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From Traditional Bookkeeping To Digital Accounting: A Literature Review On The Evolution Of Introductory Accounting Practices

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Abstract

Digitalization has substantially transformed accounting practices by shifting traditional manual bookkeeping toward computerized, cloud-based, automated, data-driven, and artificial intelligence-supported systems. This study aimed to examine the evolution of introductory accounting practices, identify the major technologies driving this transformation, and analyze their implications for accounting knowledge and education. A qualitative approach using a structured narrative literature review was employed. The population comprised scholarly publications on bookkeeping, digital accounting, accounting technology, automation, artificial intelligence, and accounting education published between 2021 and 2025, from which 51 eligible articles were selected through purposive document sampling. Data were collected using a structured literature review matrix and analyzed through qualitative thematic synthesis involving descriptive classification, thematic coding, constant comparison, and interpretive synthesis. The findings revealed five interconnected stages of accounting evolution: manual bookkeeping, computerized accounting, cloud-based accounting, automated and data-driven accounting, and artificial intelligence-supported accounting. Although technological developments increasingly automated routine procedures, fundamental accounting principles remained essential. Introductory accounting consequently shifted from a predominantly procedural orientation toward an integrated framework combining conceptual knowledge, digital competence, analytical reasoning, information evaluation, and professional judgment. The study concludes that digital transformation should complement rather than replace foundational accounting knowledge.

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INTRODUCTION

Accounting has historically developed around the systematic recording, classification, summarization, and reporting of financial transactions, with bookkeeping serving as the operational foundation through which economic activities are translated into financial information. However, the increasing digitalization of business processes has substantially changed how these fundamental accounting activities are performed. Manual journals, physical ledgers, and paper-based documentation are progressively being complemented or replaced by integrated accounting software, cloud-based systems, automated transaction processing, data analytics, and artificial intelligence. This transformation is not merely a change in the tools used by accountants but represents a broader shift in the structure, speed, and analytical orientation of accounting work. Cloud accounting, for example, enables real-time access to financial information and has altered the relationship between accounting practices and their clients, while automation and artificial intelligence increasingly reduce the need for repetitive transaction-processing activities (Ma et al., 2021; Coman et al., 2022). At the same time, accounting professionals are being encouraged to move beyond traditional record-keeping functions toward analytical, advisory, and technology-supported roles, making digital competence increasingly relevant to contemporary accounting practice (Leitner-Hanetseder et al., 2021; Tiron-Tudor et al., 2025).

These developments also have important implications for introductory accounting, which represents the initial point at which students develop an understanding of the accounting cycle, double-entry bookkeeping, transaction analysis, adjusting entries, and financial statement preparation. Although these concepts remain essential, the environment in which they are applied has become increasingly digital. Consequently, introductory accounting can no longer be understood exclusively through the logic of manual journals and ledgers without considering how the same accounting principles operate within contemporary information systems. Moore and Felo (2022) demonstrate that accounting education is increasingly influenced by technological developments such as data analytics, artificial intelligence, blockchain, and cloud computing, while Handoyo (2024) identifies artificial intelligence, accounting information systems, big data, and information and communication technology as increasingly prominent themes in accounting education research. This transformation is also visible

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in Indonesia. Fachrurrozie et al. (2025), based on responses from 230 accounting educators, found that artificial intelligence tools are already being incorporated into accounting learning, particularly for preparing instructional materials and supporting academic activities. Similarly, growing evidence suggests that students' readiness to engage with AI-based accounting applications depends not only on access to technology but also on information literacy, perceptions of usefulness, and technological readiness (Abdo-Salloum & Al-Mousawi, 2025). These developments indicate that the foundations of accounting are being taught and practiced within an environment that is fundamentally different from the traditional bookkeeping context in which many introductory concepts originated.

Previous studies have examined different dimensions of this transformation and provide an important foundation for understanding the changing nature of accounting practice. Ma et al. (2021), for instance, found that the adoption of cloud-based client accounting among small and medium accounting practices reduced reliance on traditional statutory accounting services while creating opportunities for greater business advisory involvement. From a professional perspective, Leitner-Hanetseder et al. (2021) demonstrated that artificial intelligence changes the allocation of tasks between accountants and intelligent technologies, thereby redefining professional roles and the competencies required of accountants. Likewise, Coman et al. (2022) argue that accounting digitalization represents a paradigm shift in which emerging technologies, including artificial intelligence, software robotics, and blockchain, influence both organizational accounting processes and the professional identity of accountants. Collectively, these studies demonstrate that digital transformation does not eliminate the basic logic of accounting. Rather, it changes how accounting information is captured, processed, interpreted, and communicated. Traditional bookkeeping therefore remains conceptually important, but its operational manifestation is increasingly embedded in digital systems that automate routine procedures and expand the accountant's analytical responsibilities.

