International Journal of Computer Information Systems and Industrial Management Applications
ISSN 2150-7988 Volume 18(19s) 2026 pp. 492-509
https://doi.org/10.70917/ijcisim-2026-5032
Article

Role Of Digital Accounting Transformation And Supply Chain Integration In Enhancing Financial Market Participation And Entrepreneurial Sustainability

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Abstract: Digital accounting and digitally integrated supply chains are often treated as separate operational projects, yet both determine whether small and medium-sized enterprises (SMEs) can produce credible information, demonstrate execution capacity, and engage repeatedly with formal financial markets. This study develops an integrative capability framework explaining how digital accounting transformation and supply chain integration jointly enhance financial market participation and entrepreneurial sustainability. A transparent integrative literature review was conducted using 30 peer-reviewed and authoritative institutional sources published between 1991 and June 2026. The corpus was coded for focal construct, mechanism, financing outcome, sustainability outcome, and boundary condition. The synthesis shows that digital accounting primarily improves timeliness, comparability, traceability, and verifiability of financial information, while supply chain integration converts information quality into operational evidence through coordinated procurement, inventory, sales, receivables, and partner relationships. Their complementarity reduces information asymmetry and transaction costs, strengthens forecasting and cash-flow credibility, and improves readiness for bank credit, trade and asset-based finance, fintech assessment, equity, and sustainable finance. Financial market participation then supports resilience, innovation, responsible growth, and environmental and social value creation; however, the pathway is weakened by poor data governance, capability gaps, cybersecurity exposure, incompatible systems, algorithmic bias, and power asymmetry with dominant partners. Six theory-grounded propositions and a five-stage implementation pathway are proposed. The paper contributes by repositioning accounting systems and supply-chain integration as mutually reinforcing market-participation capabilities rather than isolated efficiency tools. It also offers an auditable research agenda for longitudinal, multi-country testing.

Keywords: digital accounting transformation; supply chain integration; financial market participation; SME finance; entrepreneurial sustainability; digital capability

1. Introduction

Small and medium-sized enterprises are central to employment, innovation, regional development, and the diffusion of sustainable business practices, but they remain structurally disadvantaged in formal finance. The latest OECD scoreboard reports that SME borrowing costs remain above pre-pandemic levels in most reporting economies, collateral requirements have increased in several markets, and long-term lending is still weak despite a partial recovery

in new credit (Melville, 2010). These constraints are not caused only by scarcity of capital. They also reflect the cost and uncertainty of evaluating smaller firms whose financial records, governance arrangements, operational histories, and sustainability data are often incomplete or difficult to verify. Earlier cross-country evidence likewise shows that financing and institutional barriers constrain the growth of smaller firms more strongly than that of large firms (Henseler et al., 2014). Consequently, entrepreneurial sustainability depends not merely on obtaining a one-time loan but on building an organizational information environment that supports repeated, diversified, and responsible participation in financial markets.

Digitalisation transforms this information environment by creating cloud-based ledgers, electronic invoicing, bank feeds, tax integration, automatic reconciliation, analytics and audit trail to transform accounting from delayed information recording into continuous information processing and decision-making. Digital transformation research in general highlights that transformation is more organizational and strategic rather than being just buying a technology (Alshahrani & Hakim, 2026; Henseler et al., 2014). In the context of accounting, digitalisation modifies the nature of information in terms of quantity, speed and connectivity while cloud computing, AI, distributed data infrastructure transform the role and organizational boundary of accountants (Fülöp, 2025; Trivedi et al., 2022). In an SME, such digital transformations may create standardized information on revenues, expenses, profitability, liquidity, tax compliance, client concentrations and repayment ability.

However, information quality by itself is not enough. Digital accuracy in accounting records that is unrelated to procurement, inventory, logistics, manufacturing, selling, and partner relationships may tell us something about the past but not the future cash flow. Supply chain integration provides the solution since it brings together various functions internally and connects the organization to its partners. Early studies have established supplier and customer arcs of integration as a means to performance improvement (Abdullah et al., 2026; Mashhadi Rajabi et al., 2026), whereas more recent research has demonstrated the effectiveness of digitally enhanced process integration, balanced integration of internal and external operations, and collaboration along the supply chain in operational and business performance (Kock, 2015; Y. Zhao et al., 2021). The financial value of integration is particularly relevant to SMEs: placed orders, invoice history, inventories, deliveries, commitments, and receivables may be used as the basis for cash-flow lending, factoring, inventory financing, and risk management.

Sustainability as a factor extends the discussion from mere profitability to more comprehensive arguments. Sustainable entrepreneurship revolves around the creation and expansion of economic value without compromising the environment and promoting social goals (Cosa & Torelli, 2024; Lodhia et al., 2024). Resilience to disruptions, efficiency in resource management, trustworthy stakeholder relations, and the capacity to fund innovation form some of the factors required for sustainability. According to recent OECD research, the fragmentation, high costs, and lack of verification associated with sustainability data forms a critical factor for the underrepresentation of SMEs in sustainable finance; only where data is interoperable and well-governed will digital solutions be able to reduce the costs of reporting and monitoring (OECD, 2026b).

