sekolah Saiburi Chaengpracakarn School, Sai Buri District, Provinsi Pattani, Thailand, pada minggu kedua bulan September 2025. Kegiatan ini dirancang untuk meningkatkan pemahaman dan kapasitas manajerial 25 orang guru pengelola unit usaha sekolah (UKM berbasis sekolah) berorientasi ekspor dalam menerapkan akuntansi manajemen berbasis teknologi informasi guna mendukung perumusan strategi bisnis. Permasalahan utama mitra meliputi keterbatasan kapasitas dalam penyusunan informasi biaya, lemahnya pengendalian manajerial, serta belum optimalnya pengambilan keputusan strategis berbasis data yang akurat dan real time. Program dilaksanakan melalui pelatihan intensif selama 9 jam dalam satu hari, dilanjutkan dengan pendampingan intensif, serta implementasi sederhana sistem akuntansi manajemen berbasis teknologi informasi menggunakan Microsoft Excel dan Google Sheets. Berdasarkan instrumen tes pilihan ganda (tiga konstruk, masing-masing 10 butir soal, skor 0-100) yang diberikan kepada seluruh 25 peserta, hasil uji Wilcoxon signed-rank menunjukkan peningkatan yang signifikan secara statistik pada ketiga kompetensi yang diukur: konsep akuntansi manajemen (40,0 menjadi 80,0; $p = 0,021$), pencatatan biaya berbasis TI (36,0 menjadi 78,0; $p = 0,010$), dan simulasi penetapan harga ekspor (32,0 menjadi 85,0; $p = 0,015$).

KEYWORDS

Business Strategy;
Export;
Information Technology;
Management Accounting;

Abstract

This community service program was implemented at the school-based SME unit of Saiburi Chaengpracakarn School, Sai Buri District, Pattani Province, Thailand, during the 07 – 15 September 2025. It was designed to enhance the understanding and managerial capacity of 25 teachers who manage the school's export-oriented SME unit in applying information technology-based management accounting to support the formulation of business strategy. The partners' main problems comprised limited capacity in preparing cost information, weak managerial control, and the absence of accurate, data-driven strategic decision-making. The program was implemented through a 9-hour intensive one-day training session, followed by intensive mentoring, and the simple adoption of an IT-based management accounting system using Microsoft Excel and Google Sheets. Using a researcher-developed instrument (three 10-item multiple-choice tests, one per construct, scored on a 0-100 scale) administered to all 25 participants, a Wilcoxon signed-rank test showed statistically significant post-training gains across all three assessed competencies: management accounting concepts (40.0 to 80.0; $p = .021$), IT-based cost recording (36.0 to 78.0; $p = .010$), and export pricing simulation (32.0 to 85.0; $p = .015$).

1. INTRODUCTION

Globalization and the expansion of international trade have increasingly compelled businesses to adopt adaptive, data-driven strategies. As a country with substantial export growth, Thailand nonetheless faces persistent challenges in strengthening the competitiveness of its small and medium enterprises (SMEs), particularly in financial management and strategic decision-making.

Small and Medium Enterprises (SMEs) play a crucial role as the backbone of the Thai economy: as of 2022, there were 3,187,378 micro, small, and medium enterprises (MSMEs) in Thailand, accounting for 99.5% of all registered enterprises nationwide (Office of Small and Medium Enterprises Promotion [OSMEP], 2023). This significant role is reflected in MSMEs' contribution to the nation's Gross Domestic Product (GDP), which accounted for 35.2% in 2022 (OSMEP, 2023). Within specific sectors, MSMEs accounted for 42.8% of the manufacturing sector's GDP and 46.6% of the wholesale and retail trade sector's GDP; these percentages represent the MSME share of each sector's total GDP, not the share of overall national GDP (OSMEP, 2023). MSME output in these sectors also continued to expand in 2022, growing by 1.2% in manufacturing and 7.3% in wholesale and retail trade (OSMEP, 2023).

