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Perceptions of Accounting Software among SMEs in Calamba City, Philippines: A Technology–Organization–Environment (TOE) Framework

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Abstract

Small and medium enterprises (SMEs) increasingly rely on accounting software to strengthen transaction recording, reporting accuracy, and managerial control; however, perceptions of such systems are shaped by technological fit, organizational readiness, and environmental pressures. This study examined accounting software perceptions among employees from five SMEs in Calamba City, Laguna, Philippines using the Technology–Organization–Environment (TOE) framework. A structured survey instrument measured the technological context (complexity of usage, compatibility with accounting processes), organizational context (financial management and data security, implementation cost), and environmental context (satisfaction with the current accounting system, competitive pressure). Data were gathered from 320 employees (including supervisors; excluding owners and managers) selected through purposive sampling and analyzed using mean scores and a Likert-scale interpretation scheme. Results showed very high perceptions in the technological context (M = 4.52) and high perceptions in the organizational (M = 3.96) and environmental (M = 4.20) contexts. Averaging the three domain composites yielded an overall mean of 4.23 (Very High). The findings indicate strong endorsement of accounting software's usability and workflow alignment, alongside generally positive organizational and environmental assessments, with comparatively more cautious perceptions concentrated in cost indispensability and confidence against external cyber threats. The study supports targeted capability-building initiatives—particularly focused on organizational readiness and security assurance—and recommends broader multi-site research to test the robustness of TOE-aligned determinants across SME contexts.

Keywords: *accounting software; Technology–Organization–Environment (TOE); SMEs; technology adoption; user perceptions; Calamba City; Philippines*

1. Introduction

Small and medium enterprises (SMEs) operate under persistent constraints in time, staffing, and managerial bandwidth, yet they are expected to produce increasingly disciplined financial records for internal control, tax compliance, supplier relationships, and bank-facing documentation. In this context, accounting software functions not merely as a bookkeeping utility but as an operational infrastructure that shapes how transactions are captured, how errors are prevented or detected, and how managers translate day-to-day activity into financial visibility. The quality of an SME's accounting information system can therefore influence routine decisions (e.g., pricing, cash allocation, credit management), as well as higher-

stakes choices regarding expansion, financing, and risk.

Despite the practical value of accounting software, adoption and sustained use are not purely technical matters. SMEs may encounter a familiar set of frictions: learning effort, perceived complexity, limited system integration with existing practices, uncertainty about data security, and concerns regarding initial and recurring costs. Even when an enterprise has already adopted a system, perceptions of its usefulness, fit, and managerial value strongly influence whether it is used consistently, whether it becomes embedded in core processes, and whether the enterprise upgrades or expands functionality over time. Consequently, understanding perceptions of accounting software among SMEs remains relevant not only to the

"adoption" moment but also to the deeper issue of effective utilization.

To analyze these dynamics, this study is anchored on the Technology–Organization–Environment (TOE) framework, which provides a structured way to examine how multiple domains shape technology-related outcomes. In the TOE logic, technology-related perceptions are influenced by: (1) the technological context—attributes of the system and its alignment with task requirements (e.g., complexity of use, compatibility with accounting procedures); (2) the organizational context—internal conditions that enable or constrain use (e.g., financial management considerations, perceived data security, and implementation costs); and (3) the environmental context—external pressures and contextual cues that affect technology-related judgments (e.g., satisfaction with the current system relative to needs, and perceived competitive pressure). Applying TOE to accounting software in the SME setting is useful because it prevents an overly narrow explanation that attributes outcomes to "technology features" alone, while also recognizing that organizational resources and external conditions may shape how software is assessed in practice.

Within this conceptual framing, the present study examines accounting software perceptions among five SMEs in Calamba City, Philippines. The emphasis is on describing the level of perceptions across TOE domains based on structured survey indicators. In practical terms, such descriptive evidence can inform managerial and capacity-building initiatives, especially in environments where SMEs are encouraged to modernize reporting systems but may differ substantially in readiness and operational maturity. Moreover, by focusing on a defined locality and multiple participating enterprises, the study offers a grounded snapshot of how SME users assess accounting software in a shared business environment, while still recognizing that local evidence is not automatically generalizable to all SMEs.

Accordingly, the study is guided by the following objectives embedded in the investigation. First, it characterizes the respondents in terms of their profile variables (as captured in the survey) to provide baseline context for interpreting the results. Second, it determines the perceived level of accounting software in the technological context, focusing on system-use complexity and compatibility with accounting processes. Third, it determines the perceived level in the organizational context, focusing on perceptions linked to financial management and data security as well as perceived implementation cost. Fourth, it determines the perceived level in the environmental context, focusing on satisfaction with the current accounting system and perceived competitive pressure. Finally, drawing from the pattern of perceptions across domains, it derives analytics-informed implications and recommendations that identify priority areas for strengthening adoption quality.

This study has practical and institutional relevance in several respects. For SME owners and managers, the results offer a structured summary of where perceptions are strongest (e.g., technological fit or environmental drivers) and where perceptions may be comparatively more cautious (commonly within organizational constraints such as cost or internal readiness). For employees involved in accounting-related tasks, the study clarifies how user-facing considerations (e.g., ease of use and process compatibility) relate to broader organizational and environmental conditions that influence the overall view of the software. For local stakeholders—including business support organizations and training providers—the findings can guide the design of targeted interventions that are more specific than generic "technology training," aligning workshop content to the domains where SMEs express lower confidence or higher constraints.

The scope of the study is bounded to SMEs located in Calamba City and to the participating five enterprises included in the dataset. The study focuses on perceptions captured through survey-based indicators aligned to TOE contexts and interpreted using descriptive statistics (mean scores and a Likert-scale interpretation scheme). As a perception-based study, results primarily reflect respondents' assessments within their organizational realities and are not intended to be interpreted as objective system performance testing. Nevertheless, descriptive evidence remains useful for identifying practical leverage points for improvement, particularly when the goal is to inform actionable, context-sensitive capacity-building initiatives rather than to claim universal causal effects.

