



Digital Accounting Adoption in Micro and Small Enterprises: The Roles of Accounting Training and Information Technology Access

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Article Info:

Abstract

Keywords:

Accounting Training;
Information Technology Access;
Financial Record-keeping;
Digital Accounting;
Adoption;
Micro and Small Enterprises;

Micro and small enterprises play a crucial role in economic resilience, yet many continue to face persistent challenges in maintaining systematic and reliable financial records. Limited accounting capacity and uneven access to information technology remain major barriers to the adoption of proper financial record-keeping practices. This study aims to examine the roles of accounting training and information technology access in influencing financial record-keeping practices among micro and small enterprises. Using a quantitative research design, primary data were collected through structured questionnaires from 50 micro and small enterprises operating in an urban area. The data were analyzed using validity and reliability tests, multiple linear regression, and hypothesis testing, including t-tests, F-tests, and the coefficient of determination. The results indicate that accounting training does not have a statistically significant effect on financial record-keeping practices, suggesting that training programs alone may not be sufficient to ensure consistent implementation. In contrast, access to and utilization of information technology show a significant positive effect on financial record-keeping practices, highlighting the critical role of digital tools in improving accuracy, efficiency, and consistency in financial reporting. Simultaneously, accounting training and information technology access jointly influence financial record-keeping practices, although technology access emerges as the dominant factor. These findings imply that policies and support programs for micro and small enterprises should prioritize expanding access to user-friendly digital accounting technologies while reorienting accounting training toward more practical, application-based approaches to enhance their effectiveness.

Article History:

Received : 22-09-2025

Revised : 12-10-2025

Accepted : 15-10-2025

Article DOI :

<https://doi.org/10.70550/pelita.v2i3.252>

How to cite : Minanari, M., Yessie, A., & Aini, L. S. (2025). Digital Accounting Adoption in Micro and Small Enterprises: The Roles of Accounting Training and Information Technology Access. *Pelita : Jurnal Penelitian, Terapan Dan Aplikatif*, 2(3). <https://doi.org/10.70550/pelita.v2i3.252>



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INTRODUCTION

Micro and small enterprises are widely acknowledged as a cornerstone of economic development, contributing significantly to employment generation, income distribution, and economic resilience across both developed and emerging economies (Aribawa, 2016; Anastasya, 2023). Despite their central role, a substantial proportion of these enterprises continue to operate with limited or informal financial record-keeping practices, which constrains managerial decision-making, reduces transparency, and restricts access to external financing (Beck & Demirguc-Kunt, 2006; Berger & Udell, 2006; Degryse et al., 2018). Inadequate accounting practices have repeatedly been identified as a structural weakness among small firms, particularly in developing and transitional economies where institutional support, financial literacy, and formal governance mechanisms remain uneven (Maseko & Manyani, 2011; Williams & O'Donovan, 2015; Ates et al., 2013).

From a theoretical perspective, the adoption of sound financial record-keeping practices is closely associated with both human capital and technological capability. Human capital theory posits that education and training enhance individuals' cognitive capacity and skills, which in turn improve productivity and organizational outcomes (Becker, 1964; Colombo & Grilli, 2005). In the context of micro and small enterprises, accounting training is expected to improve owners' understanding of financial information, promote compliance with accounting standards, and strengthen internal control over business operations (Drexler et al., 2014; Bruhn & Zia, 2013; McKenzie & Woodruff, 2014; Biduri, 2021). Empirical evidence, however, remains inconclusive. While several studies report that accounting or financial training positively influences reporting quality and firm performance (Karlsson & Honig, 2009; Molosiwa & Holland, 2025; Fatoki, 2014), other studies suggest that training effects tend to be weak or short-lived, particularly when entrepreneurs face cognitive overload, time constraints, or limited incentives to formalize their accounting practices (Valdivia, 2015; Campos et al., 2017; Anderson et al., 2018).