Existing literature is disparate from the perspectives of accounting information systems, small firm finance, supply chain management, digital entrepreneurship, and sustainable business models. Accounting-related literature tends to emphasize either information quality or professional transformation; supply-chain literature tends to emphasize operations performance; financial literature tends to highlight opacity, lending technology, and verification; while sustainability literature emphasizes the identification of opportunities and business model innovation. There are few theories that articulate the sequential interactions between these literatures. The purpose of Table 1, thus, is to make the constructs clear and their measurable content explicit. From Table 1, it can be seen that participation in financial markets is considered multidimensional in nature.

Table 1. Construct definitions and observable dimensions

Construct	Working definition	Observable dimensions	Primary outcomes

Digital accounting transformation	Reconfiguration of accounting data, processes, controls, roles, and external interfaces around digital technologies.	System and information quality; automation; real-time reporting; traceability; analytics; control maturity.	Lower reporting cost; better decisions; verifiable financial history.
Supply chain integration	Coordinated internal processes plus reciprocal information and decision links with suppliers and customers.	Internal, supplier, and customer integration; shared forecasts; traceability; synchronized decisions; relationship governance.	Operational visibility; reliable execution; cash-conversion evidence; resilience.
Financial market participation	Repeated and diversified ability to access, use, renew, and compare formal financial instruments on suitable terms.	Accounts and payments; credit; factoring/trade finance; leasing; equity; fintech; sustainable finance; affordability and continuity.	Liquidity; investment capacity; risk sharing; market discipline.
Entrepreneurial sustainability	Capacity to survive, adapt, innovate, and create economic, environmental, and social value over time.	Resilience; responsible growth; resource productivity; stakeholder value; sustainable business-model innovation.	Long-term viability and triple-value creation.

Note. Definitions synthesized from the reviewed literature.

This paper poses three research questions. First, by which means will digital transformation of the accounting system enhance the SME's capability to participate in the financial market? Second, how will supply chain integration facilitate, mediate, or qualify such a process? Finally, how will further participation in the financial market promote sustainable entrepreneurship while generating new risks in governance? This research has three contributions. Firstly, it brings information credibility and operational credibility under one framework of means. Secondly, it constructs a concept of financial market participation as a mediating capacity linking digital transformation to sustainable entrepreneurship. Finally, it offers six propositions and a staged process of implementation which can be tested using longitudinal firm-level data. This paper is explicitly evidence-based and conceptual. No primary survey or experimental data is offered.

2. Literature Review

2.1 Digital accounting transformation as an information capability

Digital transformation can be defined as organizational transformations resulting from combinations of digital technologies, change in value generation, and change in structure. Lu et al (2023) describes digital transformation through strategies, structural changes, and effects (positive and negative), whereas Verhoef et al (2021) make the distinction between digitization, digitalization, and digital transformation. In the case of accounting, such distinction is important. Transferring paper invoices into electronic files is digitization, while performing automation of reconciliation and reporting is digitalization; making decisions, controlling, financing, and partner interactions based on real-time data is digital transformation. In this paper, we use the concept of digital accounting transformation in its strongest sense.

As shown by Ramos et al (2026), big data blurs the lines that exist between data, information, and management knowledge. Mondejar et al (2021) highlight that cloud computing, big data, blockchain, and artificial intelligence are some technologies that may automate transactions and make accountants shift to more analytical and advisory

functions. The review by Knudsen (2020) gives an insight into the fact that digitalization does not eliminate politics and accountability; it just shifts knowledge, visibility, and power. All these considerations suggest that the value of accounting is generated through data architecture and governance and not simply through the adoption of any software.

Empirical research in recent years has made this link between sustainability more evident. For instance, Kabra et al (2021) use the digital accounting transformation framework in the case of banks and emphasize the need for organizational and technological integration. (Trueba et al., 2024), who apply a sequential mixed method approach to a survey of 723 small and medium-sized enterprises (SMEs) in Vietnam, find that digital accounting information systems that are effective positively affect sustainable innovation in business models, and the digital business ecosystem partially moderates this relationship. Despite the limitation of the single-country design of this study, it provides direct evidence that the accounting system can facilitate ecosystem engagement and innovation.

Regarding the financing needs, there are four qualities that matter more than others. The timeliness characteristic helps minimize the difference between accounting information and the real state of things. Comparability is needed to allow lenders and investors to compare a company over time and with its competitors. Traceability helps tie accounting records to invoices, agreements, stocks, payments, and business partners. Verifiability helps have internal controls and assurance, consistency for tax purposes, and auditing. All of these qualities combine into information qualities that can help reduce the burden of due diligence. However, this is contingent upon proper management of master data, reconciliations, authorizations, cybersecurity, and competent employees.

2.2 Financial market participation and the SME information problem

Information opacity, firm age, collateral, institutions, and technology play a crucial role in SME finance. According to Berger and Udell (2006), relationship lending, financial statement lending, asset-based lending, factoring, leasing, and credit scoring utilize information in various combinations. The use of digital accounting allows expanding this list of technology through the generation of statements, transaction history, accounts receivable history, and real-time information. This is important because formal participation constitutes a ladder where firms go from transaction account and digital payments through overdrafts, working capital loans, invoice financing, term loans, venture capital, or sustainability linked instruments.