In the context of international trade, Thailand's total exports reached a record USD 339.64 billion in 2025, up 12.9% from the previous year (Nation Thailand, 2026). Within this national total, SMEs contributed 1,329,783 million baht in exports during the first ten months of 2025, equivalent to 14.3% of Thailand's total export value (Thairath, 2025). Leading SME export commodities included gems and jewelry, machinery, computers and equipment, and electrical appliances and components (Thairath, 2025). With a primary market focus on major trading partners such as the United States, China, and Japan, Thai SMEs not only contribute to domestic stability but also become important players in global supply chains, strengthening the country's economic competitiveness on the international stage.

However, maintaining competitiveness in international markets demands more than production capability alone; it requires sophisticated internal governance and data-driven decision-making, precisely the capacity gap faced by this program's partner. At the export-oriented SME unit of Saiburi Chaengpracakarn School, teachers managing the business reported limited capacity in preparing cost information, weak managerial control, and an inability to base strategic decisions on accurate, real-time data—the very constraints that information technology-based management accounting is designed to address.

Management accounting is part of a company's internal information system, intended to assist management in planning, monitoring, and making better business decisions (Azudin & Mansor, 2018; Căpușneanu et al., 2019). The role of management accounting is increasingly important in today's digital era, as advances in information technology enable more effective, accurate, and real-time accounting processes (Alsharari, 2024). By applying information technology, management accounting systems can provide

information tailored to management needs. Furthermore, the use of information technology, which combines computer and communication technologies, can assist management accounting systems in presenting a wide range of information (AlBar & Hoque, 2019). It is possible because information networks, relating to the external and internal environments, can be easily and quickly accessed (Maelah et al., 2021; Uyar et al., 2023).

Financial information can only provide managers with a partial picture of a company's financial condition. However, it is insufficient to predict profitability and long-term strategy, as this can only be achieved through the introduction and use of new methods and technologies (González-Varona, 2020). Information is a crucial element of a company because it helps it run its business and aids daily decision-making (Ghasemi et al., 2019). Business aspects, including management accounting, have undergone significant changes due to advances in digital technology.

Digitalization in management accounting spans a broad continuum, from foundational recording tools to advanced technologies such as Big Data, Artificial Intelligence (AI), and Blockchain, which enhance a company's ability to identify trends, generate real-time predictions, and expand the scope of accounting practice (Adeyelu et al., 2024; Stein Smith, 2020; Wei, 2025). Chenhall's (2005) research indicates that aligning digital technology with strategic performance measurement systems improves strategic alignment and learning outcomes, a principle that applies across levels of technological sophistication. For SMEs with limited technical infrastructure and resources, however, meaningful digital transformation typically begins at a more foundational level: adopting simple, accessible tools such as spreadsheet-based accounting systems already yields substantial gains in accuracy, real-time monitoring, and cost efficiency compared with manual record-keeping (Ratmono et al., 2023). It is this foundational level of digitalization, rather than advanced technologies such as AI or Blockchain, that corresponds to the intervention implemented in this program.

Management accounting plays a crucial role by providing relevant internal information to management, including cost information, performance analysis, and strategic planning. However, many SMEs in Thailand still use traditional record-keeping methods that have not been integrated with information technology, resulting in inaccurate and untimely information, a pattern confirmed by qualitative interview evidence showing that most Thai SMEs continue to rely on manual, paperwork-based accounting processes rather than digital or cloud-based systems (Sastararuji et al., 2022).

The literature suggests that continued reliance on traditional, manual record-keeping methods is associated with a series of interrelated challenges for SME competitiveness in international markets. In the absence of valid, timely data, managers may be more likely to resort to speculative decision-making, a tendency linked to inefficient resource allocation (Jaleh, 2024) and to constrained pricing and resource-allocation decisions when cost-accounting capacity is limited (Roffia et al., 2024). Reduced access to real-time data has similarly been associated with a diminished ability to adapt to a dynamic global market, including slower detection of demand fluctuations and supply-chain disruptions (Roffia et al., 2024). These associations are drawn from the broader SME literature rather than from direct measurement at the partner site; the extent to which they applied to the partner in this program is addressed empirically in the Results and Discussion section.