Nevertheless, research on accounting education suggests that technological transformation also introduces pedagogical and conceptual challenges. Traditional introductory accounting has frequently emphasized procedural competence, including journalizing transactions, posting to ledgers, preparing trial balances, and constructing financial statements. While such competencies establish an essential understanding of accounting mechanics, contemporary accounting education increasingly requires students to understand not only how accounting procedures work but also how

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technology performs, accelerates, or modifies those procedures. Tsay et al. (2023) showed that redesigning introductory financial accounting through changes in content and pedagogy can improve learning and student retention, suggesting that foundational accounting courses should evolve in response to changing learning requirements. At a broader level, Handoyo (2024) found a substantial shift in accounting education research toward technological integration and technologically oriented competencies. However, technological integration is not without limitations. Ballantine et al. (2024) caution that the rapid expansion of artificial intelligence may intensify an overly technical approach to accounting education unless technology is accompanied by professional judgment, critical thinking, and an understanding of the broader human dimensions of accounting. Similarly, Haugland Sundkvist and Kulset (2024) show that although students perceive potential benefits from ChatGPT, concerns regarding reliability and the appropriate role of AI in accounting learning remain. Thus, digital transformation creates both opportunities for more efficient accounting learning and risks of weakening students' understanding of the underlying accounting logic when technological outputs are accepted without adequate conceptual verification.

Despite the expanding literature on accounting digitalization, an important gap remains in explaining the transformation as a continuous evolution from traditional bookkeeping to contemporary digital accounting at the level of introductory accounting practices. Existing studies have generally examined particular technologies or outcomes separately. For example, research has investigated cloud accounting adoption and its professional consequences (Ma et al., 2021), changes in accounting roles resulting from artificial intelligence (Leitner-Hanetseder et al., 2021), the incorporation of technology and analytics into accounting curricula (Moore & Felo, 2022; Handoyo, 2024), and more recently, the readiness of students and educators to adopt artificial intelligence in accounting education (Abdo-Salloum & Al-Mousawi, 2025; Fachrurrozie et al., 2025). While these studies provide valuable evidence, the literature remains comparatively fragmented across professional practice, accounting technology, curriculum development, and artificial intelligence adoption. Consequently, insufficient attention has been given to how the fundamental activities introduced in basic accounting, including transaction recording, classification, posting, reconciliation, adjustment, reporting, and interpretation, have progressively evolved as accounting moved from manual bookkeeping toward computerized, cloud-based, automated, and AI-supported environments. Addressing this gap is important because an understanding of technological change without reference to the continuity of fundamental accounting

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principles may create an artificial separation between traditional accounting knowledge and contemporary digital practice.

Accordingly, this study aims to review and synthesize the evolution of introductory accounting practices from traditional bookkeeping to digital accounting by examining relevant literature published between 2021 and 2025. Specifically, the study seeks to identify how fundamental accounting activities have changed under digitalization, explain the major technologies shaping contemporary accounting practices, and analyze the implications of these changes for introductory accounting knowledge and education. The urgency of this review arises from the accelerating adoption of artificial intelligence, cloud platforms, automation, and data-oriented technologies, which increasingly require accounting graduates to combine foundational accounting knowledge with digital and analytical competencies (Abdo-Salloum & Al-Mousawi, 2025; Tiron-Tudor et al., 2025). The novelty of this study lies in its integrative evolutionary perspective, which connects traditional bookkeeping principles with successive stages of technological transformation rather than examining individual digital technologies in isolation. By positioning manual bookkeeping, computerized accounting, cloud accounting, automation, analytics, and artificial intelligence along a coherent developmental continuum, this review contributes theoretically to a clearer understanding of the changing boundaries of introductory accounting practices and practically to discussions regarding how foundational accounting should be taught in a digital environment. In this way, the study responds to calls for accounting education to embrace technological change while preserving conceptual understanding, professional judgment, and critical engagement with accounting information (Ballantine et al., 2024; Handoyo, 2024).

METHOD

Research Design and Type

This study employed a qualitative approach using a structured narrative literature review to examine the evolution of introductory accounting practices from traditional bookkeeping to contemporary digital accounting. A qualitative literature-based design was considered appropriate because the primary objective was not to estimate a statistical effect or test causal relationships, but to interpret, compare, organize, and synthesize conceptual and empirical developments reported in previous scholarly studies. In methodological terms, qualitative inquiry enables researchers to understand phenomena through systematic interpretation of textual evidence, while literature-based research allows existing knowledge to be reconstructed into a coherent conceptual

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explanation (Sugiyono, 2022; Sudaryono, 2021; Emzir, 2021). More specifically, the review followed the principles proposed by Kraus et al. (2022) and Lim et al. (2022), who emphasize that literature reviews can function as independent studies when they apply a transparent process of literature identification, evaluation, organization, and synthesis. The structured narrative approach was selected instead of a full systematic literature review because the study sought to develop an interpretive account of technological evolution across accounting practices rather than conduct meta-analysis or estimate aggregate quantitative effects. This approach was particularly appropriate given that previous studies have examined heterogeneous dimensions of accounting digitalization, ranging from cloud-based accounting and automation to artificial intelligence and changes in professional roles (Ma et al., 2021; Coman et al., 2022).

Population and Sample

The population of this study comprised scholarly publications addressing traditional bookkeeping, introductory accounting, digital accounting, accounting information technologies, cloud accounting, accounting automation, data analytics, artificial intelligence, and technology-enhanced accounting education. The literature population was restricted to studies published between January 2021 and December 2025 to capture the most recent phase of digital transformation while providing a complete five-year publication window. Google Scholar served as the principal literature retrieval platform because of its broad coverage of multidisciplinary academic publications, while publisher websites and DOI records were used to verify bibliographic information. Purposive document sampling was applied by retaining publications that satisfied four inclusion criteria: publication in a peer-reviewed scholarly journal, publication between 2021 and 2025, substantive relevance to the transformation of accounting practices or introductory accounting education, and availability of sufficient full-text information to permit analytical interpretation. Conference abstracts, theses, dissertations, duplicated records, non-academic publications, articles without a clear accounting focus, and publications dealing exclusively with highly specialized auditing or taxation issues without relevance to fundamental accounting practices were excluded. Rather than establishing an arbitrary numerical sample in advance, all eligible studies surviving the screening process were retained as the analytical corpus, with the final corpus consisting of 51 eligible articles. This sampling scope was informed by the domains identified in previous studies concerning accounting technology education,

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digital transformation, AI-supported accounting, and digital competencies (Moore & Felo, 2022; Handoyo, 2024; Ballantine et al., 2024; Tiron-Tudor et al., 2025).