2. Review of Related Literature

2.1 Accounting Software in SMEs as an Operational Control System

Within small and medium-sized enterprises (SMEs), modern accounting software has evolved from a basic bookkeeping tool into a critical

operational control system. Its primary function extends to enhancing financial visibility, ensuring regulatory compliance, providing strategic decision support, maintaining audit readiness, and enforcing cash-flow discipline (Jurnal et al., 2022; Hendrico & Rijanto, 2025). This transition is vital for SMEs operating under significant resource constraints, as the adoption of such systems improves the accuracy and timeliness of financial data, thereby enabling more robust internal control mechanisms and supporting informed managerial decision-making (Hendarsyah et al., 2025).

A parallel is found in the adoption of digital tools in Philippine higher education, where technology is often adopted for pragmatic continuity rather than as part of a strategic, sustainability-oriented plan, limiting its transformative potential (Atento, 2025). Similarly, research on AI adoption in Philippine educational settings reveals a significant gap between the use of generic digital platforms and the deeper integration of adaptive systems, with perceived effectiveness for core performance outcomes (like academic gains) often rated more cautiously than for engagement or feedback features (Rao et al., 2025).

The advent of cloud-based accounting solutions represents a significant leap, offering SMEs real-time data access which supports greater operational transparency and facilitates flexible cash flow management, often at a lower cost than traditional systems (Qoriah, 2025). Furthermore, contemporary accounting systems are increasingly characterized by their integration with other core business processes and the incorporation of artificial intelligence (AI) and automation. These features collectively work to reduce manual errors, improve adherence to changing regulations, and reallocate accountants' efforts from routine tasks to more strategic, value-adding activities (Maksymenko, 2025; Petrovets, 2025).

Consequently, accounting software acts as a foundational "information infrastructure" for SMEs (Mediaty et al., 2025; Adamova & Orlova, 2025). While some evidence suggests that the accounting information system alone may not directly increase productivity, its role in enabling and strengthening internal control systems is a key driver of enhanced operational efficiency (Hendarsyah et al., 2025). Thus, for SMEs, this technology is indispensable for managing financial risks and sustaining business performance despite inherent limitations in capital and personnel.

2.2 Technological Context — Perceived Usefulness, Complexity, and Compatibility

From the technological perspective of the TOE framework, the adoption and sustained use of accounting software in SMEs are strongly influenced by factors related to the technology itself. Core constructs from the Technology Acceptance Model (TAM), such as perceived usefulness and perceived ease of use, are critical determinants (Musyaffi et al., 2024). However, the perceived complexity and associated learning burden of new software often act as significant barriers, dampening adoption intentions unless efforts are made to improve digital literacy and ensure the technology aligns intuitively with user needs (Musyaffi et al., 2024; Nascimento et al., 2023).

A pivotal factor exceeding even perceived usefulness in some contexts is the software's compatibility with existing accounting workflows and business practices (Russo, 2023; Venkatesh et al., 2022). This alignment, central to task–technology fit theory, minimizes operational disruption and supports the routinization of the software into daily activities, thereby fostering long-term utilization. Technological fit—the degree to which the software's capabilities match the specific tasks and processes of the SME—is therefore essential for overcoming complexity challenges (Musyaffi et al., 2024). Importantly, perceptions of ease of use and usefulness are not static; they can be positively shaped through organizational interventions such as comprehensive training, active user engagement, and effective project management during implementation (Saghafian et al., 2021). Security concerns regarding the technology also play a direct role in shaping its acceptance within the accounting domain (Jackson & Allen, 2024).

2.3 Organizational Context — Readiness, Cost, Capability, and Data Governance

The organizational context of the TOE framework highlights internal factors that enable or constrain accounting software adoption. A primary determinant is resource capacity, encompassing financial budget for implementation and subscriptions, and the availability of skilled personnel to operate and manage the system (Faller, 2025; Akter et al., 2022). High perceived costs and a lack of in-house expertise frequently depress organizational readiness, underscoring the necessity for ongoing training and technical support to build internal capability and confidence (Faller, 2025).

Management commitment and strategic planning are equally critical organizational factors. Leadership support is vital for securing resources, driving change management to overcome user resistance, and fostering a culture of trust—particularly concerning the security of sensitive financial data (Faller, 2025; Uchendu et al., 2021). Data security and governance emerge as paramount concerns, with robust frameworks like ISO/IEC 27001 and Zero Trust Architecture being recognized for enhancing security posture. However, their effective implementation requires significant organizational investment in awareness programs, specialized training, and IT infrastructure (Marhad et al., 2024; Abdelmagid & Diaz, 2025). Cultivating a strong cybersecurity culture is an ongoing process dependent on top-management advocacy, clear policies, and continuous employee education (Uchendu et al., 2021). To optimize limited resources, tools that assess and map employee skills to project requirements can improve implementation success rates by ensuring tasks are aligned with existing competencies (Bibi et al., 2021).

The critical role of organizational alignment and absorptive capacity is underscored in integrative analytics frameworks, which posit that technological investments only translate into desired outcomes when supported by cross-functional collaboration, shared priorities, and the internal capability to convert data into actionable decisions (Atento et al., 2025b). This aligns with findings from Philippine SME case studies, where the success of a digital transformation strategy was explicitly linked to leadership commitment and the alignment of new digital initiatives with core customer values and operational feasibility (Atento et al., 2025a).

2.4 Environmental Context — Competitive Pressure and Institutional Demands

External environmental pressures constitute powerful drivers for technology adoption in SMEs, often compelling action even when internal constraints exist. Competitive pressure from rivals, coupled with rising expectations from customers, suppliers, and financial institutions, pushes SMEs to implement digital tools—including advanced accounting software, AI, and e-commerce platforms—to enhance operational efficiency and market responsiveness (Barata et al., 2024; Sastararuji et al., 2021). The adoption of such technologies has been empirically linked to improved competitiveness through increased cost efficiency, customer retention, innovation capacity, and market share (Sharma et al., 2024; Ferdiansyah et al., 2025; May et al., 2025).

Simultaneously, SMEs face institutional pressures to maintain external legitimacy. Demands from tax authorities for compliant digital record-keeping and reporting, as well as industry norms that increasingly presume digital fluency, create a strong imperative for adoption (Schwaeke et al., 2024; Baabdullah et al., 2021). Banks and other financing entities may also require sophisticated financial reporting, further incentivizing the use of formal accounting systems. In this context, technology adoption becomes a strategic necessity for SMEs to sustain their competitive advantage and meet the expectations of key external stakeholders (Schwaeke et al., 2024; Prause, 2019). Collectively, these environmental factors can act as critical external motivators that override internal barriers, driving SMEs toward digital transformation for survival and growth (Barata et al., 2024; Mkhize et al., 2025).

