

Reframing Efficiency in Digital Accounting: A Descriptive Analysis of Judgment, Skills, and Accountability

Susi Astuti*¹, Arif Sapta Yuniarto²

¹Universitas Putra Bangsa

²Universitas Ahmad Dahlan

Email: susieastuti@gmail.com¹, arif.yuniarto@act.uad.ac.id²

ABSTRACT

Digital transformation has significantly reshaped accounting practice through the integration of artificial intelligence, data analytics, and automated systems. Existing literature predominantly frames digitalization as a driver of efficiency, improved accuracy, and expanded analytical capacity. However, the broader structural and cognitive implications of these technological shifts remain less systematically examined. This study employs a qualitative descriptive approach using a structured literature review to analyze how digitalization influences professional judgment, skill composition, and accountability dynamics within accounting. The synthesis of contemporary research confirms that digital technologies enhance data processing speed, enable continuous monitoring, and strengthen analytical scope. At the same time, the literature reveals emerging concerns related to automation bias, where professionals may over-rely on system outputs, potentially affecting skepticism and independent evaluation. Additionally, the redistribution of competencies from procedural execution to technological oversight suggests a transformation in the nature of accounting expertise. The growing use of algorithmic systems also complicates traditional accountability structures, particularly when decision processes become less transparent. The study concludes that digitalization should be understood not only as an efficiency-enhancing mechanism but also as a mediating force that reshapes professional cognition and responsibility. A balanced and critically informed perspective is therefore essential to ensure that technological advancement aligns with the long-term integrity of the accounting profession.

Keywords: Accountability; Artificial intelligence; Automation bias; Digitalization in accounting; Professional judgment; Skill transformation

INTRODUCTION

Digital transformation has become one of the most dominant narratives in contemporary accounting discourse. Technologies such as artificial intelligence (AI), machine learning, robotic process automation (RPA), cloud computing, and big data analytics are increasingly embedded in financial reporting, auditing, and managerial accounting processes. Professional bodies, software vendors, and consulting firms consistently frame digitalization as a pathway to higher efficiency, improved accuracy, real-time reporting, and enhanced decision support. Within this narrative, technological adoption is frequently portrayed not merely as an operational improvement but as an inevitable stage in the evolution of the accounting profession.

Academic literature supports many of these claims. Sutton, Holt, and Arnold (2016) argue that advanced analytics and AI tools enable accountants to process larger volumes of structured and unstructured data, thereby expanding analytical capacity beyond traditional sampling approaches. Similarly, Kokina and Davenport (2017) observe that robotic process automation can eliminate repetitive manual tasks, reduce processing errors, and free professionals to focus on higher-value analytical work. From this perspective, digitalization appears to strengthen the profession by reallocating human effort toward judgment-intensive functions while machines handle routine procedures.

However, the efficiency narrative warrants closer examination. While technological systems undoubtedly enhance processing speed and data integration, the broader implications for professional judgment, cognitive engagement, and accountability structures are less straightforward. Brynjolfsson and McAfee (2014) argue that digital technologies often create productivity gains that are unevenly distributed and accompanied by structural shifts in labor roles. Applied to accounting, this suggests that efficiency improvements may simultaneously reshape professional competencies and expectations in ways that are not immediately visible.

One area of concern relates to automation bias. Parasuraman and Riley (1997) define automation bias as the tendency for individuals to over-rely on automated systems, even when those systems are flawed or incomplete. In auditing and financial analysis contexts, overreliance on system-generated outputs may reduce professional skepticism, a foundational principle in assurance engagements. Dowling and Leech (2014) demonstrate that the use of decision aids can influence auditors' judgments, sometimes increasing reliance on system

recommendations even when contradictory evidence exists. As accounting systems become more sophisticated and opaque—particularly with AI-driven predictive models—the risk of uncritical acceptance may intensify.