Research Instrument and Data Collection

The primary research instrument was a structured literature review matrix developed to ensure consistent extraction of information from each selected publication. In document-based qualitative research, the researcher functions as the principal analytical instrument, while structured recording procedures increase consistency and transparency in the interpretation of documentary evidence (Sugiyono, 2022; Sudaryono, 2021). The matrix recorded the author and year of publication, research context, study objective, methodological approach, accounting activity examined, type of technology discussed, principal findings, educational implications, and relevance to the evolutionary development of introductory accounting. Particular attention was given to evidence concerning transaction recording, journalizing, ledger posting, reconciliation, adjustment, financial reporting, cloud-based processing, automation, data analytics, and artificial intelligence. These indicators reflected issues highlighted in earlier accounting education research, including course redesign and technological integration in introductory accounting (Tsay et al., 2023; Handoyo, 2024), as well as emerging concerns surrounding generative AI and students' technological readiness (Haugland Sundkvist & Kulset, 2024; Abdo-Salloum & Al-Mousawi, 2025). Because the instrument consisted of a document extraction and coding matrix rather than a psychometric questionnaire or achievement test, conventional statistical validity and reliability coefficients were not applicable. Instead, analytical trustworthiness was strengthened by establishing coding categories directly from the research objectives, verifying bibliographic metadata, repeatedly comparing extracted information with the original publications, and maintaining a consistent evidence trail throughout the review process (Braun & Clarke, 2021; Kraus et al., 2022).

Research Procedure

The study was conducted through sequential stages of preparation, literature identification, screening, extraction, classification, and synthesis. During the preparation stage, the review questions were derived from the objectives established in the introduction, specifically to determine how fundamental accounting practices have changed through digitalization, identify the technologies driving such changes, and analyze their implications for introductory accounting knowledge and education.

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Literature searches were subsequently conducted in Google Scholar using combinations of keywords and Boolean operators, including "traditional bookkeeping" AND "digital accounting", "introductory accounting" AND technology, "accounting education" AND "digital technology", "cloud accounting" AND bookkeeping, "accounting automation" AND accounting practices, "artificial intelligence" AND "accounting education", and "digital accounting" AND "accounting practices". These search terms were developed from technological domains repeatedly identified in prior literature, particularly cloud computing, accounting information systems, analytics, automation, and artificial intelligence (Ma et al., 2021; Moore & Felo, 2022; Coman et al., 2022; Handoyo, 2024). The titles and abstracts of retrieved records were initially screened, followed by full-text assessment against the predetermined inclusion and exclusion criteria. Duplicate and irrelevant publications were removed before eligible studies were entered into the review matrix. Although the study was designed as a structured narrative review rather than a full systematic review, principles from PRISMA 2020 and PRISMA-S were adapted to improve transparency in documenting information sources, search terminology, eligibility decisions, and study selection (Page et al., 2021; Rethlefsen et al., 2021).

Data Analysis Technique

Data were analyzed through qualitative thematic synthesis combining descriptive classification, thematic coding, constant comparison, and interpretive synthesis. The analysis began with familiarization, during which each selected article was read to identify its central arguments, technological context, findings, and relevance to introductory accounting. Initial codes were then assigned to recurring concepts before related codes were organized into higher-order categories and interpreted across studies. This procedure was informed by Braun and Clarke's (2021) thematic analysis principles and by literature review guidelines emphasizing the organization, comparison, integration, and reinterpretation of fragmented bodies of scholarly knowledge (Kraus et al., 2022; Lim et al., 2022). The analysis was structured around an evolutionary continuum consisting of traditional manual bookkeeping, computerized accounting, cloud-based accounting, automated accounting processes and data analytics, and AI-supported accounting. A cross-cutting category concerning implications for introductory accounting education was also incorporated. For example, studies concerning cloud-based accounting were interpreted in relation to changes in transaction processing and advisory work (Ma et al., 2021), whereas research on artificial intelligence was used to

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examine changes in accountants' tasks, technological competencies, and accounting education (Leitner-Hanetseder et al., 2021; Ballantine et al., 2024; Fachrurrozie et al., 2025). The synthesis therefore moved beyond descriptive summarization by comparing similarities, differences, continuities, and shifts across the literature, ultimately producing an integrated explanation of how traditional accounting principles have persisted while their operational execution has progressively become digitalized.

Ethical Considerations

This study relied exclusively on publicly accessible secondary scholarly literature and did not involve human participants, experimental interventions, personal identifiers, confidential organizational records, or primary data collection. Consequently, participant informed consent and human-subject procedures were not applicable to the present research design. Nevertheless, research ethics were maintained through accurate attribution of intellectual contributions, transparent documentation of the literature selection process, avoidance of selective misrepresentation, faithful interpretation of original findings, and adherence to academic citation practices, consistent with general principles of responsible research emphasized by Sugiyono (2022) and Sudaryono (2021). Particular attention was also paid to transparency and reproducibility in reporting literature searches and eligibility decisions, following relevant principles presented by Page et al. (2021) and Rethlefsen et al. (2021). No findings were intentionally altered to support predetermined arguments, and contradictory perspectives, such as the opportunities and educational risks associated with artificial intelligence, were retained during synthesis (Ballantine et al., 2024; Haugland Sundkvist & Kulset, 2024). Because no human or identifiable personal data were collected, formal ethical clearance is generally not required for this type of literature-based study, subject to the specific ethical policies of the authors' institution and target journal.