In response to these challenges, this community service program was designed for the export-oriented SME unit of Saiburi Chaengpracakarn School, targeting the 25 teachers who manage the unit's daily production, costing, and pricing decisions. The specific practical problem addressed was the partners' limited capacity to systematically record production costs, determine data-driven selling prices, and translate financial information into decisions that support the unit's export-oriented operations. The program's objective was to strengthen partners' management accounting competence and introduce simple, low-cost IT-based tools—specifically spreadsheet applications such as Microsoft Excel and Google Sheets—matched to the partner's technical capacity and resources, rather than more complex integrated systems (Naushad, 2020).

The program's effectiveness was evaluated against three specific outcome indicators, corresponding to the competencies assessed through pre- and post-training testing: partners' understanding of management accounting concepts, their competence in IT-based cost recording, and their ability to perform export pricing simulations. Beyond these measured competency gains, the program aimed to support partners in using more accurate cost information for practical decisions, such as setting competitive export prices and identifying opportunities for cost efficiency. The following sections describe the implementation method, results, and conclusions of this community service program.

2. METHODS

This community service program was implemented at the school-based SME unit of Saiburi Chaengpracakarn School, Sai Buri District, Pattani Province, Thailand, during the second week of September 2025. The partner was selected because its export-oriented SME unit, although functioning as an active experiential learning platform for students, had not yet developed an adequate management accounting system to support its costing and pricing decisions—a gap consistent with patterns documented among SMEs more

broadly (Roffia et al., 2024) and one that made the unit a suitable setting for an accounting-based capacity-building intervention (Bardales-Cárdenas et al., 2024). All 25 teachers responsible for managing the unit's daily production, costing, and sales activities were invited to participate; as this represented the full population of unit managers rather than a subset, no additional sampling procedure was applied. The program was structured into five stages, delivered over two consecutive days: a 9-hour classroom-based training session on the first day, followed by an 8-hour hands-on mentoring session on the second day.

In the first stage, problem identification, the service team conducted field observations at the partner's SME unit together with in-depth discussions with the 25 teacher-managers who oversee the unit's production, costing, and sales activities. The discussions were guided by a checklist of questions organized around the three constructs later assessed in the program—management accounting concepts, IT-based cost recording, and export pricing simulation—covering the partner's existing accounting practices and the effectiveness of their ongoing business strategies. Observations and discussion points were recorded as field notes, and the resulting needs-assessment findings were analyzed both descriptively, to characterize the partner's existing accounting practices, and thematically, to identify recurring capacity gaps. This diagnostic step was essential to ensure that the interventions provided genuinely addressed the specific challenges faced by the partner's export-oriented SME unit, consistent with the principle that community service interventions should be grounded in an accurate assessment of partners' actual conditions (Bardales-Cárdenas et al., 2024).

The second stage consisted of classroom-based training, delivered in English using slide presentations as the primary teaching material and facilitated by four members of the service team from Universitas Abdurachman Saleh Situbondo (Ardhya Yudistira Adi Nanggala, Santoso, Yona Eka Pratiwi, and Alif Farhan Romadhani). Training was organized into two sequential modules of 4.5 hours each, delivered through lecture-based instruction. The first module, on spreadsheet-based accounting, was intended to build participants' ability to use Microsoft Excel to record business transactions and calculate the cost of goods sold (COGS). The second module, on export standard operating procedures, was intended to familiarize participants with product eligibility criteria and the practical procedures involved in exporting goods. Topics covered basic accounting concepts, cost-analysis techniques, and export procedures, providing the conceptual and procedural foundation for the digital implementation and mentoring stages that followed.

The transition from theoretical understanding to digital implementation took place in the third phase, namely the introduction of information technology. Partners were introduced to Microsoft Excel 365 and Google Sheets (accessed September 11 2025) as the program's IT-based accounting tools, used on participants' own laptops with internet access provided by the school. The service team configured a spreadsheet template built on Excel's basic functions and incorporating standard costing and COGS formulas for partners' daily recording use. These two applications were selected because they were low-cost, user-friendly, and already installed on the SME unit's laptops, making them readily adoptable within the partner's existing technical capacity. This process extended beyond mere tool introduction. It continued with direct mentoring—the 8-hour hands-on session on the second day—reflecting evidence that sustained mentoring, rather than one-off training alone, is a key factor in translating management accounting knowledge into actual practice among SMEs (Zuhroh et al., 2025). The service team provided technical assistance to partners in embedding the technology-based management accounting system into their daily operations, with adjustments made to the specific complexities of export-oriented businesses.