Private companies have been found to corroborate the informational explanation. For instance, studies by Allee & Yohn (2009) indicate that private small companies make voluntary disclosures of their financial statements when it is beneficial for them to manage and communicate about their businesses and when the costs incurred in doing so are justified. According to Minnis (2011), financial statements that are verified are correlated with lower cost of debt and more importance of audit evidence by creditors. Such evidence does not necessarily mean that digital accounting inevitably leads to finance creation.

Institutional evidence currently available also expands opportunities for inclusion by going beyond traditional banking. This is evident from the Global Findex 2025 where the relationship between mobile access, payment, savings, borrowing, and resilience is examined in 141 economies (Elmobayed et al., 2023). Firm-level evidence from OECD (2026a) indicates the rising role of fintech and non-banking finance with centralized invoice registries and asset-based financing through digital means being useful in evaluating SMEs that have sparse records on credit history. In a similar manner, OECD (2026b) asserts that digital means can help in reducing the cost of collecting sustainability information, origination, credit evaluation, and portfolio management.

However, access, approval, usage, affordability, and sustainability are distinct results. The SME can have an account yet not access financing due to excessive interest rates, short tenors, requirement for collateral, or distrust. The SME can obtain financing yet continue to be overly reliant on one financier. It can embrace fintech yet be vulnerable to hidden scoring, data harvesting, or inappropriate services. Participation in the financial markets must thus be assessed through the diversity of financial instruments, conditions of terms, consistent use, renewal, and the ability of the firm to compare service providers.

2.3 Supply chain integration as operational credibility

The concept of supply chain integration is the combination of internal integration and external integration, which involves integration within the firm itself and with its suppliers and customers. Swalih et al (2024) state that companies with larger integration arcs outperform others. According to (Altaany et al., 2024), internal integration, supplier integration, and customer integration exist, and the degree of balance between different integration configurations is important for performance. The balance of integration is very important for small firms, as lack of internal process discipline with high external connectivity leads to contradictory data, and vice versa.

The digital infrastructure provides the connective fabric. As identified by De Silva et al (2024), the integration of information-technology infrastructures facilitates supply chain process integration and performance improvement. Information sharing, goal consistency, decision coordination, resource sharing, collaborative communication, collective knowledge creation, and incentive alignment are some of the dimensions recognized by Al-Hattami et al (2025) to create collaborative advantage. These dimensions can be interpreted in terms of finance. Forecasts shared between firms minimize uncertainty regarding working capital requirement; order and delivery synchronization verify cash conversion; integrated accounts receivable facilitate factoring; histories of suppliers minimize continuity risk; and traceability proves sustainability.

Studies on SMEs emphasize this connection. H. M. Al-Hattami, (2022) investigate the connection between sustainability orientation, supply chain integration, and SME performance, which demonstrates how integration is beneficial for converting orientation into results. Melville, (2010) offer an example of Tanzanian manufacturing SMEs where the capability to integrate supply chains through ICT leads to financial performance. This research contributes more relevance to the topic, but at the same time highlights some limitations, including the inability of cross-sectional designs to prove directionality, the possibility of shared method variance in perceptual performance measures, and non-generalizability to the context of service and platform businesses.

It adds the time element to the equation. Petcu et al (2024) suggest a workable model of supply chain which encompasses agility, resilience, and sustainability amidst disruption. To the entrepreneur, this implies that financing decisions must factor in the margins and other elements such as supplier concentration, substitute availability, variability in lead times, inventories, and ability to recover. By incorporating the variables into the accounting information, there will be an honest story on financing.

2.4 Entrepreneurial sustainability and digital opportunity

Sustainable entrepreneurship is the result of entrepreneurs identifying and acting upon market failures that cause negative environmental or social impacts. According to Sahibzada et al (2025), market inefficiencies, externalities, pricing problems, and information imbalances are opportunities for entrepreneurs. Similar reasoning applies from Grewal et al (2021), who describe how entrepreneurial activity can lessen the environmental destruction caused by market failures. From such frameworks, finance and information become enabling factors – without which, the creation of opportunities is not possible.

L. Zhao et al (2023) differentiate sustainable entrepreneurship approaches depending on how important the sustainability aims are, market implications, and innovation aspects. H. M. Al-Hattami (2026) apply the same concept of sustainable entrepreneurship models by presenting five business model archetypes – resource efficiency, value from waste, stewardship, sufficiency, and scalability. Digital accounting allows to measure cost reductions, lifecycle income, resource efficiency, and waste avoidance, while supply chain management allows to prove sustainability of sourcing, traceability, take-back process, and commitments from partners.

Digital entrepreneurship also transforms opportunity creation. According to Li et al (2024), the use of digital technology makes entrepreneurial activities less constrained and more distributed via artifacts, platforms, and ecosystems. This makes it easier for SMEs to reach their customers and sources of finance; however, it also implies greater reliance on platforms that have control over data and rules. As such, sustainable entrepreneurship means having

strategic autonomy, the ability to transfer data, and ability to reconfigure alliances. Participation in finance becomes beneficial when it builds these competencies.