In the local context of Laguna, competitive pressures among businesses have led to intensified, yet often undifferentiated, promotional strategies, forcing enterprises to seek deeper, community-informed value propositions to maintain relevance (Espelita & Atento, 2025). Furthermore, analysis of listed Philippine firms shows that even with improving fundamental performance, market sentiment and bearish technical indicators can create a divergence that tempers investment, reflecting how external environmental perceptions can constrain an organization's strategic positioning despite internal strengths (Mangubat & Atento, 2025).

2.5 Integrative TOE Evidence and Interventions

The adoption and effective use of accounting software in SMEs are not determined by technological, organizational, or environmental factors in isolation, but by their dynamic interaction within the TOE framework. For instance, a highly useful and compatible software (Technological context) may still fail if an SME lacks the financial resources and management commitment (Organizational context), regardless of strong competitive pressures (Environmental context). Conversely, stringent regulatory mandates (Environment) can accelerate adoption despite moderate technological complexity or initial organizational reluctance, provided basic organizational readiness is mobilized.

Evidence from the literature points to several interventions that can positively influence this interplay. To address technological complexity and poor fit, phased implementation strategies coupled

with task-specific training can enhance ease of use perceptions and build user competence (Nascimento et al., 2023; Saghafian et al., 2021). To bolster organizational readiness, securing management advocacy is foundational for resource allocation and for fostering a security-conscious culture, which can mitigate trust-related barriers (Uchendu et al., 2021; Faller, 2025). Furthermore, leveraging external support ecosystems—such as software vendors, industry associations, or government digitalization programs—can help SMEs navigate environmental pressures by providing needed expertise, subsidies, or compliance guidance, thereby reducing the organizational burden of adoption (Barata et al., 2024).

Evidence from a Philippine family-owned SME demonstrates that a feasible strategic response to environmental saturation ("red ocean" competition) involves a deliberate reconfiguration of value offerings through service redesign and digital touchpoints, explicitly balancing innovative differentiation with basic financial feasibility checks (Atento et al., 2025a). This case illustrates the integrative TOE principle in action: a viable intervention requires simultaneously addressing technological enablement (digital tools), organizational constraints (cost structure, family-business dynamics), and environmental pressures (local competition).

Ultimately, successful integration hinges on aligning a well-chosen technology with the SME's internal capabilities and strategically responding to external drivers. This integrated view of the TOE contexts provides a robust lens for examining the multifaceted perceptions and adoption dynamics of accounting software among SMEs, such as those operating in Calamba City.

2.6 Synthesis of the Literature

Across the reviewed studies, accounting software in SMEs is consistently framed as a form of operational infrastructure rather than a narrow clerical tool. Its value proposition is anchored in strengthening financial visibility, improving compliance readiness, and enabling managerial control under resource scarcity—functions that are especially consequential in SMEs where errors, delays, and weak internal controls can quickly translate into liquidity strain and operational risk (Jurnal et al., 2022; Hendrico & Rijanto, 2025; Hendarsyah et al., 2025). This "control-system" framing is reinforced by work emphasizing accounting information systems as foundational

infrastructure that supports internal control effectiveness and operational efficiency, even when direct productivity gains are not automatically realized (Mediaty et al., 2025; Adamova & Orlova, 2025; Hendarsyah et al., 2025). Parallel evidence from technology use in Philippine education suggests that adoption frequently occurs for continuity or pragmatic necessity rather than as a fully strategic transformation, implying that perceived benefits may remain bounded unless deeper integration and capability-building occur (Atento, 2025; Rao et al., 2025). In the accounting domain, this distinction is critical: adoption without routinization and process alignment may yield limited improvements.

Within the TOE framework, technological factors emerge as immediate, user-facing determinants that shape day-to-day acceptance. Consistent with TAM and closely related acceptance models, perceived usefulness and ease of use remain central drivers; however, complexity and learning burden can suppress favorable perceptions when digital literacy and implementation support are insufficient (Musyaffi et al., 2024; Nascimento et al., 2023). The literature repeatedly elevates compatibility and workflow alignment as decisive—sometimes even more influential than general usefulness—because compatibility reduces disruption, supports task–technology fit, and encourages routine embedding of the software into accounting processes (Russo, 2023; Venkatesh et al., 2022; Musyaffi et al., 2024). Importantly, perceived technological barriers are not treated as fixed: training, user engagement, and disciplined project management can shift perceived ease of use and strengthen perceived value over time (Saghafian et al., 2021). This makes technological context both a design problem (fit and usability) and a change-management problem (learning and implementation support). Security concerns further condition acceptance, particularly for finance-related systems where trust is tightly coupled with willingness to digitize sensitive records (Jackson & Allen, 2024).

The organizational context functions as the enabling (or limiting) substrate that determines whether a technologically suitable system can be adopted and used effectively. Organizational readiness is repeatedly operationalized through financial capacity, availability of skilled personnel, and internal capability to manage implementation and post-implementation usage (Faller, 2025; Akter et al., 2022). High perceived costs, skills scarcity, and weak internal support structures can constrain

readiness even when the system is perceived as beneficial (Faller, 2025). Leadership commitment is presented as a critical catalyst because it secures resources, legitimizes change, and reduces resistance—especially where the adoption affects routines and accountability structures (Faller, 2025; Uchendu et al., 2021). The literature also elevates data governance and cybersecurity culture as organizational imperatives; robust frameworks (e.g., ISO/IEC 27001 and Zero Trust) are recognized, but implementation is resource-intensive and typically requires sustained management advocacy, clear policies, and continuous training (Marhad et al., 2024; Abdelmagid & Diaz, 2025; Uchendu et al., 2021). Complementarily, capability-alignment tools that match employee skills to project requirements suggest that organizational competence is not only about "having people," but also about ensuring the right competencies are mobilized for implementation tasks (Bibi et al., 2021). Integrative analytics perspectives echo this point: technological investments yield outcomes only when supported by cross-functional alignment, shared priorities, and absorptive capacity—i.e., the ability to translate system outputs into actionable managerial decisions (Atento et al., 2025b). Philippine SME evidence likewise emphasizes leadership commitment and feasibility alignment as prerequisites for successful digital initiatives (Atento et al., 2025a).