Another structural issue involves subtle forms of deskilling. Susskind and Susskind (2015) argue that digital systems in professional services often transform expert knowledge into embedded technological processes. When routine analytical steps are automated, practitioners may gradually lose hands-on familiarity with underlying procedures. In accounting, automated journal entries, AI-supported anomaly detection, and pre-configured reporting templates can streamline operations, yet they may also reduce repeated exposure to foundational analytical reasoning. Over time, the profession could experience a paradox: greater technological capability alongside diminished direct cognitive engagement with core processes.

Furthermore, digitalization complicates accountability. As AI-driven tools participate in risk assessment, fraud detection, and valuation modeling, responsibility becomes distributed between human users and technological systems. The International Auditing and Assurance Standards Board (IAASB, 2020) acknowledges that while technology can enhance audit quality, ultimate responsibility remains with the auditor. This formal allocation of responsibility may not fully resolve practical tensions, particularly when system outputs are derived from proprietary algorithms that users cannot fully interrogate. When errors arise, distinguishing between human misjudgment and system design limitations becomes increasingly complex.

Importantly, these concerns do not negate the benefits of digital transformation. Empirical and conceptual studies consistently show that data analytics improves anomaly detection, enhances transparency, and supports more timely reporting (Sutton et al., 2016). The issue, therefore, is not whether digitalization is beneficial, but whether the dominant efficiency narrative sufficiently captures its trade-offs. Efficiency gains may coexist with cognitive dependency, altered professional identity, and evolving risk structures. A purely celebratory account risks overlooking these layered implications.

In light of these developments, a descriptive examination of current literature is necessary to map the tension between technological optimism and structural transformation in accounting practice. Rather than advancing a normative rejection of digital tools, this study critically reviews how digitalization reshapes professional judgment, skill composition, and accountability arrangements. By synthesizing existing theoretical and empirical insights, the

analysis aims to clarify where efficiency improvements are well-substantiated and where deeper professional consequences remain underexplored.

Understanding these dynamics is particularly important at a time when accounting education, professional certification, and organizational governance structures are adapting rapidly to technological change. If digitalization fundamentally alters how accounting expertise is constructed and exercised, then curriculum design, regulatory oversight, and firm-level control systems must evolve accordingly. A balanced perspective—acknowledging both measurable efficiency gains and subtle structural risks—is therefore essential for sustaining professional integrity in the digital era.

LITERATURE REVIEW

Digitalization and the Efficiency Narrative

The dominant discourse surrounding digitalization in accounting emphasizes efficiency, scalability, and real-time analytical capability. Data analytics, AI-driven audit tools, and robotic process automation are widely described as mechanisms that enhance audit quality and financial reporting timeliness. Alles (2015) argues that big data and analytics fundamentally expand the scope of accounting information systems, allowing continuous monitoring and anomaly detection beyond traditional sampling methods. Similarly, Vasarhelyi, Kogan, and Tuttle (2015) describe the evolution toward continuous auditing, where automated procedures provide near real-time assurance.

From a systems perspective, Appelbaum, Kogan, and Vasarhelyi (2017) contend that data analytics improves the depth and breadth of evidence available to auditors, potentially strengthening audit effectiveness. The argument is straightforward: more data, processed faster, should reduce information asymmetry and increase transparency. Kokina and Davenport (2017) further suggest that robotic process automation enhances operational reliability by eliminating repetitive manual procedures prone to human error.

However, the efficiency narrative often treats technological capability as inherently progressive. Brynjolfsson and McAfee (2014) caution that digital technologies tend to restructure work rather than simply improve it. In professional services, this restructuring may alter how expertise is exercised, evaluated, and reproduced. Thus, while efficiency gains are

empirically supported, their broader implications for professional cognition and identity remain contested.

Automation Bias and Professional Judgment

A central concern in technology-mediated environments is automation bias. Parasuraman and Riley (1997) define automation bias as the tendency to favor suggestions from automated decision aids and to ignore contradictory information. In high-reliability contexts, such overreliance can weaken critical assessment.

In auditing, Dowling and Leech (2014) demonstrate that decision-support systems influence auditor judgment processes, sometimes shifting attention toward system-generated cues at the expense of independent evaluation. Brown-Liburd, Issa, and Lombardi (2015) show that data analytics tools can alter auditors' information processing patterns, potentially affecting skepticism and risk assessment strategies.