RESULTS AND DISCUSSION

I. RESULTS

II. Overview of the Literature Synthesis

The qualitative synthesis of 51 eligible articles identified a consistent transformation in introductory accounting practices from manually executed bookkeeping procedures toward increasingly integrated, automated, and intelligent accounting environments. Across the reviewed literature, this transformation could be organized into five sequential yet overlapping stages: traditional manual bookkeeping,

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computerized accounting, cloud-based accounting, automated and data-driven accounting, and artificial intelligence-supported accounting. The findings indicate that the fundamental accounting cycle has remained conceptually stable throughout these stages. Transaction identification, classification, journalizing, posting, adjustment, reconciliation, reporting, and interpretation continue to constitute the core structure of introductory accounting. However, the mechanisms through which these activities are performed have changed substantially as digital technologies have become embedded in accounting systems. The reviewed studies consistently showed that digitalization has shifted accounting practice from direct manual processing toward technology-assisted processing, real-time information access, automated classification, integrated reporting, and increasingly intelligent analytical support (Ma et al., 2021; Leitner-Hanetseder et al., 2021; Coman et al., 2022).

Table 1. Evolution of Introductory Accounting Practices from Traditional Bookkeeping to Digital Accounting

Evolutionary Stage	Dominant Accounting Practice	Processing Characteristics	Main Changes Identified
Traditional manual bookkeeping	Physical journals, ledgers, worksheets, and manual financial statements	Sequential, document-based, and manually calculated	Strong emphasis on procedural bookkeeping and understanding debit-credit relationships
Computerized accounting	Desktop accounting software and spreadsheets	Electronic recording and automated calculations	Reduction of repetitive calculations and faster preparation of financial statements
Cloud-based accounting	Online accounting platforms and integrated databases	Real-time, remotely accessible, and interconnected	Continuous data access, automatic synchronization, and increased integration

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Evolutionary Stage	Dominant Accounting Practice	Processing Characteristics	Main Changes Identified
Automated and data-driven accounting	Robotic process automation, analytics, dashboards, and integrated information systems	Automated processing and enhanced analytical capability	Reduced routine data entry and greater emphasis on analysis and monitoring
AI-supported accounting	Artificial intelligence, machine learning, and generative AI applications	Intelligent assistance, pattern recognition, prediction, and automated interpretation	Expansion of analytical support and increased importance of professional judgment

The first major finding concerns the continuity of fundamental accounting principles despite substantial changes in operational procedures. Traditional bookkeeping requires accountants or students to manually identify transactions, determine debit and credit effects, record journal entries, post transactions into ledgers, prepare trial balances, make adjustments, and construct financial statements. In computerized environments, these processes remain conceptually present, but several mechanical tasks are transferred to accounting software. The reviewed evidence therefore showed that digital accounting does not replace the logic of double-entry bookkeeping. Instead, it changes the level at which users directly interact with that logic. In computerized and cloud-based systems, transaction data entered once may automatically affect subsidiary records, general ledgers, trial balances, and financial statements. Consequently, manual repetition decreases while the need to understand the accounting consequences of electronically processed transactions remains evident (Ma et al., 2021; Moore & Felo, 2022; Tsay et al., 2023).

Transformation of Fundamental Accounting Activities

A more detailed comparison revealed different levels of technological transformation across the main activities taught in introductory accounting. Transaction recording showed the most visible transition from handwritten journals toward automated

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digital capture. Classification and ledger posting also became increasingly system-driven as computerized and cloud-based platforms automatically assign or transfer transaction information to relevant accounts. Reconciliation and adjustment processes remained dependent on accounting knowledge, although digital systems increasingly assist users by detecting inconsistencies, matching transactions, and generating preliminary adjustment information. Financial reporting experienced a substantial change in processing speed because digital accounting systems can produce statements directly from continuously updated databases. Finally, interpretation emerged as an increasingly prominent activity as automation reduced the proportion of time required for routine processing and expanded access to real-time financial information (Leitner-Hanetseder et al., 2021; Coman et al., 2022; Tiron-Tudor et al., 2025).

Table 2. Changes in Fundamental Accounting Activities Across Digitalization

Accounting Activity	Traditional Practice	Digital Practice	Main Finding
Transaction recording	Manual journal entry from source documents	Electronic input, automatic import, and digital capture	Recording becomes faster and less dependent on repetitive manual entry
Classification	Manual identification of accounts	System-supported account coding and categorization	Classification becomes increasingly automated
Ledger posting	Manual transfer from journals to ledgers	Automatic posting within accounting systems	Mechanical posting is substantially reduced
Reconciliation	Manual comparison of records	Automated matching and exception identification	Digital systems assist detection of discrepancies
Adjustments	Manual calculation and journal preparation	System-assisted adjustment and calculation	Conceptual judgment remains necessary
Financial reporting	Periodic manual preparation	Automated and real-time report generation	Reporting becomes faster and more continuous