Environmental drivers operate as external triggers that often accelerate adoption pressure independent of internal readiness. Competitive pressure, customer/supplier expectations, and the demands of financial institutions push SMEs toward digital tools, including advanced accounting systems and complementary technologies (Barata et al., 2024; Sastararuji et al., 2021). Empirical findings associate technology adoption with improved competitiveness through cost efficiency, customer retention, innovation capacity, and market share—outcomes that shape the perceived strategic necessity of modernization (Sharma et al., 2024; Ferdiansyah et al., 2025; May et al., 2025). Institutional pressures amplify these forces, particularly where authorities and industry norms require compliant digital recordkeeping and reporting, and where legitimacy increasingly depends on demonstrable digital capability (Schwaeke et al., 2024; Baabdullah et al., 2021; Prause, 2019). Local Philippine evidence adds nuance by showing that environmental saturation can produce strategic pressure for differentiation and community-informed value propositions, while financial-market contexts illustrate how external perceptions can constrain strategic positioning even

when internal performance indicators improve (Espelita & Atento, 2025; Mangubat & Atento, 2025). Collectively, the environmental literature indicates that SMEs may adopt not only for efficiency, but also to preserve legitimacy and competitive viability.

Taken together, the reviewed studies converge on an integrative conclusion: SME accounting software adoption and effective use are contingent on alignment among technological fit, organizational readiness, and environmental pressure. The literature supports practical interventions that target this alignment: phased implementations and task-specific training to reduce complexity and improve fit (Nascimento et al., 2023; Saghafian et al., 2021), management advocacy to mobilize resources and embed a security-conscious culture (Uchendu et al., 2021; Faller, 2025), and external support ecosystems (vendors, associations, digitalization programs) to reduce organizational burden while responding to institutional and competitive demands (Barata et al., 2024). Evidence from a Philippine family-owned SME further illustrates that viable responses to environmental pressure require simultaneous attention to digital enablement, cost feasibility, and contextual competitive realities—an applied demonstration of TOE interaction rather than isolated factor effects (Atento et al., 2025a). Within this integrated framing, perceptions of accounting software can be interpreted as the surface expression of deeper alignment (or misalignment) across the three TOE contexts.

2.7 Gaps in the Literature

Although the literature provides substantial evidence on technology adoption and digital transformation in SMEs, several gaps remain when the specific problem is framed as accounting software perceptions across TOE contexts within a defined locality.

First, a construct and outcome gap is evident. Much of the adoption literature emphasizes intention, acceptance, or adoption outcomes using TAM/UTAUT-type constructs (e.g., usefulness, ease of use, compatibility), while fewer studies explicitly profile perception levels across the full TOE domains in a way that can directly inform localized interventions for current users (Musyaffi et al., 2024; Venkatesh et al., 2022; Russo, 2023). TOE studies often discuss determinants conceptually, but in practice, empirical work may privilege one domain (typically technology acceptance) over balanced measurement across technological,

organizational, and environmental contexts. This leaves an applied gap: decision-makers frequently need diagnostic evidence indicating which domain is strongest and which is comparatively constrained to design training or readiness initiatives.

Second, there is a contextual and locality gap. While Philippine-based discussions of digital adoption and strategic responses to environmental pressure exist, the literature cited here is more developed for general digital transformation and competitive strategy than for accounting software perceptions specifically within Philippine SMEs and within a city-level setting (Espelita & Atento, 2025; Atento et al., 2025a). Institutional pressures and competitive dynamics are well-established globally, but the degree to which these drivers shape accounting software perceptions in a concentrated locality—where SMEs may share similar regulatory exposure, market conditions, vendor ecosystems, and workforce capabilities—remains under-specified in the reviewed set (Schwaeke et al., 2024; Barata et al., 2024). A locality-specific analysis is not merely descriptive; it can reveal context-bound constraints that broader cross-country generalizations may obscure.

Third, an implementation and governance gap persists for SMEs. The literature recognizes cybersecurity frameworks and governance imperatives, yet there is limited alignment between these high-standard frameworks and the realistic resource constraints of SMEs, particularly in accounting contexts where trust and security concerns directly shape willingness to digitize financial records (Marhad et al., 2024; Abdelmagid & Diaz, 2025; Jackson & Allen, 2024). While cybersecurity culture and management advocacy are emphasized, more empirical clarity is needed on how SMEs perceive data security and governance as part of accounting software use, and how those perceptions interact with cost and readiness constraints (Uchendu et al., 2021; Faller, 2025). This gap is operationally important because perceived security and perceived cost often co-determine perceived feasibility in small firms.

Fourth, an intervention-design gap is visible. Multiple studies recommend training, phased implementation, and external support ecosystems, but fewer works connect TOE diagnostics to a structured, context-appropriate intervention blueprint that can be directly implemented by SME stakeholders (Nascimento et al., 2023; Saghafian et al., 2021; Barata et al., 2024). In applied SME environments, intervention relevance depends on whether training content and sequencing address the domain-specific constraints most salient to users (e.g., complexity and fit vs. readiness and cost vs. compliance and competitive pressure).

In view of these gaps, the present study is positioned to contribute localized evidence by examining accounting software perceptions among SMEs within Calamba City through the TOE framework, using domain-specific indicators (complexity and compatibility; organizational readiness factors including financial management/data security and cost; and environmental conditions including satisfaction and competitive pressure). By profiling perceptions across domains within a defined locality and translating the results into a structured enhancement initiative (e.g., a technology-integration workshop aligned to TOE constraints), the study responds to the need for diagnostically useful, context-sensitive evidence that supports practical implementation decisions while remaining consistent with the integrative logic emphasized in the literature (Faller, 2025; Uchendu et al., 2021; Nascimento et al., 2023; Atento et al., 2025a).