2.5 Theoretical integration and research gap

The resource-based view explains why digital accounting architecture, data quality, financial expertise, supplier relationships, and customer knowledge can become valuable organizational resources when they are combined and effectively governed (Barney, 1991). Dynamic-capabilities theory explains how entrepreneurs sense changes in demand, finance, regulation, and supply risk; seize opportunities through investment and partnerships; and reconfigure processes and resources as conditions evolve (Soomro et al., 2024). Neither theory implies that technology is inherently advantageous. Advantage arises from complementary routines that are difficult to imitate and that permit repeated adaptation.

Table 2 summarizes representative studies across the four literature streams and highlights the discontinuity addressed here. Accounting studies rarely model supply-chain evidence; supply-chain studies usually treat finance as a performance indicator rather than a market-participation process; and sustainability research often under-specifies the information architecture required for external finance. Figure 1 resolves the gap by linking two complementary capabilities to information and operational credibility, then to financial market participation and entrepreneurial sustainability. The feedback arrow in Figure 1 indicates cumulative causation: better finance can fund further digitalization, assurance, integration, and sustainability innovation.

Table 2. Representative cross-domain evidence and unresolved gaps

Study	**Evidence or context**	**Contribution to the framework**	**Limitation/gap**
(H. Al-Hattami, 2025)	Conceptual accounting analysis	Digital data alter accounting information, knowledge, and strategic use.	Does not test SME financing outcomes.
(Zahoor et al., 2023)	Accounting literature review	Cloud, big data, blockchain, and AI reshape accounting work and decision support.	Technology potential exceeds causal evidence.
(Soomro et al., 2024)	Mixed methods; 723 Vietnamese SMEs	Effective digital accounting supports sustainable business-model innovation; ecosystem partially mediates.	Single country, self-report, cross-sectional phase.
(Arnaud et al., 2024)	Privately held small U.S. firms	Explains voluntary demand for financial statements and external use.	Predates contemporary cloud and platform data.
(Vial, 2019)	Private-firm debt financing	Verification improves the usefulness of statements in debt pricing.	Audit evidence is not equivalent to digital capability.
(Nikou et al., 2022)	Digitally enabled supply chains	Integrated IT infrastructure enables higher-order process integration and performance.	Financial participation is not modeled.

(Fülöp, 2025)	Manufacturing integration configurations	Internal, supplier, and customer integration must be strong and balanced.	Context limits inference for micro and service firms.
(Kock, 2015)	SMEs; sustainability orientation	Integration helps translate sustainability orientation into performance.	Financing mechanism remains implicit.
(Y. Zhao et al., 2021)	Tanzanian manufacturing SMEs	ICT-enabled integration is associated with financial performance.	Cross-sectional and country-specific.
(Verhoef et al., 2021)	SME sustainable-finance policy analysis	Digital tools can reduce data, origination, assessment, and monitoring frictions.	Applications remain emergent; governance varies.
(Henseler et al., 2014)	Literature/practice review	Business-model archetypes specify pathways for sustainability value creation.	Data and financing architecture under-specified.

Note. Author synthesis of representative studies in the 30-source corpus.

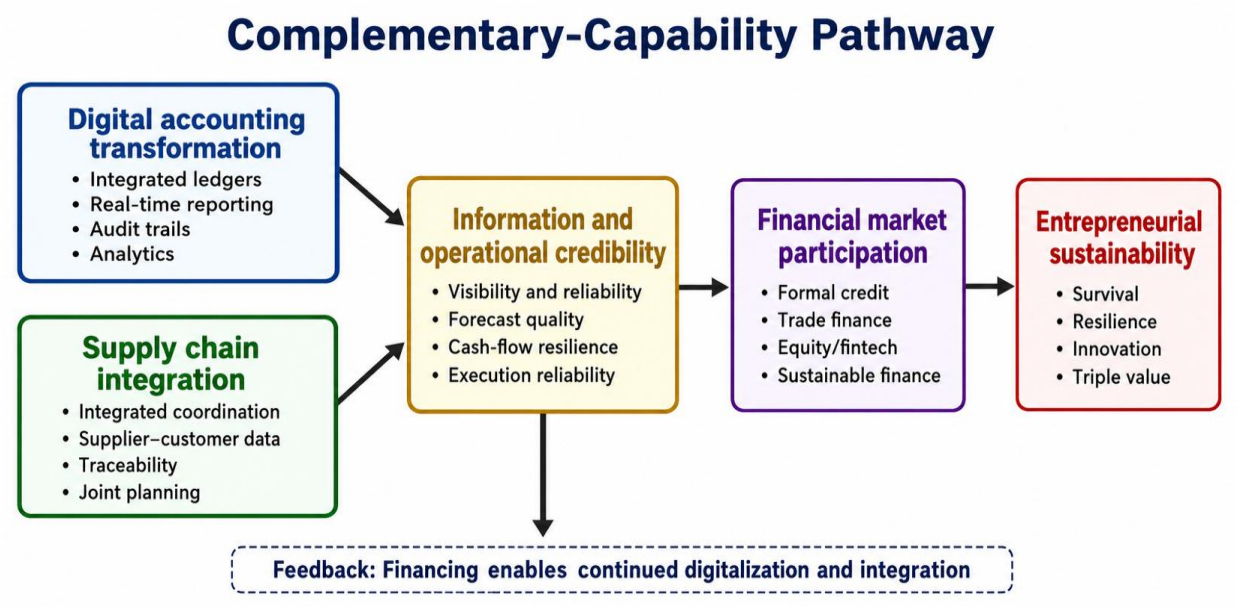

Figure 1. Integrated framework linking complementary capabilities to financial market participation and entrepreneurial sustainability