Alongside human capital, technological capability has become increasingly salient in shaping accounting practices among small enterprises (Hanifa et al., 2020; Lestari et al., 2025; Putra et al., 2024b). Drawing on the technology acceptance model and diffusion of innovation theory, access to information technology is expected to reduce perceived complexity, enhance ease of use, and increase the perceived usefulness of accounting activities (Davis, 1989; Rogers, 2003; Venkatesh et al., 2012). The diffusion of digital accounting systems, cloud-based platforms, and mobile bookkeeping applications has been shown to improve the accuracy, timeliness, and consistency of financial records, even among enterprises with limited formal accounting knowledge (Grande et al., 2011; Nguyen et al., 2015; Alshawi et al., 2011). Empirical studies further indicate that technology adoption often exerts a stronger influence on accounting formalization than traditional training interventions, particularly in environments where digital tools automate recording and reporting processes (Thong, 1999; Tarutè & Gatautis, 2014; Scuotto et al., 2017).

Despite the expanding literature on accounting training and digitalization in small enterprises, several important gaps remain (Nurchahyo et al., 2024; Aribawa, 2016; Aulia et al., 2025; Afifah & Triyanto, 2023). First, much of the existing research examines accounting training and information technology adoption separately, offering limited insight into their relative and joint effects on financial record-keeping practices (Soto-Acosta et al., 2016; OECD, 2017). Second, empirical findings regarding the effectiveness of accounting training are highly fragmented, with limited consensus on whether training alone can induce sustained behavioral change in accounting practices, particularly in the presence of increasing digital automation

(Campos et al., 2017; McKenzie, 2021). Third, evidence from urban micro and small enterprises in emerging economies remains scarce, despite the fact that these contexts are characterized by rapid digital transformation, heterogeneous educational backgrounds, and persistent informality (Klapper & Parker, 2011; Cirera et al., 2020; North et al., 2020). As a result, it remains unclear whether accounting training continues to play a meaningful role in improving financial record-keeping when digital accounting technologies are increasingly accessible and widely adopted.

Motivated by these gaps, this study aims to examine the roles of accounting training and information technology access in shaping financial record-keeping practices among micro and small enterprises (Putra, 2019; Putra et al., 2024 a; Putra et al., 2025; Faishol et al., 2024;). By integrating insights from human capital theory and technology adoption theory, this research contributes to the literature by empirically assessing whether accounting training retains its expected relevance in the digital accounting era or whether access to information technology has become the dominant driver of financial record-keeping adoption (Putra et al., 2024b; Rahayu et al., 2023; Widia et al., 2023). The study further evaluates the combined effects of training and technology access to provide a more comprehensive understanding of accounting practice adoption in small enterprises. The findings are expected to offer theoretical contributions to the accounting and small business literature, as well as practical implications for policymakers and development agencies in designing more effective, technology-oriented support programs for micro and small enterprises.

LITERATURE REVIEW

The adoption of systematic financial record-keeping practices in micro and small enterprises has been extensively discussed in the accounting and small business literature, particularly in relation to human capital development and technological capability (Rinandiyana et al., 2020; Rahayu et al., 2023; Putra & Syahrudin, 2019). From a theoretical standpoint, human capital theory provides a foundational explanation for why training is expected to improve accounting practices. Becker (1964) argues that investment in education and training enhances individuals' knowledge and cognitive skills, which subsequently improves productivity and task performance. In the context of micro and small enterprises, accounting training is therefore expected to strengthen owners' understanding of accounting principles, enhance their ability to process financial information, and encourage compliance with formal reporting standards (Colombo & Grilli, 2005; Drexler et al., 2014; Nurazizah & Zulkarnain, 2022; Putra & Ghani, 2020; Utari et al., 2022). Prior empirical studies support this argument by showing that accounting and financial training can improve bookkeeping quality, financial awareness, and business performance, particularly in early-stage enterprises (Karlsson & Honig, 2009; Bruhn & Zia, 2013; Fatoki, 2014; Azizah & Wildania, 2023).

Nevertheless, the effectiveness of accounting training remains a contested issue. Several studies report that training interventions often fail to generate sustained changes in accounting behavior, especially among micro enterprises operating under time constraints, informality, and limited enforcement mechanisms (Valdivia, 2015; Anderson et al., 2018; McKenzie, 2021). Campos et al. (2017) further argue that traditional classroom-based training tends to be less effective than more action-oriented approaches, suggesting that knowledge acquisition does not automatically translate into practice. These mixed findings imply that while accounting training may enhance cognitive capacity, its impact on financial record-keeping practices is likely contingent on complementary factors, including organizational context and access to enabling tools.