3. Methodology

3.1 Research Design

The study employed a quantitative, cross-sectional descriptive survey approach to determine employees' perceptions of accounting software using the Technology–Organization–Environment (TOE) framework. The analysis focused on summarizing perceived levels across TOE contexts through descriptive statistics (i.e., mean scores and verbal interpretations).

3.2 Study Locale and Research Setting

The study was conducted among five small and medium-sized enterprises (SMEs) in Calamba City, Laguna, Philippines. The participating firms were selected based on their operational use of accounting software and their capacity to provide eligible employee respondents.

3.3 Participants and Sample Size

A total of 320 employees participated across the five SMEs. Owners were excluded. Respondents included rank-and-file employees and supervisory-level personnel, while managers were not included.

3.4 Sampling Technique and Inclusion Criteria

Purposive sampling was used. Respondents were eligible if they:

a. were currently employed in one of the participating SMEs,

b. had at least one (1) year of work experience in the company, and

c. were 23 years old and above at the time of participation.

3.5 Research Instrument

Data were collected using a structured questionnaire with two parts:

1. Part I — Demographic Profile.

Items captured respondent characteristics (e.g., age group, sex, civil status) and length-related profile (operationalized in this study as years of service/tenure in the company).

2. Part II — Accounting Software Perception (TOE contexts).

A 5-point Likert-type scale measured perceptions across six TOE-aligned indicators, with five (5) items per indicator (total = 30 items):

a. Technological Context

- Complexity of Usage (5 items)

- Compatibility with Accounting Processes (5 items)

b. Organizational Context

- Financial Management and Data Security (5 items)

- Implementation Cost (5 items)

c. Environmental Context

- Satisfaction with Current Accounting System (5 items)

- Competitive Pressure (5 items)

Responses were rated as: 5 = Strongly Agree, 4 = Agree, 3 = Not certain, 2 = Disagree, 1 = Strongly Disagree.

3.6 Instrument Validation

The questionnaire underwent content/face validation through faculty/adviser review for alignment with the study objectives and the TOE indicators. Revisions included item refinement and removal of non-parallel items based on expert feedback prior to administration.

3.7 Data Gathering Procedure

After validation, the questionnaires were distributed to eligible employees in the five participating SMEs. Respondents were given a reasonable period to complete the instrument, after which questionnaires were retrieved according to the collection schedule agreed upon with the participating organizations.

3.8 Ethical Considerations

Participation was conducted with emphasis on confidentiality of responses. Respondents were informed that their identities would be treated with care, and they were given the option to remain anonymous to reduce response inhibition and improve response candor.

3.9 Statistical Treatment of Data

Data were encoded and analyzed using Jamovi. Frequency and percentage distributions were used to summarize demographic variables. The arithmetic mean (M) was used to summarize perception scores per item and to compute composite scores for each TOE indicator and domain. Indicator composites were computed as the arithmetic mean of their constituent item scores; domain composites were computed as the arithmetic mean of their indicator composites.

The following interpretive ranges guided verbal descriptions of mean scores:

1.00–1.80 = Strongly Disagree / Very Low

1.81–2.60 = Disagree / Low

2.61–3.40 = Not certain / Neutral

3.41–4.20 = Agree / High

4.21–5.00 = Strongly Agree / Very High

4. Results and Discussion

4.1 Respondent Profile

A total of 320 employees from five SMEs in Calamba City participated in the study. In terms of age, the largest proportion of respondents belonged to the 23–27 years old group (46%), followed by

those aged 28–37 years old (33%). The remaining respondents were distributed across age brackets above 37 years old, indicating a smaller but still present representation of more mature employees.

With respect to sex, the sample was slightly male-dominant, with 52% male respondents, while the remaining proportion consisted of female respondents. In terms of civil status, the majority were married (60%), while single respondents comprised 37% of the sample. The remaining percentage consisted of respondents who reported other civil status categories (e.g., widowed or separated).

Regarding length of service, nearly half of the respondents had been employed in their company for 1–3 years (49%), while a substantial proportion reported 4–6 years of tenure (41%). The remaining respondents had served for more than seven years, indicating that a smaller subset of the sample had longer-term organizational exposure.

These profile distributions suggest that perceptions of accounting software were primarily drawn from employees in early-to-mid career age brackets and with short-to-moderate organizational tenure, while still incorporating input from older and longer-tenured personnel.

4.2 Overall Perception of Accounting Software Using the TOE Lens

Overall perceptions of accounting software across the five SMEs were highly favorable when assessed using the TOE framework. Using the domain composites for the three TOE contexts—Technological (M = 4.52), Organizational (M = 3.96), and Environmental (M = 4.20)—the study yielded an overall composite mean of 4.23, which corresponds to Very High / Strongly Agree (4.21–5.00).

Overall, employees generally viewed accounting software as a strong enabling system within their organizations—particularly in terms of its usability and alignment with accounting workflows (technological context) and the perceived benefits associated with satisfaction and performance outcomes (environmental context). The comparatively lower organizational mean suggests that internal constraints—especially those related to cost justification and confidence in security against external threats—were the most cautious area within an otherwise favorable adoption environment.

4.3 Technological Context

Within the TOE framework, the technological context reflects the extent to which the accounting software is perceived as manageable to use (complexity) and aligned with existing accounting workflows (compatibility). In this study, these dimensions were treated as the core technology-facing indicators that shape day-to-day usability and the likelihood that the system becomes routinely embedded in work practice.

Complexity of Usage

On complexity of usage, responses indicated very high agreement (composite mean = 4.57), suggesting that the accounting software is generally perceived as easy to use and learn, and sufficiently user-friendly for routine operational use.

Item-level results further show that perceived convenience for daily operations received the strongest endorsement (M = 4.70), followed closely by perceptions that the software is easy to learn (M = 4.67) and user-friendly through practice (M = 4.67). Perceived ease of use was likewise very high (M = 4.52). The lowest-rated statement, although still within the "Very High" range, pertained to the idea that overall functionality becomes easier to operate as time on the system increases (M = 4.30).

Substantively, this pattern suggests that the technology is already viewed as accessible and workable, while still leaving a narrow, practical space for reinforcement—particularly in strengthening users' confidence in mastering more advanced functions over time through guided, repeated use.

Compatibility with Accounting Processes.