3. Research Methodology

3.1 Review design

The study uses an integrative literature-review design. Integrative reviews are appropriate when a research problem spans mature and emerging fields, contains diverse empirical and conceptual evidence, and requires a new framework rather than a pooled effect estimate. Arnaud et al (2024) emphasizes that a literature review is a research methodology when its purpose, search logic, selection, analysis, and contribution are transparent. Vial (2019) also points out that in an integrative review, past knowledge is supposed to be systematically organized and a model,

taxonomy, or research agenda needs to be developed. The above criteria match well with the current research goal since the variables under study have been operationalized differently in accounting, information systems, finance, operations, and entrepreneurship literature.

The unit of analysis chosen for this paper was publication rather than an empirical estimation by one researcher. The eligible publications for this integrative review include peer-reviewed journal articles as well as authoritative institutional reports that contribute to one of the five focal links: digital transformation of accounting, information credibility, involvement of small businesses in financial markets, supply chain integration, and entrepreneurial sustainability. The temporal window was 1991 to June 2026. The lower boundary captures the resource-based view that underpins the capability argument; the upper boundary incorporates the latest available OECD evidence on SME finance and digital sustainable-finance tools.

3.2 Search, verification, and selection

Searches were conducted iteratively in July 2026 through publisher webpages, DOI-indexed scholarly records, university repositories, and the official websites of the OECD and World Bank. Search strings combined construct and outcome terms, for example: (digital accounting OR accounting information system OR accounting digital transformation) AND (SME OR entrepreneur OR private firm); (supply chain integration OR collaboration OR traceability) AND (financial performance OR finance OR SME); and (sustainable entrepreneurship OR sustainable business model) AND (digital OR finance OR supply chain). Backward and forward reference chaining was used to connect recent studies with foundational work. Table 3 records the search logic and eligibility rules.

Table 3. Search strategy and eligibility protocol

Element	Search/selection specification	Purpose	Integrity safeguard
Scope	1991–June 2026; English; SMEs/private firms emphasized; multi-disciplinary.	Capture foundations and current digital-finance developments.	Dates and source types stated explicitly.
Search concepts	Digital accounting/AIS; supply-chain integration; SME finance; financial reporting; sustainable/digital entrepreneurship.	Identify each construct and cross-domain link.	Multiple synonyms and reference chaining.
Sources	Publisher pages, DOI records, university repositories, OECD and World Bank sites.	Verify bibliographic identity and substantive relevance.	No unverifiable references retained.
Inclusion	Peer-reviewed or authoritative institutional source; non-redundant mechanism or boundary condition.	Build a compact, auditable theory corpus.	All 30 items listed in References.
Exclusion	Household-only market participation; opinion; technical software descriptions; duplicates; incomplete metadata.	Maintain organizational focus and evidence quality.	Reasons defined before synthesis.

Reporting	Final corpus reported; unstable initial web-result counters omitted.	Avoid false PRISMA-style precision in open search interfaces.	Workflow disclosed in Figure 2.

Note. Protocol designed for a transparent integrative review; unstable initial web-result counters were not used.

A source was included when bibliographic metadata could be verified, the argument or design was relevant to a focal mechanism, and the publication added non-redundant evidence. Exclusion criteria were unverifiable references, opinion pieces without an evidence base, studies focused only on household investment behavior, purely technical software descriptions, and duplicate versions of the same study. Because open scholarly interfaces return unstable and personalized result counters, the review does not present a pseudo-precise number of initial hits. Instead, it reports the final auditable corpus of 30 fully enumerated sources. Figure 2 depicts the five-stage workflow and explicitly distinguishes scope, search, screening, coding, and synthesis.