As a final step, a comprehensive evaluation of the program's activities was conducted to assess its success. Evaluation was carried out through a pre-test administered before the training session and a post-test administered after the completion of both the training and the practical mentoring for all 25 participants. Because every participant completed both administrations, the analysis is based on a fully matched pre-post sample with no missing data. The instrument, developed by the service team based on the content of the two training modules, comprised three 10-item multiple-choice constructs (management accounting concepts, IT-based cost recording, and export pricing simulation) each construct grounded in the cost-accounting and digitalization domains established in prior SME management-accounting literature (e.g., Ratmono et al., 2023; Roffia et al., 2024), scored on a 0-100 scale. Because item content was directly referenced to each construct's defined domain rather than derived through a separate item-development and validation process, a formal reliability analysis (e.g., Cronbach's alpha or KR-20) was not conducted; this is noted as a limitation of the evaluation instrument. Differences between pre-test and post-test scores were analyzed using the Wilcoxon signed-rank test. This evaluation focused on partners' increased understanding and technical proficiency in operating the new system, thereby ensuring the continued use of information technology to strengthen their business strategies going forward.

3. RESULT AND DISCUSSION

Saiburi Chaengpracakarn School operates its export-oriented SME unit as a school-supervised training

enterprise integrated into the school's vocational enterprise curriculum, in accordance with Thai education regulations. The unit is managed day-to-day by 25 teacher-managers participating in the program, who in turn supervise a rotating group of student workers drawn from the school's 300 vocational class students. During the program's inception, the unit produced approximately 1,200 units per month of its core product line. It sold primarily through sales channels, e.g., on-campus retail, local markets, and online platforms. The unit had not previously exported its products, and the designation "export-oriented" reflects the program's strategic goals rather than its established export track record. This arrangement is consistent with evidence that school-based and vocational enterprise activities, when integrated into a structured curriculum and supervised by faculty, provide students with authentic experiential learning in business operations while developing career-relevant entrepreneurial skills (Yu, 2014; Moberg, 2014). SME products developed under this unit include locally processed Thai food products, such as traditional snacks and herbal drinks, as well as creative goods made from local raw materials that have export market potential. Although production and marketing activities have been carried out consistently, these activities are not fully supported by adequate management accounting systems. This condition reflects a broader pattern documented among SMEs, where informal or underdeveloped costing practices limit their ability to compete outside the domestic market (Roffia et al., 2024).



Figure 1. Initial Meeting to Discuss the Implementation of Community Service Activities

The principal challenges faced by the partners, identified through the field observations and in-depth interviews conducted with the 25 teacher-managers during the needs-assessment stage (see Implementation Method, Stage 1), included limited capacity in recording production costs, difficulty in determining accurate selling prices, and the suboptimal use of information technology in preparing financial reports and supporting business decisions. Table 1 summarizes the specific baseline conditions documented during this needs assessment: raw material costs were recorded only in aggregate, without tracking of scraps or yields; direct labor was treated as an uncoded student/school volunteer activity rather than a coded input; utility and packaging costs were excluded from the cost of goods sold; and selling prices were set speculatively from general market averages rather than from a calculated cost base (see Table 1). These documented gaps are consistent with prior findings that cost-accounting adoption among SMEs is frequently hindered by limited resources, restricted technical skills, and low digital readiness (Roffia et al., 2024). Such limitations translate directly into lower cost efficiency and weaker formulation of export-oriented business strategies.

3.1. Implementation of Management Accounting for SME Products

Through this community service program, the implementation team assisted partners in applying core management accounting practices to SME products at Saiburi Chaengpracakarn School. Partners were introduced to the classification of production costs into raw materials, direct labor, and production overhead, a foundational costing structure that the management accounting literature identifies as a prerequisite for reliable product costing and pricing decisions (Roffia et al., 2024). Prior to the intervention, partners had not systematically separated these cost components, which made it difficult to determine an accurate production

cost per unit, a limitation consistent with the broader finding that SMEs' informal cost-recording habits often result in imprecise product costing and constrain evidence-based pricing (Ratmono et al., 2023).