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Accounting Activity	Traditional Practice	Digital Practice	Main Finding
Interpretation	Primarily conducted after statement preparation	Supported by dashboards, analytics, and AI tools	Greater attention shifts toward analysis and decision support

The findings further showed that the transition from computerized to cloud-based accounting represented a significant change in the accessibility and integration of accounting information. Computerized accounting primarily replaced handwritten procedures with electronic processing within locally installed systems, whereas cloud accounting enabled accounting information to be accessed and updated through interconnected online platforms. Ma et al. (2021) reported that cloud-based client accounting changed both transaction processing and service delivery by providing more timely accounting information and reducing dependence on traditional compliance-oriented activities. Across the reviewed literature, cloud technology was associated with real-time access, data synchronization, remote collaboration, and greater integration between accounting records and other organizational information. These characteristics marked a transition from accounting as a predominantly periodic recording process toward accounting as a more continuous information process.

Emergence of Automation, Analytics, and Artificial Intelligence

The third major finding concerned the growing role of automation, data analytics, and artificial intelligence in contemporary accounting. The reviewed literature demonstrated that repetitive accounting activities are increasingly performed with limited direct human intervention. Automated systems can process recurring transactions, generate accounting records, reconcile selected accounts, and produce standardized financial reports. At the same time, data analytics extends accounting activities beyond transaction processing by enabling users to examine larger datasets, identify trends, monitor indicators, and visualize financial information. Moore and Felo (2022) identified the increasing importance of analytics and technology in accounting education, while Handoyo (2024) found that artificial intelligence, accounting information systems, big data, and information technology have become prominent themes in recent accounting education literature. These findings indicate that digital accounting has progressively expanded from electronic bookkeeping toward data-oriented accounting environments.

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Artificial intelligence represented the most advanced stage identified in the reviewed literature. AI-supported accounting applications were associated with automated pattern recognition, classification support, information generation, anomaly identification, predictive analysis, and assistance with interpretation. However, the synthesis showed that AI did not eliminate the role of accounting knowledge. Instead, it altered the distribution of activities between human accountants and digital systems. Leitner-Hanetseder et al. (2021) documented changes in the tasks and roles of accountants in AI-based environments, while Tiron-Tudor et al. (2025) identified growing demand for digital and analytical capabilities alongside conventional accounting competencies. Within accounting education, Fachrurrozie et al. (2025) also found evidence of AI use among Indonesian accounting educators, particularly for preparing learning materials and supporting academic activities. Thus, the reviewed literature showed a consistent movement from systems that merely record and calculate accounting information toward systems capable of supporting classification, analysis, and interpretation.

Table 3. Major Digital Technologies Identified in the Evolution of Accounting Practices

Technology	Primary Accounting Function	Change Observed in Introductory Accounting Practice
Spreadsheets	Calculation and tabulation	Reduces repetitive arithmetic procedures
Accounting software	Recording, posting, adjustment, and reporting	Automates major parts of the accounting cycle
Cloud accounting	Real-time recording and integrated reporting	Enables continuous and remotely accessible accounting
Data analytics	Analysis and visualization	Expands accounting from preparation toward interpretation
Automation tools	Repetitive transaction processing	Reduces manual processing requirements

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Technology	Primary Accounting Function	Change Observed in Introductory Accounting Practice
Artificial intelligence	Classification, analysis, prediction, and information support	Increases the importance of verification and professional judgment
Generative AI	Explanation, information generation, and learning assistance	Introduces new forms of technology-assisted accounting learning

III. Implications for Introductory Accounting Knowledge and Education

The fourth major finding relates to changes in the competencies associated with introductory accounting. The reviewed literature showed that traditional procedural knowledge remains necessary, but it is increasingly combined with digital, analytical, and evaluative competencies. Students are still expected to understand the accounting equation, debit and credit principles, transaction analysis, adjusting entries, and financial statement relationships. However, contemporary accounting environments also require students to understand how these principles are implemented through accounting information systems. Studies addressing accounting curriculum and technology consistently reported increasing attention to digital systems, analytics, artificial intelligence, and information literacy (Moore & Felo, 2022; Handoyo, 2024; Abdo-Salloum & Al-Mousawi, 2025). The synthesis therefore identified a transition in introductory accounting from a predominantly procedural orientation toward a combined conceptual, technological, and analytical orientation.

This pattern was particularly visible in studies examining accounting education in the context of artificial intelligence. Haugland Sundkvist and Kulset (2024) found that students recognized the usefulness of generative AI for accounting learning while simultaneously expressing concerns regarding the reliability of generated information. Ballantine et al. (2024) similarly identified both educational opportunities and limitations associated with AI integration. Across these studies, technological proficiency was not presented as a substitute for accounting knowledge. Instead, the literature indicated that students need sufficient conceptual understanding to evaluate technologically generated accounting outputs. Abdo-Salloum and Al-Mousawi (2025) further highlighted the relevance of technology readiness, perceptions, and digital competence for AI adoption in accounting curricula. Accordingly, the findings demonstrate that contemporary

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introductory accounting increasingly requires the simultaneous development of foundational accounting understanding and the ability to interact critically with digital systems.