In parallel, technology adoption theory offers an alternative and increasingly prominent explanation for the adoption of financial record-keeping practices. The technology acceptance model posits that perceived usefulness and perceived ease of use are key determinants of technology adoption (Davis, 1989), while diffusion of innovation theory emphasizes the role of relative advantage, compatibility, and complexity in shaping adoption decisions (Rogers, 2003). In the accounting domain, information technology has been shown to reduce the complexity of bookkeeping tasks, automate transaction recording, and enhance the accuracy and timeliness of financial information (Grande et al., 2011; Nguyen et al., 2015). Empirical evidence suggests that access to digital accounting systems and mobile bookkeeping applications significantly improves financial reporting practices among small enterprises, even in contexts where accounting knowledge is limited (Alshawi et al., 2011; Tartù & Gatautis, 2014; Scuotto et al., 2017).

Prior studies increasingly indicate that information technology access may exert a stronger influence on financial record-keeping practices than accounting training alone. Thong (1999) and Soto-Acosta et al. (2016) find that technology adoption facilitates organizational innovation by embedding standardized processes into daily operations, thereby reducing reliance on individual expertise. Similarly, North et al. (2020) show that digitally enabled SMEs demonstrate higher levels of formalization and reporting discipline compared to non-digital counterparts. These findings are particularly relevant in emerging economies, where digital tools often substitute for formal accounting infrastructure and professional support (Cirera et al., 2020; OECD, 2017).

Despite extensive research on accounting training and information technology adoption, existing studies have largely examined these factors independently, resulting in limited understanding of their combined and relative effects on financial record-keeping practices. Human capital theory would predict that training improves accounting outcomes, whereas technology adoption theory suggests that access to digital tools may directly shape behavior by embedding accounting routines into automated systems (Herliani et al., 2025; Amalia, 2023; Hanifah et al., 2020). The coexistence of these perspectives raises an important empirical question regarding whether accounting training retains its expected relevance in environments characterized by rapid digitalization, or whether information technology access has become the dominant driver of accounting practice adoption (Brynjolfsson & McAfee, 2014; Autor, 2015).

Building on these theoretical arguments and prior empirical findings, this study conceptualizes financial record-keeping practices as an outcome influenced by both accounting training and information technology access. Accounting training is expected to enhance financial record-keeping by improving knowledge and awareness of accounting principles, consistent with human capital theory. Accordingly, the first hypothesis is formulated as follows:

H1: Accounting training has a positive effect on financial record-keeping practices in micro and small enterprises.

Furthermore, access to information technology is expected to facilitate financial record-keeping by reducing complexity, improving efficiency, and increasing the perceived usefulness of accounting activities, as suggested by technology acceptance and diffusion theories. Digital accounting tools are therefore anticipated to play a critical role in shaping accounting practices among micro and small enterprises. This leads to the second hypothesis:

H2: Information technology access has a positive effect on financial record-keeping practices in micro and small enterprises.

In addition, prior studies suggest that human capital and technological capability may interact in shaping organizational outcomes (Colombo & Grilli, 2005; Soto-Acosta et al., 2016).

Accounting training may enhance the ability of enterprise owners to effectively utilize digital accounting tools, while technology access may amplify the practical impact of training by facilitating implementation. Consequently, this study also examines the joint influence of accounting training and information technology access on financial record-keeping practices, providing a more integrated perspective on accounting practice adoption in micro and small enterprises.

METHODS

This study adopts a quantitative research design with an explanatory approach to examine the effects of accounting training and information technology access on financial record-keeping practices among micro and small enterprises. A quantitative design is considered appropriate as it enables systematic testing of theoretically grounded hypotheses and facilitates the identification of causal relationships between variables through statistical analysis (Sarstedt et al., 2021; Creswell & Creswell, 2017). The study relies on cross-sectional primary data, which are commonly used in small business and accounting research to capture behavioral and organizational characteristics at a specific point in time (Bryman, 2016; Saunders et al., 2019).