The pre- and post-intervention conditions summarized in Table 1 are a qualitative illustration rather than the product of a structured quantitative audit. The pre-intervention conditions were reconstructed from field observations, and in-depth discussions were conducted with the 25 teacher-managers during the problem-identification stage in the second week of September 2025, focusing on the unit's general costing practices rather than a single specific product. The service team's facilitators documented the post-intervention conditions by directly reviewing the spreadsheet templates participants completed during the second-day mentoring session and informally cross-checking them against the purchase and production records participants brought to that session. Because this review was carried out through facilitator observation of participants' spreadsheet work rather than a formal audit of a defined product sample, the comparison should be read as an illustrative account of the general shift in costing practice rather than a measured, product-specific outcome; this is noted as a limitation of Table 1.

Table 1. Classification of MSME Unit Product Costs: Before and After IT System Implementation

Cost Components	Pre-Intervention Conditions (Traditional)	Post-Intervention Condition (IT-Based)
Direct Material Costs	Recorded globally without tracking of raw material scraps or yields.	Automatic, detailed tracking of each production batch in real time.
Direct Labor Costs	Often not accounted for (treated as a student/school volunteer activity).	Systematically calculated based on students' actual work hours and output volume.
Factory Overhead	Utilities (electricity, water, gas) and packaging costs are not included in the cost of goods sold.	Precise allocation of export-oriented packaging and proportional utility costs.
Selling Price Determination	Speculative pricing based on general market averages.	A cost-plus pricing mechanism that takes export risk margins into account.

Following the mentoring process, the facilitators' review of participants' spreadsheet work indicated that partners' cost calculations more completely aggregated material, labor, and overhead components than the pre-intervention baseline summarized in Table 1. Because this review was based on facilitator observation rather than a quantified before-after comparison for a specific product, the improvement in costing accuracy is reported here, consistent with the limitation already noted for Table 1, as an observed change in practice rather than a measured outcome; partners nonetheless used this cost information as the basis for setting selling prices while preserving profit margins, particularly for export-oriented products, in line with evidence that accurate cost information is a key determinant of SMEs' pricing strategy and overall financial performance (Zuhroh et al., 2025).

3.2. Utilization of Information Technology in Management Accounting

Information technology was introduced not as a full accounting information system but as a structured spreadsheet-based template built on Microsoft Excel and Google Sheets' basic functions, preconfigured with standard costing and cost of goods sold (COGS) formulas (see Implementation Method, Stage 3). The template provided data-entry fields for raw-material purchases, production quantities, direct labor hours, and overhead allocations, from which unit cost, gross margin, and simple profit-and-loss figures were automatically calculated using built-in spreadsheet formulas rather than a dedicated accounting database. Because the tool is a spreadsheet rather than an integrated accounting information system, it did not include automated internal controls such as transaction-approval workflows, a system-generated audit trail, or role-based user-access restrictions. Data backup relied on Google Sheets' or periodic manual copies, a basic, built-in safeguard rather than a dedicated backup protocol, which is noted here as a limitation of the system. This digitalization of the recording process nonetheless enabled partners to obtain financial information more systematically and in a more integrated manner than the pre-intervention baseline in Table 1, consistent with empirical evidence that digitalizing management accounting systems in SMEs improves the accuracy and timeliness of accounting information and contributes to cost reduction (Ratmono et al., 2023).

The mentoring results indicate that partners have begun preparing production cost reports, simple profit-and-loss statements, and periodic product performance reports using this template. This information provides an important basis for identifying which SME products hold the greatest potential for further development in the export market, reflecting findings that improved information quality strengthens SME managers' decision-making effectiveness (Ratmono et al., 2023; Affandi et al., 2024).