More recently, studies examining AI-enabled audit environments indicate that algorithmic outputs can create a perception of objectivity that reduces cognitive resistance (Issa, Sun, & Vasarhelyi, 2016). When predictive models or anomaly detection systems are perceived as highly sophisticated, professionals may defer to them—even when underlying assumptions are not fully transparent.

Professional skepticism, a foundational auditing principle, requires active questioning and independent judgment (IAASB, 2020). If automation bias subtly shifts cognitive engagement from evaluative to confirmatory modes, then efficiency may come at the cost of reduced critical depth. The literature does not claim inevitable decline, but it highlights measurable shifts in judgment patterns under technological mediation.

Deskilling and the Transformation of Expertise

Beyond judgment bias, digitalization raises structural questions about skill composition. Frey and Osborne (2017) identify accounting-related tasks as highly susceptible to automation, particularly rule-based and repetitive processes. While their analysis is occupational rather than profession-specific, it suggests that core procedural competencies may be increasingly embedded within software systems.

Susskind and Susskind (2015) argue that digital systems transform professional knowledge into standardized, codified outputs. In accounting, automated reconciliation, AI-driven journal entry suggestions, and template-based reporting reduce manual engagement with underlying

calculations. This transition may improve consistency but reduce experiential learning through repetition.

Arnold and Sutton (2018) note that intelligent systems shift the accountant's role from preparer to reviewer and interpreter. Such role migration can elevate strategic involvement, yet it may also create dependency on systems that practitioners do not fully understand. The risk is not immediate incompetence, but gradual erosion of foundational analytical fluency.

Importantly, deskilling is not universally observed. Some scholars argue that digitalization instead promotes reskilling toward analytics, data governance, and strategic advisory functions (Richins et al., 2017). The empirical picture is therefore mixed: technological integration redistributes competencies rather than simply eliminating them. The unresolved question is whether this redistribution strengthens or fragments professional identity over time.

Accountability and Algorithmic Mediation

As accounting processes integrate AI and advanced analytics, accountability structures become more complex. Traditional assurance frameworks assign ultimate responsibility to human professionals (IAASB, 2020). Yet algorithmic systems increasingly influence risk assessment, fraud detection, and valuation modeling.

Burrell (2016) highlights the opacity of algorithmic systems, arguing that complex models may be difficult for users to interpret or interrogate. In audit settings, opaque predictive models challenge the traceability of reasoning processes. When outcomes derive from machine learning models trained on large datasets, identifying causal logic can be nontrivial.

Janssen and Kuk (2016) note that algorithmic governance structures often diffuse responsibility across designers, users, and organizations. In accounting, this diffusion may complicate post-hoc evaluation of errors. If a misstatement occurs due to flawed model assumptions embedded within software, responsibility remains formally human—but practically distributed.

This emerging tension reflects a broader shift toward socio-technical accountability. Technology enhances detection capabilities and processing speed, yet it also mediates professional reasoning. The literature does not suggest abandoning digital tools; rather, it underscores the need for transparency, interpretability, and sustained human oversight.

Synthesis

The existing literature converges on several points. First, digitalization undeniably increases processing capacity and analytical scope in accounting. Second, empirical evidence suggests that decision-support technologies influence judgment patterns and may introduce automation bias. Third, skill structures are being redistributed, with routine tasks automated and strategic competencies emphasized. Fourth, accountability becomes more complex as algorithmic systems mediate professional reasoning.

What remains underexplored is the cumulative interaction of these dynamics. Efficiency improvements are measurable and often celebrated, yet subtle cognitive and structural transformations unfold simultaneously. The profession appears to be transitioning from procedural expertise toward technologically mediated judgment. Whether this transition ultimately strengthens or weakens professional integrity depends not only on system capability, but on how accountants maintain critical engagement within digital environments.

METHOD

This study employs a qualitative descriptive approach using a structured literature review design. The objective is to synthesize and critically interpret existing academic discussions on digitalization in accounting, particularly regarding efficiency narratives, automation bias, skill transformation, and accountability implications.