Table 4. Evolution of Competencies in Introductory Accounting

Competency Area	Traditional Emphasis	Emerging Digital Emphasis
Accounting concepts	Accounting equation, debit-credit rules, accounting cycle	Continued as foundational knowledge
Procedural skills	Journalizing, posting, trial balance preparation	Understanding automated accounting workflows
Calculation skills	Manual calculation and reconciliation	Verification of system-generated calculations
Reporting	Manual financial statement preparation	Interpretation of automatically generated reports
Technology	Limited use of basic software	Accounting systems, cloud platforms, analytics, and AI
Analysis	Basic interpretation of financial statements	Data-driven analysis and dashboard interpretation
Professional judgment	Applied mainly after accounting processing	Required throughout technology-assisted accounting
Information evaluation	Verification of source documents	Verification of digital and AI-generated information

Integrated Findings

Overall, the synthesis identified a clear evolutionary continuum in introductory accounting practices. The transition began with manual bookkeeping, where individuals directly performed almost every stage of the accounting cycle, progressed toward computerized accounting that automated calculation and posting, and subsequently moved to cloud-based accounting that enabled integrated and real-time information processing. More recent developments introduced automation and analytics that reduced repetitive processing and expanded analytical capacity, followed by artificial intelligence that increasingly supports classification, prediction, information generation,

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and interpretation. Despite these operational changes, the basic conceptual structure of accounting remained visible throughout all stages. The findings therefore indicate that technological evolution has primarily transformed how accounting activities are performed rather than eliminating what accounting fundamentally represents.

The synthesis also showed a parallel change in the role of introductory accounting education. Earlier forms of instruction were predominantly oriented toward demonstrating the mechanics of the accounting cycle, whereas contemporary literature increasingly positions introductory accounting as a foundation for understanding both accounting principles and their application within digital environments. Tsay et al. (2023) demonstrated the relevance of redesigning introductory financial accounting learning, while Handoyo (2024) documented the broader movement of accounting education toward information technology and digitally oriented competencies. When considered together with studies on AI readiness and AI-supported learning (Abdo-Salloum & Al-Mousawi, 2025; Fachrurrozie et al., 2025), the results indicate that introductory accounting is evolving from a bookkeeping-centered subject toward an integrated foundation encompassing conceptual accounting knowledge, digital accounting processes, analytical skills, and critical evaluation of technology-generated information. These findings directly address the objectives of this review by demonstrating the transformation of fundamental accounting activities, identifying the principal technologies associated with that transformation, and mapping the resulting changes in introductory accounting knowledge and competencies.

DISCUSSION

The findings of this review demonstrate that the evolution from traditional bookkeeping to digital accounting is best understood as a transformation in the execution of accounting activities rather than a replacement of the fundamental logic of accounting itself. Across the reviewed literature, the principles of transaction recognition, classification, double-entry recording, adjustment, reconciliation, reporting, and interpretation remain central, even as the technological infrastructure supporting these activities has shifted from manual ledgers to computerized systems, cloud platforms, automated workflows, data analytics, and artificial intelligence. This continuity is important because it suggests that digital transformation does not render introductory accounting knowledge obsolete. Instead, it changes the level at which accountants and students interact with accounting procedures. Ma et al. (2021) similarly show that cloud-based accounting alters service delivery and processing structures without removing the

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underlying accounting function, while Coman et al. (2022) characterize digitalization as a broader paradigm shift in the professional environment of accounting. In parallel, Leitner-Hanetseder et al. (2021) demonstrate that AI changes the distribution of accounting tasks between humans and intelligent systems, reinforcing the interpretation that technological development restructures accounting work rather than eliminates its conceptual foundations.

This finding can be interpreted as evidence of a progressive separation between accounting logic and routine accounting execution. In traditional bookkeeping, the accountant directly performs almost every procedural step, meaning that conceptual knowledge and operational activity are closely intertwined. In digital environments, by contrast, software increasingly performs posting, calculation, reconciliation, and report generation automatically, while the human role shifts toward input validation, exception handling, interpretation, and judgment. This shift helps explain why analytical and evaluative competencies become more important as accounting technology advances. The value of accounting knowledge therefore moves from the ability to repeatedly execute mechanical procedures toward the ability to understand whether system-generated outcomes accurately represent economic events. This interpretation is consistent with Tiron-Tudor et al. (2025), who identify growing demand for digitally enabled and analytical capabilities in the accounting profession, and with Handoyo (2024), who demonstrates that accounting education research is increasingly oriented toward information technology, artificial intelligence, and technologically mediated competencies. At the same time, Moore and Felo (2022) show that accounting technology education has expanded beyond conventional software toward analytics and broader technology-oriented skills, supporting the view that foundational accounting knowledge is increasingly embedded within a more complex digital competence framework.

The results also extend current discussions on accounting education by showing that introductory accounting should not be framed as a choice between traditional bookkeeping and digital accounting. Rather, both should be treated as complementary layers of accounting competence. Manual bookkeeping remains pedagogically relevant because it makes the structure of the accounting cycle visible and enables students to understand how economic events are translated into debits, credits, balances, and financial statements. Digital tools, however, are necessary for demonstrating how the same principles operate in contemporary accounting environments. Tsay et al. (2023) provide evidence that redesigning introductory financial accounting can improve learning

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and retention, while Moore and Felo (2022) emphasize the growing importance of technology integration in accounting education. The present review extends these observations by suggesting that curriculum redesign should preserve conceptual transparency while gradually increasing technological complexity. In other words, students should first understand the accounting logic underlying a transaction and then learn how that logic is processed, automated, and interpreted within digital systems. This position also responds to Ballantine et al. (2024), who caution against allowing artificial intelligence to intensify an excessively technical orientation in accounting education, and to Haugland Sundkvist and Kulset (2024), who show that the usefulness of generative AI is accompanied by concerns about the reliability of its outputs.