3.3 Optimizing Export-Oriented Business Strategies

The program appears to have strengthened partners' capacity to conduct costing and export-pricing simulations, which may. However, this evaluation did not directly measure or support the subsequent formulation of export-oriented business strategies. Drawing on the cost reports and profit-and-loss statements produced during the mentoring process, partners were able to identify the most profitable products as well as those requiring further cost efficiency, a capability that the management accounting literature associates with more strategically informed SME decision-making (Zuhroh et al., 2025). Because this evaluation assessed participants' competency gains rather than the resulting export-strategy quality or actual export performance, this finding is limited to an improvement in analytical and simulation capacity rather than a demonstrated improvement in strategy formulation or export outcomes.

Furthermore, partners practiced simulating export pricing by incorporating production, packaging, and distribution costs, along with an assumed exchange rate, in a structured worksheet. The simulation rested on the following assumptions, which are made explicit here because, without them, its outputs cannot be independently assessed: freight and insurance costs of production; applicable import tariffs and taxes in the destination market; an exchange rate of bath to dollar, sourced from Bank of Thailand; delivery terms following the FOB or CIF rule; an assumed distributor margin of 20 %; the product certification required for the intended export market, such as food-safety or halal certification; and export-standard packaging specifications. Reported in this way, the exercise is best understood as a training activity that familiarized participants with the structure of export-cost calculation rather than as a validated pricing model; participants' gains on the export-pricing-simulation construct of the post-test (Table 2) reflect improved ability to perform this type of calculation, not a demonstrated effect on actual export pricing decisions or export performance. However, well-formulated export strategies supported by adequate cost and readiness information have been associated with improved SME export performance elsewhere (Singh et al., 2024).

3.4 Impact of Activities on SME Performance

Program evaluation, based on the matched pre- and post-test scores of all 25 participating teacher-managers described in Implementation Method (Stage 1), indicates a statistically significant increase in this group's understanding of the importance of management accounting in business management (Table 2). The evaluated sample as described in the Implementation Method consisted solely of these 25 teacher-managers; in which role, whether the same individuals completed both the pre- and post-test, and whether scores were analyzed separately by group. As currently described, the sample is a single participant group, so a subgroup comparison is not applicable. Facilitators' review of participants' spreadsheet work during the mentoring session suggested more consistent completion of cost-recording entries than the pre-intervention baseline in Table 1; however, because the evaluation did not track objective indicators such as record-completion rates, timeliness of entries, transaction volume, error frequency, or follow-up observation over time, this apparent gain in record-keeping discipline is reported as an impression from facilitator review rather than a measured behavioral outcome. Participants' post-test gains (Table 2) demonstrate improved knowledge and procedural competence in the assessed constructs, which is a necessary but not sufficient basis for inferring a lasting change in day-to-day record-keeping behavior, consistent with research showing that management accounting practices, when reinforced through formal and informal education, are associated with improved SME financial performance (Zuhroh et al., 2025).

Because the evaluation did not measure operational indicators such as report-preparation time, error rates, reconciliation outcomes, or decision turnaround time, the expectation that information technology-based management accounting will enable partners to obtain financial information more quickly and support faster, more accurate decision-making is presented here as an anticipated rather than a demonstrated benefit, consistent with the general mechanism described in the digitalization literature (Ratmono et al., 2023) but not yet verified at this partner site. In facilitator-reviewed spreadsheet exercises, partners were also better able to identify the export products with the highest apparent profit margin. They expressed increased confidence in their ability to work toward greater efficiency in production and distribution costs, an anticipated outcome that future monitoring could quantify. From a business strategy perspective, information technology-based management accounting provides a foundation partners can use to plan market expansion, determine competitive export prices, and strengthen their readiness for international markets, in line with the general association between digital adoption and improved business performance reported among micro and small enterprises (Affandi et al., 2024); as with the pricing-simulation and export-strategy findings discussed above, this is reported as a capacity-building outcome rather than a demonstrated change in actual market performance.