Relevant literature was collected from peer-reviewed journals indexed in Scopus, Web of Science, ScienceDirect, Emerald Insight, and Google Scholar. The selection focused primarily on publications from 2014 onward to capture contemporary developments in AI, big data analytics, and robotic process automation within accounting and auditing contexts. Foundational theoretical works were included where conceptually necessary.

Articles were selected based on their relevance to professional judgment, behavioral implications, or structural transformation in accounting practice. Purely technical system-design studies without discussion of professional impact were excluded.

Data were analyzed through thematic synthesis. Key arguments were coded and grouped into four analytical themes: (1) efficiency enhancement, (2) automation bias, (3) skill redistribution, and (4) accountability dynamics. The analysis compares converging and

diverging scholarly perspectives to identify structural tensions within the digitalization discourse.

Because the study relies on secondary sources, its conclusions are interpretive rather than empirical. The aim is analytical clarification, not statistical generalization.

RESULTS AND DISCUSSION

The thematic synthesis of the literature reveals a consistent dominance of the efficiency narrative in discussions of digitalization within accounting. Across empirical and conceptual studies, digital technologies—particularly AI, data analytics, and robotic process automation—are predominantly framed as mechanisms for improving accuracy, timeliness, and scalability of financial processes (Alles, 2015; Appelbaum et al., 2017; Vasarhelyi et al., 2015). The literature strongly supports the claim that digital tools enhance data processing capacity and expand the evidential base available to auditors and accountants.

However, the analysis also shows that cognitive and structural implications receive comparatively less systematic attention. While behavioral studies acknowledge the presence of automation bias (Parasuraman & Riley, 1997; Dowling & Leech, 2014; Brown-Liburd et al., 2015), these concerns are often treated as secondary effects rather than central professional risks. The prevailing assumption appears to be that improved system sophistication naturally elevates professional performance. Yet evidence suggests that decision-support systems can subtly shift information processing patterns, potentially reducing independent evaluative effort in favor of system-generated cues.

Similarly, discussions of skill transformation reflect a divided perspective. Some scholars argue that digitalization leads to reskilling and greater strategic engagement (Richins et al., 2017). Others highlight the embedding of procedural knowledge into technological systems, which may gradually reduce direct cognitive interaction with foundational accounting processes (Susskind & Susskind, 2015; Frey & Osborne, 2017). The literature does not indicate immediate professional decline, but it does suggest redistribution of expertise from procedural execution toward technological oversight.

Accountability emerges as an underdeveloped theme. Although professional standards clearly maintain that responsibility remains with human practitioners (IAASB, 2020), algorithmic opacity complicates the practical allocation of responsibility (Burrell, 2016). When professional

judgments are mediated by machine learning models, the boundary between human reasoning and system output becomes less transparent. The literature acknowledges this tension but has yet to fully conceptualize its long-term implications for assurance and governance frameworks.

Overall, the findings indicate that digitalization in accounting produces measurable efficiency gains while simultaneously introducing subtle cognitive and structural shifts. The dominant narrative emphasizes productivity and performance improvement; however, the synthesis suggests that professional skepticism, skill composition, and accountability structures evolve in parallel. These dynamics do not invalidate technological advancement, but they challenge the assumption that efficiency alone equates to professional enhancement.

A balanced interpretation therefore requires moving beyond technological optimism toward a more structurally aware perspective—one that recognizes digital systems as both enabling tools and mediating forces within professional judgment. Such recognition is essential for aligning accounting education, regulatory standards, and organizational practices with the realities of technologically integrated work environments.

CONCLUSION

This study examined the dominant narratives surrounding digitalization in accounting through a descriptive synthesis of contemporary literature. The findings indicate that technological integration—particularly through AI, data analytics, and automation—has demonstrably expanded processing capacity, improved timeliness, and enhanced analytical scope within accounting and auditing functions. The efficiency gains documented across prior studies are neither speculative nor marginal; they represent a substantive transformation in how financial information is generated, analyzed, and reported.