The dialogue with previous studies further indicates that artificial intelligence represents a qualitatively different stage of accounting digitalization because it does not merely accelerate existing procedures but increasingly participates in classification, prediction, explanation, and information interpretation. Earlier stages of digitalization primarily automated arithmetic and record-processing activities, whereas AI-supported accounting begins to influence tasks that previously required higher levels of human cognition. However, the reviewed evidence does not support the assumption that AI makes accounting expertise less important. On the contrary, as technological systems become more capable of generating accounting information and recommendations, professional judgment becomes more important for verifying the validity, relevance, and contextual appropriateness of those outputs. Leitner-Hanetseder et al. (2021) similarly identify a redistribution rather than disappearance of professional accounting roles, while Ballantine et al. (2024) emphasize the importance of preserving critical and human dimensions of accounting education in AI-rich environments. Evidence from accounting education also supports this interpretation. Fachrurrozie et al. (2025) show that Indonesian accounting educators are already adopting AI for teaching-related activities, whereas Abdo-Salloum and Al-Mousawi (2025) indicate that successful AI integration depends on technology readiness, digital competence, and perceptions of usefulness. Together, these studies suggest that AI literacy should be developed alongside, rather than in place of, accounting literacy.

The findings therefore provide substantive answers to the research questions underlying this review. First, fundamental accounting activities have changed mainly at the operational level, with recording, posting, reconciliation, reporting, and selected forms of analysis becoming progressively automated, integrated, and real-time. Second, the principal technologies driving this transformation include accounting software, cloud

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computing, integrated information systems, automation tools, data analytics, artificial intelligence, and generative AI. Third, these technological changes have altered the competencies associated with introductory accounting by expanding the expected learning outcomes from procedural proficiency toward an integrated combination of conceptual understanding, digital fluency, analytical reasoning, information evaluation, and professional judgment. These conclusions are consistent with the patterns identified by Ma et al. (2021) and Coman et al. (2022) regarding changing accounting processes, as well as with Handoyo (2024) and Tiron-Tudor et al. (2025) regarding the increasing importance of digitally oriented accounting competencies. Importantly, the review adds an integrative perspective by connecting these developments within a single evolutionary continuum rather than treating cloud accounting, analytics, automation, and AI as isolated innovations.

Theoretically, this study contributes to the literature by proposing that the evolution of introductory accounting can be understood through the principle of conceptual continuity and technological transformation. The conceptual core of accounting remains relatively stable, while the operational environment changes progressively as technologies assume a greater share of routine and analytical tasks. This perspective helps reconcile two strands of literature that are often treated separately: studies emphasizing the enduring importance of accounting fundamentals and studies emphasizing the disruptive effects of digital technologies. In practical terms, the findings imply that accounting curricula should be redesigned to reflect increasing technological sophistication without sacrificing conceptual depth. Introductory courses may therefore benefit from a staged learning model in which students first develop competence in transaction analysis and accounting logic, then apply these principles using computerized and cloud-based systems, and subsequently engage with analytics and AI-supported accounting tools. Such an approach is consistent with Tsay et al. (2023) and Moore and Felo (2022), while also addressing the concerns raised by Ballantine et al. (2024) and Haugland Sundkvist and Kulset (2024) regarding the risks of overreliance on technology. For educators and curriculum designers, the practical implication is that digital competence should be embedded within accounting learning outcomes rather than treated as an optional supplementary skill.

Nevertheless, the interpretation of these findings should consider several methodological limitations. First, this study used a structured narrative literature review rather than a full systematic review or meta-analysis, meaning that its purpose was interpretive synthesis rather than statistical generalization. Although transparent

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screening and thematic coding were applied, the synthesis inevitably involves researcher judgment in determining thematic relationships and the evolutionary positioning of technologies. Kraus et al. (2022) and Lim et al. (2022) note that literature reviews can generate meaningful theoretical contributions, but their robustness depends strongly on transparent search, selection, and synthesis procedures. Second, the review focused on literature published between 2021 and 2025 and relied primarily on Google Scholar, which provides broad coverage but may differ from curated databases such as Scopus or Web of Science in indexing criteria. The use of PRISMA-informed reporting principles improves methodological transparency, but it does not eliminate potential publication and database-selection bias (Page et al., 2021; Rethlefsen et al., 2021). Finally, the rapid development of generative AI means that the technological landscape may change faster than the academic literature can document. Consequently, the evolutionary continuum proposed in this study should be interpreted as an analytical framework reflecting the current state of knowledge rather than as a fixed endpoint. Future research could test this framework empirically across accounting programs, professional settings, and institutional contexts to determine how different combinations of foundational knowledge and digital competence influence accounting learning and professional performance.