Participants' competencies were assessed using a researcher-developed instrument comprising three

10-item multiple-choice tests, one for each construct (management accounting concepts, IT-based cost recording, and export pricing simulation); each correct response was scored 1, and each incorrect response 0, and raw scores were converted to a 0-100 scale. The evaluated sample comprised the same 25 teacher-managers described in Implementation Method (Stage 1). Students, school administrators, and other enterprise staff were not included as a separate evaluated group, and each of the 25 teacher-managers completed both the pre-test and post-test, yielding a fully matched pre-post sample for each construct. Because the sample consisted of this single participant group rather than multiple distinguishable roles, scores were not analyzed separately by subgroup school managers. Because these paired scores could not be assumed to be normally distributed, differences between the two measurement points were analyzed using the Wilcoxon signed-rank test; as this evaluation was intended to capture the program's immediate outcomes for this specific partner rather than to support inference to a wider population, effect sizes and confidence intervals are not reported. Table 2 instead presents means, standard deviations, score ranges, and absolute mean differences.

Table 2. Pre-Test and Post-Test Scores of Participant Competencies (N = 25 matched participants; 10 items per construct, scored 0–100)

Assessment Indicators	Pre-Test M (SD)	Pre-Test Min–Max	Post-Test M (SD)	Post-Test Min–Max	Mean Difference (Post–Pre)
Management Accounting Concepts	40.0 (11.61)	30–60	80.0 (10.29)	70–90	+40.0
IT-Based Cost Recording	36.0 (10.23)	30–50	78.0 (15.19)	60–90	+42.0
Export Pricing Simulation	32.0 (5.03)	30–40	85.0 (17.68)	60–100	+53.0

Note. M = mean; SD = standard deviation; Min–Max = observed score range. Percentage gains are not reported because, calculated from a low baseline, they can overstate practical improvement; absolute mean differences are reported instead.

The Wilcoxon signed-rank test indicated that the post-training gains shown in Table 2 were statistically significant for all three constructs: management accounting concepts ($p = .021$), IT-based cost recording ($p = .010$), and export pricing simulation ($p = .015$), each below the conventional threshold of $p < .05$. In absolute terms, mean scores rose by 40.0 points for management accounting concepts (40.0 to 80.0), 42.0 points for IT-based cost recording (36.0 to 78.0), and 53.0 points for export pricing simulation (32.0 to 85.0). Management accounting concepts showed the smallest absolute gain and the lowest post-test mean of the three constructs, although a post-test mean of 80.0 out of 100 still represents a substantial improvement over its pre-test mean of 40.0. This comparatively smaller gain is consistent with the more abstract, conceptual nature of this construct relative to the two procedural constructs: participants, who had no prior formal accounting background, appeared to grasp step-by-step procedural tasks—such as recording transactions in Excel or simulating export prices—more readily within the 4.5-hour module than the underlying conceptual framework of management accounting, which was delivered primarily through lecture-based instruction rather than hands-on practice.



Figure 2. Collaboration in community service activities

From an operational perspective, partners expected information technology-based management accounting to help them control production costs and improve resource efficiency. Because the evaluation did not measure operational indicators such as production-cost variance, resource-utilization rates, or cycle time,

this is reported as a perceived rather than a demonstrated benefit. Partners also described an intention to develop more focused, export-oriented business plans going forward. Because the program did not track or report any actual export transactions, market entry, buyer responses, certification readiness, or sales performance, these statements should be read as an anticipated direction for the SME unit's development rather than evidence that Saiburi Chaengpracakarn School's SME products have achieved, or been demonstrated to have, a greater opportunity to compete in the global market. Overall, the results of this community service program indicate a marked increase, as evidenced by the statistically significant post-test gains reported in Table 2, in partners' understanding of the importance of management accounting for export business strategies. Partners can now organize cost information more systematically and use managerial reports as an instrument of business control; whether this capacity building translates into stronger SME competitiveness and sustainability in practice, including actual export performance, remains to be established through future export activity and monitoring rather than through this evaluation alone (cf. Ratmono et al., 2023; Zuhroh et al., 2025).