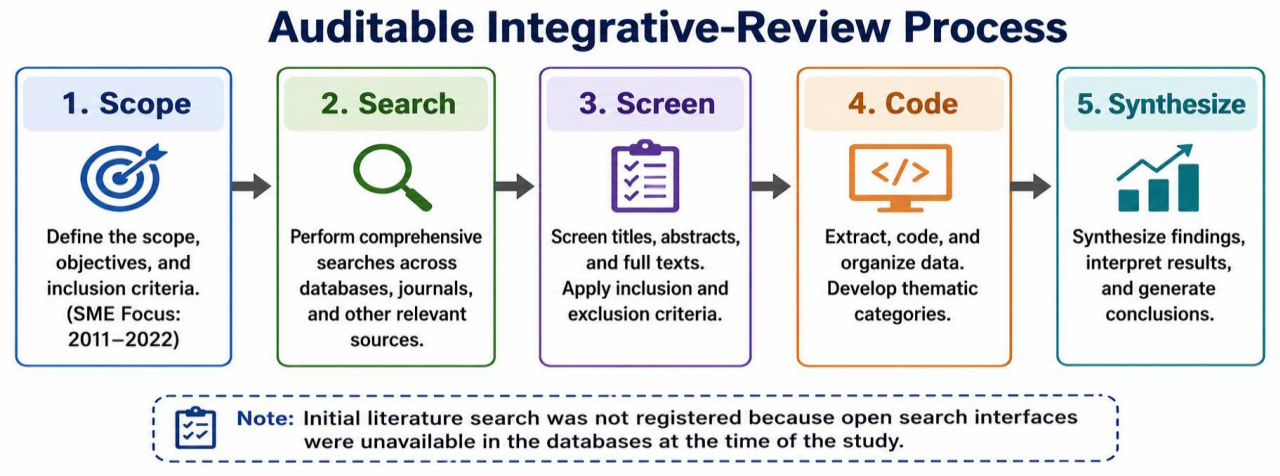

Figure 2. Integrative review and synthesis workflow

3.3 Corpus composition and coding

The thirty sources were intentionally equally distributed across areas of research: seven addressed digital accounting or organizational digital transformation; seven covered SME finances, financial reporting or financial inclusion; seven addressed supply chain integration, connectivity or resilience; five built sustainable or digital entrepreneurship; two provided capability theories; and two defined the integrative review approach. A source could also receive the secondary code related to another area, if its contribution transcended area boundaries; however, primary codes were exclusive to each other for the purposes of descriptive reporting.

A coding sheet guided the systematic coding of publication year, source type, focal level, technology or capability, information mechanism, operational mechanism, financing pathway, sustainability outcome, theoretical perspective, evidence form and boundary condition. Codes and definitions are presented in Table 4. The analysis went through three stages. At first, within-area synthesis identified common mechanisms and disagreements. Secondly, cross-area comparison revealed concepts that fulfilled identical functions under different names such as traceability, verification, visibility, information quality, etc. Finally, causal ordering was created based on the question of what should be present before an SME could provide credible evidence, apply it in financing, get and utilize finances, and sustain value creation.

Table 4. Analytical coding framework

Code family	Illustrative codes	Analytical question	Framework role

Capability	Automation, analytics, internal integration, supplier/customer integration, assurance.	What organizational ability is developed?	Independent/complementary capability.
Information mechanism	Timeliness, comparability, traceability, visibility, verifiability.	How is uncertainty or processing cost reduced?	Information credibility mediator.
Operational mechanism	Forecasting, cash conversion, reliability, traceability, resilience.	How is execution capacity demonstrated?	Operational credibility mediator.
Finance outcome	Access, use, cost, maturity, breadth, renewal, sustainable finance.	Which form and quality of participation changes?	Intermediate organizational outcome.
Sustainability outcome	Survival, innovation, resource efficiency, responsible growth, triple value.	What persists or improves over time?	Dependent outcome.
Boundary condition	Skills, cybersecurity, institutions, interoperability, bias, partner power.	When is the pathway strengthened or weakened?	Moderator/risk mechanism.

Note. Codes were applied at publication level and compared within and across domains.

3.4 Analytical rigor and limitations

These measures included explicit documentation of sources, verification via DOI or institution, construct definitions, distinction between empirical findings and conceptual inferences, and negative case analysis. For instance, the framework does not consider software usage as transformation, financial access as utilization, or sustainability reporting as verified impact. It also considers the presence of opposing forces such as surveillance, cyber security risks, data lock-in, bias in automated assessment, and asymmetric bargaining power. The propositions have been included in the final framework provided that they have been supported by at least two literature strands or one literature strand along with institutional support.

There are weaknesses to this method. It does not conduct an exhaustive systematic review but an integrative one, it is unable to reproduce searches in subscription-based databases and does not conduct pooling of effect sizes. The corpus is dominated by English language publications and established sources, hence may ignore recent working papers or local practices. The coding was theory-led and interpretative; hence inter-coder agreement should be tested in a future team-led review. This weakness limits completeness claims but does not affect the nature of the framework.

4. Results and Discussion

4.1 Descriptive pattern of the evidence

The 30-source corpus covers 35 years but focuses heavily on the era when the topic of organizational digitalization became one of the main areas of research. Six sources have been published during 1991-2006, seven between 2007-2013, ten during 2014-2020, and seven from 2021 up to June 2026. Eleven sources include empirical firm or organizational data, sixteen represent conceptual, theoretical, review, and methodological publications, and three sources are institutional reports. The distribution of sources described in Table 5 is adequate for developing theories but also demonstrates why the paper suggests relationships but does not estimate their magnitude.

Table 5. Composition of the 30-source evidence corpus

Evidence pattern	Category	Number	Share of corpus	Interpretation
Primary domain	Digital accounting/transformation	7	23.3%	Strong conceptual base; limited direct finance-term testing.
Primary domain	SME finance/reporting/inclusion	7	23.3%	Clear information-asymmetry mechanism.
Primary domain	Supply-chain integration/resilience	7	23.3%	Consistent operational-performance pathway.
Primary domain	Sustainable/digital entrepreneurship	5	16.7%	Provides long-term value and opportunity logic.
Primary domain	Capability theory	2	6.7%	Explains complementarity and reconfiguration.
Primary domain	Review methodology	2	6.7%	Supports transparent integrative synthesis.
Source type	Empirical organizational studies	11	36.7%	Sufficient for propositions, not pooled estimates.
Source type	Conceptual/review/theory/method	16	53.3%	Dominant theory-building evidence.
Source type	Institutional reports	3	10.0%	Current market and policy context.