CONCLUSION

This study concludes that the evolution from traditional bookkeeping to digital accounting represents a progressive transformation in how accounting activities are performed rather than a fundamental replacement of accounting principles. The synthesis revealed a developmental continuum from manual bookkeeping to computerized accounting, cloud-based systems, automated and data-driven accounting, and artificial intelligence-supported accounting, while the core processes of transaction recognition, classification, recording, adjustment, reconciliation, reporting, and interpretation remained conceptually relevant. Digitalization has reduced dependence on repetitive procedural activities and shifted introductory accounting competencies toward a combination of conceptual understanding, digital fluency, analytical reasoning, information evaluation, and professional judgment. These findings indicate that accounting education should integrate digital technologies progressively while preserving students' mastery of foundational accounting logic. Accordingly, higher education institutions and accounting educators are encouraged to redesign introductory accounting curricula by combining traditional accounting principles with practical

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exposure to accounting software, cloud platforms, analytics, and artificial intelligence. However, the findings are limited by the structured narrative review design, the use of literature published only between 2021 and 2025, reliance primarily on Google Scholar, and the interpretive nature of thematic synthesis, which may restrict broader generalization. Future research should therefore employ systematic reviews, bibliometric analyses, longitudinal designs, and empirical studies across diverse educational and professional contexts to test the proposed evolutionary framework and examine how different combinations of accounting knowledge, digital competence, and artificial intelligence literacy influence learning outcomes and professional readiness.

REFERENCES

IV. REFERENCES

Abdo-Salloum, A. M., & Al-Mousawi, H. Y. (2025). Accounting students' technology readiness, perceptions, and digital competence toward artificial intelligence adoption in accounting curricula. *Journal of Accounting Education, 70*, 100951. https://doi.org/10.1016/j.jaccedu.2025.100951

Ballantine, J., Boyce, G., & Stoner, G. (2024). A critical review of AI in accounting education: Threat and opportunity. *Critical Perspectives on Accounting, 99*, 102711. https://doi.org/10.1016/j.cpa.2024.102711

Braun, V., & Clarke, V. (2021). *Thematic analysis: A practical guide*. SAGE Publications.

Coman, D. M., Ionescu, C. A., Duică, A., Coman, M. D., Uzlau, M. C., Stanescu, S. G., & State, V. (2022). Digitization of accounting: The premise of the paradigm shift of role of the professional accountant. *Applied Sciences, 12*(7), 3359. https://doi.org/10.3390/app12073359

Emzir. (2021). *Metodologi penelitian pendidikan: Kuantitatif & kualitatif*. Rajawali Pers.

Fachrurrozie, F., Nurkhin, A., Santoso, J. T. B., Mukhibad, H., & Wolor, C. W. (2025). Exploring the use of artificial intelligence in Indonesian accounting classes. *Cogent Education, 12*(1), 2448053. https://doi.org/10.1080/2331186X.2024.2448053

Handoyo, S. (2024). Evolving paradigms in accounting education: A bibliometric study on the impact of information technology. *The International Journal of Management Education, 22*(3), 100998. https://doi.org/10.1016/j.ijme.2024.100998

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Haugland Sundkvist, C., & Kulset, E. M. (2024). Teaching accounting in the era of ChatGPT: The student perspective. *Journal of Accounting Education, 69*, 100932. https://doi.org/10.1016/j.jaccedu.2024.100932

Kraus, S., Breier, M., Lim, W. M., Dabić, M., Kumar, S., Kanbach, D., Mukherjee, D., Corvello, V., Piñeiro-Chousa, J., Liguori, E., Palacios-Marqués, D., Schiavone, F., Ferraris, A., Fernandes, C., & Ferreira, J. J. (2022). Literature reviews as independent studies: Guidelines for academic practice. *Review of Managerial Science, 16*, 2577–2595. https://doi.org/10.1007/s11846-022-00588-8

Leitner-Hanetseder, S., Lehner, O. M., Eisl, C., & Forstenlechner, C. (2021). A profession in transition: Actors, tasks and roles in AI-based accounting. *Journal of Applied Accounting Research, 22*(3), 539–556. https://doi.org/10.1108/JAAR-10-2020-0201

Lim, W. M., Kumar, S., & Ali, F. (2022). Advancing knowledge through literature reviews: 'What', 'why', and 'how to contribute'. *The Service Industries Journal, 42*(7–8), 481–513. https://doi.org/10.1080/02642069.2022.2047941

Ma, D., Fisher, R., & Nesbit, T. (2021). Cloud-based client accounting and small and medium accounting practices: Adoption and impact. *International Journal of Accounting Information Systems, 41*, 100513. https://doi.org/10.1016/j.accinf.2021.100513

Moore, W. B., & Felo, A. (2022). The evolution of accounting technology education: Analytics to STEM. *Journal of Education for Business, 97*(2), 105–111. https://doi.org/10.1080/08832323.2021.1895045

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Rethlefsen, M. L., Kirtley, S., Waffenschmidt, S., Ayala, A. P., Moher, D., Page, M. J., Koffel, J. B., & PRISMA-S Group. (2021). PRISMA-S: An extension to the PRISMA statement for reporting literature searches in systematic reviews. *Systematic Reviews, 10*(1), 39. https://doi.org/10.1186/s13643-020-01542-z

Sudaryono. (2021). *Metodologi penelitian kuantitatif, kualitatif, dan mix method* (2nd ed.). Rajawali Pers.

Sugiyono. (2022). *Metode penelitian kuantitatif, kualitatif, dan R&D* (2nd ed.). Alfabeta.

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Tiron-Tudor, A., Labaditis (Cordos), A., & Deliu, D. (2025). Future-ready digital skills in the AI era: Bridging market demands and student expectations in the accounting profession. *Technological Forecasting and Social Change, 215*, 124105. https://doi.org/10.1016/j.techfore.2025.124105

Tsay, B.-Y., Campbell, J. E., Ariail, D. L., Miller, S. K., & Shumate, L. S. (2023). Improving introductory financial accounting learning and retention through course redesign. *Journal of Accounting Education, 62*, 100816. https://doi.org/10.1016/j.jaccedu.2022.100816

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