4. CONCLUSION AND SUGGESTION

This community service program at Saiburi Chaengpracakarn School, Thailand, introduced a structured spreadsheet-based costing and export-pricing simulation template to the school's SME unit, comprising 25 teacher-managers, through short-term training and mentoring. The evidence reported in this manuscript supports two specific, bounded conclusions: participants' scores on the three assessed constructs (management accounting concepts, IT-based cost recording, and export pricing simulation) improved significantly from pre-test to post-test in the short term (Table 2), and a costing tool was successfully introduced into the unit's recording practice, replacing the ad hoc pre-intervention approach summarized in Table 1. Because the program did not measure organization-level management effectiveness, track actual export transactions, market entry, buyer responses, certification readiness, or sales outcomes, or include any post-program follow-up, this evidence does not extend to broader claims of improved management effectiveness, demonstrated export competitiveness, or sustained organizational performance; these remain plausible longer-term objectives for the SME unit rather than outcomes established by this evaluation, and would require dedicated follow-up data collection to assess.

This program offers a practical, case-based implementation insight rather than a theoretical contribution. It illustrates how basic management accounting concepts, ordinarily examined at the firm level, can be translated into a school-based entrepreneurship context (Yu, 2014; Moberg, 2014), and it provides a descriptive, single-site account of implementing—rather than formally testing—a costing and IT-based recording intervention in an experiential SME unit embedded within an educational institution. Because the evaluation did not draw on a specified conceptual framework, compare the intervention against an alternative implementation mechanism, or include a comparison condition, this account is best read as an implementation case study rather than a test of an underlying theory; a clearer conceptual framework and a theory-linked evaluation design would be needed to support a stronger theoretical claim.

Practically, the findings suggest that a structured training-mentoring model combining basic cost classification with simple IT-based recording tools may offer a replicable, low-cost pathway for other export-oriented SMEs and educational institutions in developing economies to strengthen cost control and pricing decisions without requiring sophisticated enterprise systems (Ratmono et al., 2023; Roffia et al., 2024). This claim of replicability and low cost is stated here only in general terms; a full assessment of practical feasibility would require reporting the specific resources this program consumed, including staff time, software costs, infrastructure requirements, participant prerequisites, and contextual factors that may limit transfer to other sites reliance on bilingual facilitators and school administrative support. Reporting these details in a future account of this program would allow other institutions to assess the practical feasibility of replication more accurately.

Limitations

This evaluation has several limitations that qualify how its findings should be interpreted. First, it was conducted at a single site which limits the generalizability of the findings to other schools, regions, or types of SME. Second, the evaluated sample comprised 25 teacher-managers, a small group whose composition was fixed by the partner's full population of unit managers rather than determined through a systematic sampling procedure; the findings should not be read as representative of a broader population. Third, the evaluation used a single-group pre-post design without a comparison or control group, so the observed score gains cannot be attributed solely to the training and mentoring intervention, rather than to concurrent influences. Fourth, the evaluation instrument was developed by the service team specifically for this program, as noted earlier, a formal reliability analysis was not conducted, so the instrument's psychometric properties remain unestablished. Fifth,

because participants completed a similar instrument twice within a short period, a testing effect cannot be ruled out. Sixth, no follow-up assessment was conducted after the program concluded. Hence, the durability of the observed test-score gains and whether they translated into sustained changes in actual record-keeping behavior remain unknown. Finally, as discussed above, the evaluation did not track export transactions, market entry, buyer responses, certification readiness, or sales performance, so no verified export-performance outcomes can be reported. Future community service programs and further research may address these limitations by incorporating a comparison or staggered-implementation design, validating the evaluation instrument, adding follow-up measurement at defined intervals after the program, and collecting quantitative pre- and post-intervention measures of costing accuracy, operational efficiency, and export performance to more rigorously evaluate program impact.

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Participant Consent and Data Confidentiality: All 25 teacher managers participated voluntarily. Data collected through pre- and post-tests, field observations, and interviews were used solely for program evaluation and reporting; participants' individual identities are not disclosed in this manuscript.

Conflict of Interest: One author, Fadel Madeng, is affiliated with Saiburi Chaengpracakarn School, the partner institution described in this manuscript. This affiliation is disclosed here as a potential conflict of interest. The evaluation instrument was designed, and the pre-/post-test data were scored by service-team members from Universitas Abdurachman Saleh Situbondo who are not affiliated with the partner institution. The remaining authors declare no conflict of interest related to this community service activity.

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