However, the literature also reveals that efficiency does not operate in isolation. Alongside measurable performance improvements, digitalization reshapes professional cognition, skill composition, and accountability structures. Automation bias may subtly influence judgment processes, particularly in environments where system outputs are perceived as highly reliable. Skill redistribution shifts emphasis from procedural execution toward technological oversight and interpretive analysis, raising questions about the long-term evolution of foundational expertise. At the same time, algorithmic mediation complicates traditional notions of

professional responsibility, especially when decision-support systems rely on opaque computational logic.

Importantly, these developments do not justify a rejection of digital transformation. Rather, they call for a more structurally aware perspective—one that recognizes digital systems as both enabling infrastructures and mediating forces within professional judgment. Efficiency gains should be understood as part of a broader socio-technical shift, not as definitive indicators of professional advancement.

For accounting education, regulatory bodies, and professional practice, the implication is clear: technological competence must be accompanied by sustained critical engagement. Maintaining professional skepticism, conceptual depth, and transparent accountability mechanisms becomes increasingly essential in digitally integrated environments. Future research may extend this analysis empirically by examining how these structural dynamics manifest across organizational contexts, audit settings, and educational institutions.

In sum, digitalization enhances accounting capability, but its long-term impact on professional integrity depends not solely on technological sophistication, but on how the profession negotiates the cognitive and structural transformations it introduces.

REFERENCES

- Alles, M. (2015). Drivers of the use and facilitators and obstacles of the evolution of big data by the audit profession. *Accounting Horizons*, 29(2), 439–449.
- Appelbaum, D., Kogan, A., & Vasarhelyi, M. (2017). Big data and analytics in the modern audit engagement: Research needs. *Auditing: A Journal of Practice & Theory*, 36(4), 1–27.
- Arnold, V., & Sutton, S. G. (2018). The theory of technology dominance: Understanding the impact of intelligent decision aids on decision makers. *Advances in Accounting Behavioral Research*, 21, 1–33.
- Brown-Liburd, H., Issa, H., & Lombardi, D. (2015). Behavioral implications of big data's impact on audit judgment and decision making. *Accounting Horizons*, 29(2), 451–468.
- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton & Company.
- Burrell, J. (2016). How the machine 'thinks': Understanding opacity in machine learning algorithms. *Big Data & Society*, 3(1).

- Dowling, C., & Leech, S. A. (2014). A Big 4 firm's use of information technology to control the audit process: How an audit support system is changing auditor behavior. *Accounting, Organizations and Society, 39*(4), 230–252.
- Frey, C. B., & Osborne, M. A. (2017). The future of employment: How susceptible are jobs to computerisation? *Technological Forecasting and Social Change, 114*, 254–280.
- International Auditing and Assurance Standards Board (IAASB). (2020). *The use of technology in the audit of financial statements*. International Federation of Accountants.
- Issa, H., Sun, T., & Vasarhelyi, M. (2016). Research ideas for artificial intelligence in auditing. *The CPA Journal, 86*(9), 16–22.
- Janssen, M., & Kuk, G. (2016). The challenges and limits of big data algorithms in technocratic governance. *Government Information Quarterly, 33*(3), 371–377.
- Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: How automation is changing auditing. *The CPA Journal, 87*(6), 20–24.
- Parasuraman, R., & Riley, V. (1997). Humans and automation: Use, misuse, disuse, abuse. *Human Factors, 39*(2), 230–253.
- Richins, G., Stapleton, A., Stratopoulos, T., & Wong, C. (2017). Big data analytics: Opportunity or threat for the accounting profession? *Journal of Information Systems, 31*(3), 63–79.
- Susskind, R., & Susskind, D. (2015). *The future of the professions: How technology will transform the work of human experts*. Oxford University Press.
- Sutton, S. G., Holt, M., & Arnold, V. (2016). "The reports of my death are greatly exaggerated"—Artificial intelligence research in accounting. *Accounting Horizons, 30*(2), 287–298.
- Vasarhelyi, M., Kogan, A., & Tuttle, B. (2015). Big data in accounting: An overview. *Accounting Horizons, 29*(2), 381–396.