The data used in this study are primary quantitative data obtained directly from micro and small enterprise owners operating in an urban area. Primary data were selected to ensure that the measurements accurately reflect current accounting practices, technology usage, and training experiences of the respondents (Sekaran & Bougie, 2016). Data were collected using a structured questionnaire administered directly to enterprise owners or managers who are responsible for financial record-keeping. The questionnaire-based survey method is widely employed in accounting and SME research due to its effectiveness in capturing perceptual, behavioral, and organizational variables in a standardized manner (Nguyen et al., 2015; McKenzie & Woodruff, 2014).

The study population consists of micro and small enterprises that have previously participated in accounting-related training programs and operate within the selected urban context. A purposive sampling technique was applied to ensure that respondents met specific criteria relevant to the research objectives, particularly prior exposure to accounting training and engagement in daily financial recording activities. This sampling approach is consistent with prior empirical studies that focus on targeted SME populations to enhance construct relevance and internal validity (Thong, 1999; Soto-Acosta et al., 2016). A total of 50 valid responses were obtained and included in the analysis, which is considered adequate for multiple regression analysis in exploratory and explanatory SME research contexts (Sarstedt et al., 2021; Kock & Hadaya, 2018).

Data collection was conducted using a self-administered questionnaire employing a Likert-type scale to measure respondents' perceptions and practices. Likert scales are widely used in behavioral accounting and information systems research due to their reliability in capturing attitudes, perceptions, and self-reported behaviors (Likert, 1932; Venkatesh et al., 2012). Prior to distribution, the questionnaire items were adapted from validated instruments used in previous studies on accounting training, information technology adoption, and financial reporting practices to enhance content validity (Grande et al., 2011; Tarutè & Gatautis, 2014; Fatoki, 2014). A pilot review was conducted to ensure clarity and contextual relevance of the items.

The measurement of variables in this study is grounded in established theoretical and empirical literature. Accounting training is measured by indicators capturing the frequency, relevance, and perceived usefulness of accounting-related training received by enterprise owners,

reflecting the human capital perspective that training enhances knowledge and managerial capability (Becker, 1964; Drexler et al., 2014; Campos et al., 2017). Information technology access is measured through indicators related to the availability and utilization of digital accounting tools, bookkeeping applications, and electronic transaction systems, consistent with technology acceptance and diffusion theories (Davis, 1989; Rogers, 2003; Venkatesh et al., 2012). Financial record-keeping practices, as the dependent variable, are measured using indicators that reflect the regularity, accuracy, completeness, and timeliness of financial records, in line with prior studies on accounting quality and SME reporting practices (Maseko & Manyani, 2011; Williams & O'Donovan, 2015; Grande et al., 2011).

Data analysis was carried out using multiple stages of statistical testing. First, validity and reliability tests were conducted to assess the quality of the measurement instruments. Construct validity was evaluated using item-total correlations, while reliability was assessed using Cronbach's alpha coefficients, following widely accepted thresholds in social science research (Nunnally & Bernstein, 1994; Sarstedt et al., 2021). Subsequently, multiple linear regression analysis was employed to test the proposed hypotheses and examine the individual and joint effects of accounting training and information technology access on financial record-keeping practices. Multiple regression is appropriate for estimating the influence of multiple independent variables on a single dependent variable and is extensively used in accounting and SME research (Gujarati & Porter, 2009; Wooldridge, 2016).

Hypothesis testing was conducted using t-tests to evaluate the partial effects of each independent variable and F-tests to assess their simultaneous effects on the dependent variable. In addition, the coefficient of determination was examined to assess the explanatory power of the regression model. These analytical techniques are consistent with prior empirical studies investigating behavioral and organizational determinants of accounting practices in small enterprises (Nguyen et al., 2015; North et al., 2020; Soto-Acosta et al., 2016). Overall, the methodological approach adopted in this study ensures theoretical alignment, empirical rigor, and analytical transparency, thereby supporting robust inference regarding the roles of accounting training and information technology access in shaping financial record-keeping practices among micro and small enterprises.