Compatibility with accounting processes was rated very highly (composite mean = 4.47, Very High), indicating strong agreement that the accounting software aligns with and supports core accounting processes. Item-level results show that the highest endorsement was for the statement that using accounting software has ensured high-quality accounting for the business (M = 4.82), followed by the belief that it helps maintain accuracy in financial reports (M = 4.51) and that it has sped up accounting processes (M = 4.43). Respondents also expressed very high agreement that the software will continue to improve accounting processes (M = 4.60). The comparatively lowest item—though still positive—was the belief that the current software helps implement accounting processes correctly (M =

4.00), suggesting that while alignment is strong, there remains modest space for reinforcing procedural standardization and correct process execution (e.g., through refresher training, job aids, or workflow checklists).

Overall Technological Context Composite.

Averaging the two sub-dimensions yields an overall technological context composite mean of 4.52 (Very High). This indicates that employees strongly endorse both the usability of the accounting software and its compatibility with accounting workflows—conditions that are typically conducive to sustained, routinized use rather than superficial or compliance-only adoption.

4.4 Organizational Context

Within the TOE framework, the organizational context reflects internal enabling conditions and constraints that shape how accounting software is valued and supported in practice. In this study, organizational perceptions were assessed through two sub-dimensions: (1) financial management and data security, and (2) implementation cost. Overall, results indicate favorable organizational assessments, with more variation emerging in security assurance and the perceived indispensability of the investment.

Financial Management and Data Security.

The financial management and data security dimension posted a composite mean of 4.09 (High), indicating general agreement that accounting software strengthens internal financial handling and reporting. The strongest endorsement was observed for the belief that the software helps ensure privacy of financial information (M = 4.34) and supports timely delivery of financial reports (M = 4.30). Respondents also agreed that the software contributes to error-free management of financial information (M = 4.21) and improves the accuracy of financial statements (M = 4.01). The comparatively lowest rating—though still within the "High" range—was the belief that financial information is protected from potential hacking (M = 3.60). This pattern suggests that while respondents recognize strong benefits in privacy, accuracy, and timeliness, confidence is relatively weaker regarding external cyberthreat protection, indicating a practical need for clearer security controls, access governance, and user awareness measures.

Implementation Cost.

Implementation cost yielded a composite mean of 3.82 (High), reflecting agreement that the cost of accounting software is generally acceptable, but not uniformly perceived as indispensable or directly expense-reducing. The strongest endorsement was the belief that investing in accounting software will benefit the business in the long run (M = 4.67), followed by agreement that the acquisition cost is reasonable relative to its benefits (M = 4.30). More moderate ratings emerged for the belief that accounting software can reduce labor costs (M = 3.92). The lowest ratings were recorded for the view that accounting software is a necessary investment (M = 3.10) and that it can gradually decrease operating expenses (M = 3.10). Collectively, these results indicate that respondents tend to view the investment as strategically beneficial over time, yet remain less convinced that it is indispensable or that it will automatically translate into immediate and visible operating-cost reductions.

Overall Organizational Context Composite.

Taking both sub-dimensions together, the overall organizational context composite mean is 3.96 (High). This indicates generally positive organizational support for accounting software—particularly for privacy, reporting timeliness, and long-run value—while highlighting more cautious perceptions regarding cyberthreat protection and the direct cost-saving certainty of the investment.

4.5 Environmental Context

Within the TOE framework, the environmental context reflects external and situational forces that shape how accounting software is perceived as necessary, valuable, or strategically relevant. In this study, environmental perceptions were captured through two sub-dimensions: (1) satisfaction with the current accounting system, and (2) competitive pressure. Results indicate that respondents strongly endorse the value of accounting software in improving internal work outcomes and system performance, while expressing more mixed views on its role as a competitive differentiator.

Satisfaction with the Current Accounting System.

Satisfaction with the current accounting system received a very high composite mean (M = 4.55), indicating strong satisfaction with the current accounting software and its perceived contribution to operational outcomes. The highest endorsement was for the belief that accounting software can impact employee productivity (M = 4.82), followed

by agreement that it upgrades current accounting processes (M = 4.73) and can lead to an exceptional accounting system (M = 4.65). Respondents also expressed very high agreement that the software greatly affects the performance of accounting processes (M = 4.32) and that its presence influences employee satisfaction (M = 4.22). Overall, these results suggest that employees view accounting software not only as functionally helpful but also as materially connected to workplace performance, process quality, and work experience.

Competitive Pressure.

Competitive pressure yielded a composite mean of 3.85 (High), reflecting agreement that accounting software has relevance in competitive positioning, but with notable variability across items. The strongest endorsement was for the belief that accounting software helps maintain and further improve the firm's standing in market competition (M = 4.72). Respondents also agreed that using accounting software can enhance overall performance (M = 4.11) and that technological advances such as accounting software can increase the likelihood of being on top of competition (M = 4.10). However, two items fell into the neutral range: the belief that acquiring accounting software is an advantage against competitors who do not have one (M = 3.05) and that accounting software provides an edge against competition (M = 3.25). This pattern implies that while respondents recognize accounting software as supportive of performance and competitiveness in general, they are less convinced that software adoption alone guarantees a distinctive competitive edge—possibly because such tools may already be common in the sector or because competitive advantage depends on broader strategic and operational capabilities beyond the software itself.

Overall Environmental Context Composite.

Considering both sub-dimensions together, the overall environmental context composite mean is 4.20 (High). Environmental perceptions were strongly positive overall—driven primarily by very high satisfaction with the current system—while competitive-pressure perceptions were positive but comparatively more cautious and heterogeneous.

4.6 Summary of Key Findings

Using the TOE domain composites, overall perceptions of accounting software across the five SMEs were very high (overall mean = 4.23). Technological perceptions were the strongest, reflecting consistent endorsement of usability and workflow alignment. Environmental perceptions were high, driven mainly by satisfaction with current accounting system outcomes, while views related to competitive pressure were more mixed. Organizational perceptions were also high, but two recurring caution points emerged: (a) confidence in protection against external hacking threats and (b) beliefs regarding whether the investment is indispensable and produces visible reductions in operating expenses.