Note. Primary-domain categories are mutually exclusive; source-type categories are separately reported.

There are three main observations. Firstly, while both accounting and finance focus on the importance of credibility and verifiability of information, digital accounting literature fails to study financing arrangements. Secondly, supply chain literature always confirms integration-performance relations, whereas finance is usually considered as an end rather than a process with certain instruments and information involved. Thirdly, sustainability literature provides an argument about long-term value, whereas the most recent institutional evidence demonstrates that costs of generating and verifying information prevent many SMEs from taking advantage of sustainable finance. The gap lies in the demonstration of the mechanism through which financial and operational information is transformed into reusable market information.

4.2 Digital accounting creates financial visibility but not automatic access

A key insight from the first result is that digital accounting enhances financial transparency via four inter-related characteristics: timeliness, consistency, granularity, and auditability. Automation of bank feed and reconciliation reduces delays; standardization of charts of account and reporting processes ensures consistency; granular transactions allow revenues, costs, and drivers of working capital to be observable; and linked documents allow for an audit trail.

Such characteristics make the creation of loan packages and responses to due diligence inquiries easier. Continuous monitoring once funding is provided could help in reducing transaction costs over subsequent interactions.

This mechanism expands on the reporting experience in private firms. In case lending rewards validated information (L. Zhao et al., 2023), digitalization can make validation less of an episodic event by maintaining documentation and controlling. In case small firms willingly prepare statements when requested by various users (Arnaud et al., 2024), interoperable accounting can help in reducing the incremental cost of providing statements for multiple users. The point is not that electronic accounting replaces assurance, collateral, relationships, or sustainable cash flows. Rather, it expands the set of possible financial technologies described by Berger and Udell (2006), specifically financial statement lending, cash flow scoring, asset based lending, and factoring.

Further evidence shows that there could be a tipping point effect. Simple digitization can increase administrative efficiency but not alter market participation. Digital transformation takes place only if accounting systems are linked to decision-making, control, and interface with the outside world. As Fülöp, (2025) and Kock, (2015) suggest, the focus should be on effectiveness and ecosystems rather than simple implementation. Therefore, it is true that even if an SME has a cloud subscription which is not used and e-invoices which are not reconciled, it is still opaque.

4.3 Supply-chain integration converts visibility into operational credibility

Complementarity is the second finding. Supply chain integration adds business context and forward-looking signals to accounting data. An accounting record contains the total amount of receivables; integration includes order history, disputes, concentration, acceptances, and future collections. An accounting record includes the value of inventory; integration includes age, location, replenishment risk, and obsolescence. An accounting record shows accounts payable to suppliers; integration contains information on delivery reliability, alternative suppliers, and supply chain collaboration. These associations allow financiers to discern between temporary liquidity problems and structural weaknesses.

This complementarity accounts for both the better performance of integrated supply chains that are internally consistent and externally congruent (Antonini, 2024), as well as for the generation of high-level process capabilities by the integration of information technologies (Lodhia et al., 2024). Furthermore, it expands (Abdullah et al., 2026) collaborative advantage logic to finance by showing that information exchange and decision coordination may yield evidence that neither side could obtain independently. For an anchor buyer, a receipt or purchase order will confirm the SME's receivable; for a supplier, transaction history will provide grounds for trade credit; for a financier, cash conversion process integration will help with limit setting and monitoring.

However, there is potential risk associated with integration. First, the dominant buyer can request detailed information and withhold benefits. Second, a platform can inhibit information portability. Third, synchronized systems can share information with errors or cyber-attacks. The issue with power and accountability that Cosa & Torelli, (2024) raises should be seen not only within the context of accounting. It requires governance to determine who owns the data, accesses it, corrects it, retains it, and uses it.

4.4 Financial market participation mediates entrepreneurial sustainability

The third implication is that sustainable results are created not only through finance but also through operations learning. Engaging with diverse financial markets could be used to balance working capital, finance clean technologies, certify companies, absorb disruptions, and finance business-model experiments. Discipline could be fostered through reporting, covenants, investor attention, and milestones tracking. Digital accounting and integration are thus linked with the sustainable-business-model frameworks of Kabra et al (2021) and Verhoef et al (2021).

However, mediation cannot be automatic. Credit may harm sustainability due to maturity mismatches, over-growth in relation to managerial capabilities, or repayment pressure undermining long-term environmental action. Equity may facilitate innovations but erode control. Platforms may facilitate speed yet add complexity through hidden costs and dependencies on data. Labels of sustainable finance may reward a genuine transition or encourage

greenwashing. Entrepreneurial sustainability, in short, requires finance quality: right amount, timing, pricing, maturity, flexibility, and accountability.

The second path is operational learning. With integrated data of financial performance and supply chain operations, entrepreneurs are able to detect inefficiencies, losses from selling unprofitable goods, carbon-intensive actions, late customers, weak suppliers, and closed loops. All these increase entrepreneurs' capacity to sense and seize according to the dynamic capabilities approach (Lu et al., 2023). When entrepreneurs realign their sourcing, pricing, product design, and financing using credible information, it becomes a path-dependent capability that is hard to replicate. Here is where a generic digital tool turns into a strategic resource according to the definition by Ramos et al (2026).