RESULT AND DISCUSSION

Results

The empirical analysis was conducted using primary cross-sectional data collected from 50 micro and small enterprise owners who had participated in accounting training programs and were actively involved in financial record-keeping activities. The data were analyzed using validity and reliability testing, followed by multiple linear regression to evaluate the partial and simultaneous effects of accounting training and information technology access on financial record-keeping practices. The analytical approach follows established quantitative procedures commonly employed in SME and accounting research (Sarstedt et al., 2021; Wooldridge, 2016; Sarstedt et al., 2021).

The reliability analysis indicates satisfactory internal consistency across all constructs. Cronbach's alpha values exceeded the minimum recommended threshold of 0.70 (Nunnally & Bernstein, 1994), confirming the stability and consistency of the measurement instrument. Accounting training demonstrated acceptable reliability, while information technology access and financial record-keeping practices showed strong internal consistency, suggesting that the measurement indicators effectively captured the underlying constructs.

Table 1. Reliability Summary of Research Variables

Variable	Number of Items	Cronbach's Alpha	Interpretation
Accounting Training	7	0.738	Reliable
Information Technology Access	6	0.882	Highly Reliable
Financial Record-Keeping Practices	6	0.875	Highly Reliable

The results on table 1, confirm that the constructs used in this study meet established psychometric standards (Sarstedt et al., 2019), supporting the robustness of subsequent regression analysis.

The multiple regression analysis was conducted to test the hypothesized relationships. The regression model demonstrates overall statistical significance, as indicated by the F-test ($p < 0.001$), suggesting that the independent variables jointly explain variations in financial record-keeping practices. The model explains approximately 30.9% of the variance in financial record-keeping practices (Adjusted $R^2 = 0.309$), indicating moderate explanatory power in line with SME behavioral studies (Nguyen et al., 2015; Soto-Acosta et al., 2016).

Table 2. Summary of Regression Analysis

Independent Variable	Coefficient (β)	t-value	Significance	Result
Accounting Training	0.152	1.282	0.206	Not Supported
Information Technology Access	0.558	4.698	0.000	Supported
Model F-statistic	11.960	—	0.000	Significant
Adjusted R^2	0.309	—	—	Moderate

The results on table 2, indicate that accounting training does not have a statistically significant effect on financial record-keeping practices. Although the coefficient is positive, its significance level exceeds the conventional threshold ($p > 0.05$), leading to the rejection of H1. In contrast, information technology access demonstrates a strong positive and statistically significant effect on financial record-keeping practices ($p < 0.001$), supporting H2. The magnitude of the standardized coefficient suggests that information technology access is the dominant explanatory variable in the model.

The empirical findings therefore reveal that while training contributes conceptually to accounting awareness, digital technology access plays a more decisive role in shaping actual accounting practices among micro and small enterprises.

Discussion

The findings provide important theoretical and empirical insights into the determinants of financial record-keeping practices in micro and small enterprises. Contrary to the prediction

derived from human capital theory (Becker, 1964; Colombo & Grilli, 2005), accounting training does not exert a statistically significant influence on financial record-keeping practices. This result challenges the assumption that knowledge acquisition alone is sufficient to induce behavioral change in accounting routines. While prior studies have documented positive effects of training on business performance and financial awareness (Bruhn & Zia, 2013; Karlsson & Honig, 2009; Fatoki, 2014), other empirical investigations have similarly reported limited or short-lived impacts of training interventions (Valdivia, 2015; McKenzie, 2021; Anderson et al., 2018). The present findings align more closely with the latter stream of research, suggesting that in contexts characterized by operational pressures, informality, and limited enforcement, training may enhance understanding without necessarily translating into consistent accounting implementation.

In contrast, the strong and statistically significant effect of information technology access supports the propositions of technology acceptance and diffusion theories (Davis, 1989; Rogers, 2003; Venkatesh et al., 2012). The findings indicate that digital accounting tools and electronic transaction systems play a crucial role in embedding accounting routines into daily operations. This supports prior research demonstrating that digitalization reduces complexity, automates bookkeeping tasks, and enhances reporting consistency (Grande et al., 2011; Nguyen et al., 2015; Tarutè & Gatautis, 2014). The magnitude of the effect suggests that technological infrastructure may substitute for certain aspects of human capital, particularly in micro enterprises where formal accounting expertise is limited. This observation is consistent with arguments advanced by Brynjolfsson and McAfee (2014) and Autor (2015), who highlight the transformative impact of digital technologies in reshaping work processes and reducing reliance on specialized cognitive skills.