At the indicator level, the strongest endorsements concentrated on usability and perceived process improvement, whereas the clearest caution signals emerged in security assurance, cost indispensability, and the limited belief that accounting software functions as a stand-alone competitive differentiator. Collectively, the results yield a domain-ranked TOE perception profile in which technological fit is a strength, organizational assurance and cost-value clarity are the key constraint points, and environmental support is positive but uneven in competitive-edge claims.

4.7 Discussion of Findings

4.7.1 Technological Context: Usability and Workflow Fit as the Primary Strength

The technological context registered a Very High composite mean (M = 4.52), indicating that employees strongly endorse accounting software as both usable and operationally aligned with accounting tasks. This pattern is consistent with technology-acceptance literature, where perceived ease of use and perceived usefulness shape favorable evaluations and sustained utilization (Musyaffi et al., 2024; Venkatesh et al., 2022). In the present results, the complexity of usage indicators were rated very highly, particularly those emphasizing convenience for daily operations and learnability. Such results suggest that the accounting software has crossed an important adoption threshold: it is not merely present, but perceived as workable enough to support routine task execution with minimal friction—an essential condition for routinization in SME settings where time and capacity for prolonged learning curves are limited (Nascimento et al., 2023; Saghafian et al., 2021).

Similarly, the compatibility with accounting processes indicators were rated very highly, with the strongest endorsements concentrated on claims about improved accounting quality, reporting accuracy, and faster processes. This aligns with

task–technology fit arguments, where perceived compatibility is often a decisive factor in determining whether systems become embedded in daily work, sometimes exceeding general "usefulness" in explanatory strength (Russo, 2023; Venkatesh et al., 2022). Notably, the comparatively lower (though still positive) item related to implementing accounting processes "correctly" signals a subtle but important distinction: users may perceive the software as supportive of speed and quality, yet the translation of software capability into procedural correctness depends on internal process discipline, standardized workflows, and consistent user practice. This interpretation is congruent with implementation research emphasizing that perceived ease and fit can be strengthened through structured training, user engagement, and disciplined project management—particularly in contexts where software features are present but process execution varies across users and departments (Saghafian et al., 2021; Nascimento et al., 2023). In short, the technological results suggest a strong foundation: the system is perceived as accessible and compatible, which reduces the risk that adoption remains superficial.

4.7.2 Organizational Context: Confidence in Value Is High, but Security Assurance and Cost Indispensability Remain the Constraint Points

The organizational context produced a High composite mean (M = 3.96), reflecting generally positive internal assessments but with more cautious agreement than the technological domain. This pattern is consistent with TOE logic: even when a technology is perceived as easy and compatible, organizational realities—resources, governance, internal capability, and assurance mechanisms—often determine whether benefits are fully realized and sustained (Akter et al., 2022; Faller, 2025). In the present findings, the financial management and data security dimension was rated high, especially for privacy, timeliness of reporting, and error reduction. These results support the view that accounting software is perceived as strengthening operational control and information handling—an outcome repeatedly emphasized in SME accounting systems research, where technology functions as an infrastructure enabling internal control, reporting quality, and managerial decision support (Jurnal et al., 2022; Hendrico & Rijanto, 2025; Hendarsyah et al., 2025).

However, the lowest endorsement within this sub-dimension concerned protection from potential hacking, suggesting a relative confidence gap in external cyberthreat resilience. This is analytically

important because trust and security perceptions are frequently decisive in accounting systems where financial data sensitivity is high (Jackson & Allen, 2024). Moreover, while robust security frameworks and architectures are widely recommended, they typically require organizational investment in policies, awareness, and capability-building—requirements that can be particularly demanding for SMEs (Marhad et al., 2024; Abdelmagid & Diaz, 2025). The observed pattern therefore plausibly reflects the difference between privacy as controlled access in day-to-day use versus assurance against external threats, the latter of which demands more formal governance and security culture (Uchendu et al., 2021).

The implementation cost dimension was also rated high, and respondents strongly endorsed long-run business benefit and reasonableness of cost relative to benefits. Yet two items—software as a "necessary investment" and software as gradually decreasing operating expenses—received comparatively weaker ratings. This suggests a nuanced cost-value interpretation: employees may accept the strategic value proposition but remain unconvinced that accounting software produces immediate, visible reductions in operating costs or that it is indispensable in a strict sense. This aligns with evidence that accounting systems may not automatically translate into direct productivity gains unless they are embedded into internal controls and decision routines (Hendarsyah et al., 2025), and with broader organizational alignment arguments indicating that technology value depends on internal capability to convert system outputs into actionable decisions (Atento et al., 2025b). Thus, organizational findings point to two actionable constraint points: security assurance confidence and value-pathway clarity (i.e., how the software's benefits translate into tangible operational outcomes over time).

4.7.3 Environmental Context: Strong System Satisfaction, but Mixed Beliefs About Competitive Edge

The environmental context registered a High composite mean (M = 4.20), reflecting generally supportive external and situational conditions for accounting software use, albeit with internal variation across indicators. The satisfaction with the current accounting system dimension was very high, with respondents strongly associating the software with employee productivity, process upgrading, and improved accounting system outcomes. Such findings reinforce the characterization of accounting software as an operational control system that

enhances visibility and supports performance-relevant outcomes (Jurnal et al., 2022; Hendrico & Rijanto, 2025). They are also consistent with contemporary shifts toward integrated and increasingly automated accounting systems, where digital tools improve speed, reduce manual errors, and enhance compliance readiness (Maksymenko, 2025; Petrovets, 2025). In SME contexts, cloud-based tools are often argued to intensify these perceived advantages by enabling timely access and operational transparency, supporting flexible financial management (Qoriah, 2025).

In contrast, the competitive pressure dimension was only high (not very high) and displayed heterogeneous item-level beliefs. While respondents strongly endorsed the view that accounting software supports market standing and performance, they were more neutral regarding the claim that having accounting software alone provides a distinct advantage over competitors. This is consistent with a mature diffusion interpretation: once a technology becomes common or expected, it may no longer be perceived as a differentiator, but rather as a baseline capability necessary to remain credible and operationally efficient. Environmental and institutional perspectives support this view, emphasizing that adoption may be driven as much by legitimacy and stakeholder expectations as by differentiation (Schwaeke et al., 2024; Prause, 2019; Baabdullah et al., 2021). Competitive pressures can compel adoption even in the presence of internal constraints, but the resulting technology may function as "table stakes" rather than a unique competitive edge (Barata et al., 2024; Mkhize et al., 2025). Local business dynamics likewise suggest that competitive intensity can lead to saturation where differentiation depends on broader value propositions, not solely on the presence of digital tools (Espelita & Atento, 2025). Therefore, environmental results imply that accounting software is perceived as performance-supporting and expectation-aligned, but not uniformly viewed as a stand-alone source of competitive advantage.

4.7.4 Integrated Interpretation: Domain-Ranked TOE Profile and Implications for SME Adoption Quality

Viewed together, the findings produce a clear domain-ranked TOE perception profile: Technological Context (Very High) is the strongest domain, followed by Environmental Context (High), while Organizational Context (High) is positive but comparatively the most cautious. This integrated pattern is consistent with TOE's central proposition that successful adoption and effective use reflect interaction among technology attributes, organizational readiness, and environmental pressures rather than any single factor in isolation (Akter et al., 2022; Barata et al., 2024). In practical terms, the results suggest that the accounting software is perceived as sufficiently usable and compatible (strong technological fit), and that respondents experience strong satisfaction with system outcomes (supportive environment), but that organizational enablers—particularly security assurance against hacking and the clarity of cost-value pathways—are the principal areas where confidence is comparatively weaker.

This profile has a key interpretive implication: the adoption environment across the five SMEs appears favorable for sustained use, but the quality of adoption—meaning consistent, secure, and procedurally correct utilization—depends on organizational strengthening. Implementation research indicates that training, user engagement, and phased reinforcement can improve perceived ease and routinization (Saghafian et al., 2021; Nascimento et al., 2023), while governance and security culture require sustained leadership commitment and clear policies to reduce trust-related barriers (Uchendu et al., 2021; Marhad et al., 2024). In addition, the mixed cost indispensability signals suggest that stakeholders may benefit from clearer organizational narratives and metrics that connect software use to visible operational outcomes (e.g., reduced rework, faster reporting cycles, improved audit trail completeness), consistent with evidence that information systems generate value when aligned with control systems and decision routines rather than treated as stand-alone tools (Hendarsyah et al., 2025; Atento et al., 2025b).

Finally, the environmental results caution against overstating competitive differentiation claims: the software is widely seen as beneficial and supportive of market standing, yet not automatically perceived as an advantage over competitors. This suggests that while accounting software strengthens operational capability, competitive advantage likely depends on how well the organization integrates the tool into broader process discipline, governance, and strategic execution—an integrative view consistent with applied SME evidence that digital tools must be paired with feasibility and value reconfiguration to respond effectively to competitive pressures (Atento et al., 2025a; Sharma et al., 2024).

5. Conclusions and Recommendations

5.1 Conclusions

The findings indicate that employees across the participating SMEs generally view accounting software as a credible and valuable operational system that supports routine accounting work and contributes to improved process outcomes. The strongest basis for this favorable perception lies in technology-facing considerations: users experience the system as workable, learnable, and aligned with core accounting workflows, which supports sustained utilization rather than superficial or compliance-only use. At the same time, the organizational domain introduces the principal boundary conditions for deep and confident adoption. While respondents recognize clear benefits for privacy, reporting timeliness, and financial information handling, there is comparatively weaker assurance regarding protection against external cyber threats and more cautious belief that the system is indispensable or reliably produces immediate operating-expense reductions. Environmental perceptions further suggest that accounting software is strongly valued for internal performance and process upgrading, yet it is not uniformly viewed as a stand-alone competitive differentiator; instead, it functions more plausibly as a baseline capability that supports efficiency, legitimacy, and responsiveness. Overall, the results imply that the adoption environment is favorable and that the main leverage for strengthening adoption quality lies less in improving usability or workflow fit and more in reinforcing governance, security assurance, and value-pathway clarity so that software capability translates consistently into correct, secure, and decision-relevant accounting practice.

5.2 Recommendations

In light of the findings, the following recommendations are proposed. These are framed as analytics-informed decision supports derived from the domain and item-level patterns, not as implemented interventions.

1. Strengthen security assurance through internal controls and basic governance routines. Since the weakest organizational signal relates to hacking protection, SMEs may enhance user confidence by tightening access controls (e.g., role-based permissions), establishing password and device-use standards, improving backup routines, and formalizing incident reporting channels. These measures can strengthen perceived security assurance without requiring large-scale infrastructure.

2. Clarify the organizational value pathway of accounting software using simple operational metrics. Given mixed perceptions about cost indispensability and operating-expense reduction, SMEs may benefit from routinely tracking a small set of indicators (e.g., reporting turnaround time, error/rework frequency, completeness of audit trail, frequency of delayed reconciliations). Such metrics can translate "long-run benefit" into observable operational gains and support cost justification narratives.

3. Reinforce procedural correctness and standardization to maximize compatibility benefits. Although compatibility was rated very highly, the comparatively lower "correct implementation" item suggests a need to strengthen process discipline (e.g., standardized encoding rules, chart-of-accounts usage guidelines, monthly closing checklists, supervisory review points). This ensures perceived compatibility results in consistently correct process execution.

4. Avoid over-claiming competitive differentiation; treat accounting software as a baseline capability. Because competitive-edge perceptions were mixed, SMEs may position accounting software primarily as a capability that improves operational efficiency, compliance readiness, and decision support, while competitive advantage is pursued through broader strategic and service/value innovations supported by reliable financial data.

5. For research and development partners, extend the analysis beyond descriptive profiling. Future work may incorporate inferential comparisons (e.g., differences across SMEs, tenure groups, or age groups) and model-based assessment (e.g., regression/SEM paths among TOE indicators), if appropriate data structures and assumptions are satisfied.

5.3 Limitations and Future Research Directions

a) Self-report limitation: Findings are based on perception measures and do not directly test objective system performance or audited financial outcomes.

b) Geographic limitation: The study is confined to SMEs in one locality, which limits generalizability.

c) Scope of respondents: Owners and managers were excluded; leadership-level perceptions and governance practices were not directly measured.

d) Suggested future directions: Replication across multiple localities and industry segments; integration of objective process metrics (error rates, reporting time, compliance outcomes); and analytic modeling of TOE determinants for adoption quality.

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