The joint significance of accounting training and information technology access at the model level further suggests that while training alone may be insufficient, its relevance should not be dismissed entirely. Training may enhance the ability of entrepreneurs to interpret financial information generated by digital systems, even if it does not independently drive record-keeping behavior. This interaction perspective resonates with prior studies emphasizing the complementary relationship between human capital and technological capability (Soto-Acosta et al., 2016; North et al., 2020; Cirera et al., 2022). However, the empirical dominance of technology access observed in this study highlights a contextual shift in accounting practice adoption: digital tools appear to be the primary catalyst of financial formalization among urban micro and small enterprises.

The novelty of this research lies in its comparative and integrative examination of accounting training and information technology access within a single empirical framework. While previous studies have often assessed these variables separately, this study provides direct empirical evidence that in a digitally evolving SME environment, information technology access may outweigh traditional training interventions in influencing financial record-keeping practices. This contributes to the ongoing debate regarding the effectiveness of business training programs (McKenzie & Woodruff, 2014; Campos et al., 2017) and extends the literature by demonstrating that digital access can act as a structural driver of accounting discipline.

From a policy perspective, the findings suggest that development programs targeting micro and small enterprises should prioritize expanding access to user-friendly digital accounting systems, while redesigning training initiatives to be more practice-oriented and technology-integrated. The results imply that policy interventions focusing solely on classroom-based accounting training may yield limited impact unless accompanied by digital facilitation mechanisms. Such implications are consistent with OECD (2017) recommendations on digitally

enabled SME growth and with empirical findings highlighting the central role of ICT adoption in enhancing SME performance (Scuotto et al., 2017; Soto-Acosta et al., 2016).

CONCLUSION

This study set out to examine the relative and joint effects of accounting training and information technology access on financial record-keeping practices among micro and small enterprises. The findings provide clear empirical evidence that while accounting training does not exert a statistically significant direct effect, access to and utilization of information technology significantly enhance financial record-keeping practices. Although both variables jointly contribute to explaining variations in accounting practices, information technology access emerges as the dominant driver of financial formalization in the observed SME context.

These results contribute to the ongoing debate in the small business and accounting literature regarding the effectiveness of training-based interventions. From a theoretical standpoint, the findings suggest a contextual refinement of human capital theory in digitally evolving environments. While human capital development remains conceptually relevant, its direct behavioral impact may diminish when digital technologies increasingly embed accounting routines into automated systems. The study therefore advances a complementary capability perspective, where technological infrastructure operates not merely as a supporting tool but as a structural enabler of accounting discipline. In doing so, the research extends technology adoption theory by demonstrating that in micro-enterprise settings, digital access can partially substitute for formal accounting expertise.

The practical implications are equally significant. Policymakers and SME development agencies should reconsider the traditional emphasis on classroom-based accounting training as a standalone intervention. The findings indicate that expanding access to user-friendly digital accounting platforms, mobile bookkeeping systems, and electronic payment infrastructures may yield more immediate and sustainable improvements in financial record-keeping behavior. Training programs, rather than being abandoned, should be redesigned to be application-oriented and digitally integrated, ensuring that knowledge acquisition is directly linked to technological implementation.

Despite its contributions, this study is not without limitations. The research relies on cross-sectional data from a relatively limited sample within a single urban district, which may constrain generalizability across regions and business sectors. In addition, the explanatory power of the model indicates that other contextual variables, such as organizational culture, digital literacy, firm age, or external advisory support, may also influence financial record-keeping practices but were not included in the present model. Future research may adopt longitudinal designs to capture behavioral changes over time, incorporate moderating or mediating variables to explore interaction effects between training and digital capability, or employ mixed-method approaches to gain deeper insight into the behavioral mechanisms underlying accounting adoption. Comparative studies across rural and urban contexts may also provide a broader understanding of how digital transformation reshapes accounting practices in diverse SME ecosystems.

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