Table 6 provides six propositions based on the synthesis. Propositions 1 and 2 capture the independent credibility effects of digital accounting and supply-chain integration. Proposition 3 highlights their complementarity. Proposition 4 considers participation in the financial markets as a mediator. Proposition 5 brings governance as a moderator while Proposition 6 outlines a feedback mechanism through which successful participation will finance capability development. All these propositions are directional but without specifying an effect size.

Table 6. Mechanism-based research propositions

Proposition	Antecedent	Mechanism	Expected outcome	Key boundary
P1	Effective digital accounting capability	Timeliness, comparability, traceability, and verifiability	Greater breadth and continuity of financial market participation	Data/control quality and financial capability
P2	Balanced internal, supplier, and customer integration	Forecast accuracy, execution reliability, and cash-conversion visibility	Higher financing readiness and more suitable working-capital instruments	Trust, interoperability, and partner reciprocity
P3	Digital accounting × supply-chain integration	Financial data linked to operational evidence	Complementary effect greater than either capability alone	Common identifiers and integrated governance
P4	Information and operational credibility	Lower information asymmetry and transaction cost	Financial participation mediates resilience, innovation, and sustainability	Finance price, maturity, flexibility, and use
P5	Responsible data governance	Correction rights, security, portability, explainability, human oversight	Stronger inclusion; fewer adverse digitalization effects	Institutional enforcement and digital skills
P6	Successful, diversified participation	Learning, reputation, retained resources, and partner confidence	Positive feedback into further digitalization, integration, and sustainable innovation	Avoidance of overleveraging and platform lock-in

Note. Propositions synthesize convergent mechanisms; no causal effect sizes are claimed.

4.5 Capability maturity and sequencing

From the evidence, it is clear that the implementation order plays an important role. Figure 3 illustrates a five-stage maturity path: digitise, connect, integrate, validate and participate. In stage one, a controlled digital ledger, electronic source documents, consistent master data, and cyber-security are achieved. Stage two links the banking, inventory, procurement, payroll, and sales data in such a way that the accounting process mirrors operations events. Stage three broadens integration to suppliers and customers using forecasting, traceability and mutually defined performance measures. Stage four validates information using reconciliations, assurance, scenario analysis, and financing/lender investor reporting. Stage five accesses and compares financial products using evidence.

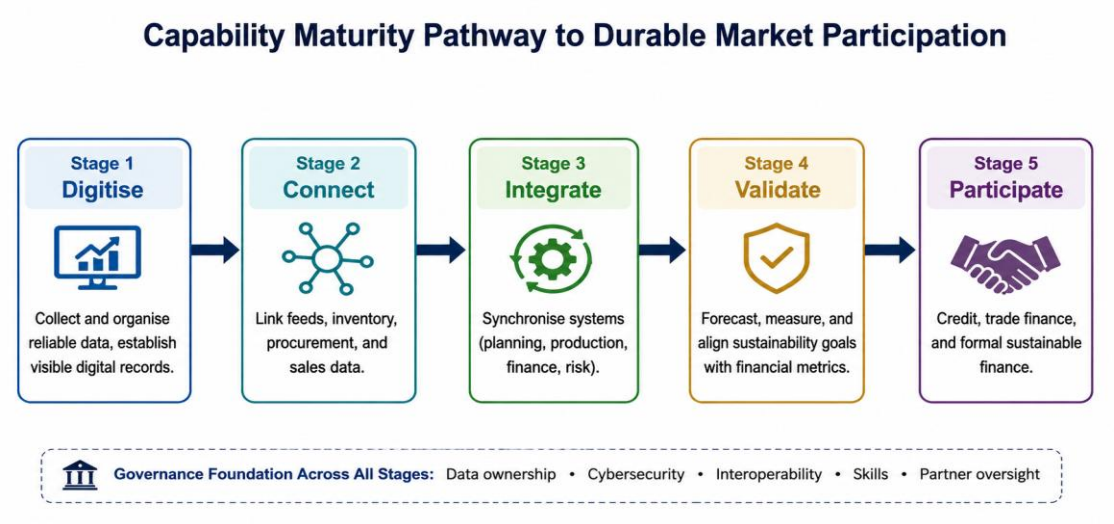

Figure 3. Five-stage capability maturity pathway

The route is cumulative but not necessarily linear; microbusinesses might adopt e-invoicing and invoice finance prior to full internalization; platforms might obtain cash-flow finance through their transactions data even while keeping poor bookkeeping. However, failure to build a foundation makes firms more vulnerable; automated finance based on faulty data creates inappropriate limits; externally integrated systems might clash with internal books; sustainability based on unreliable inputs might lead to exposure to reputational and legal issues. That is why the foundation of governance provided below Figure 3 is applicable at all stages of development.

4.6 Boundary conditions and risk mechanisms

The factors influencing the context include the size, age, industry, institutional settings of the country, owner's competence, and position in the supply chain. Small firms stand to benefit the most from reduced costs for reporting and are the ones constrained by skills and cost concerns. Firms operating in the manufacturing industry will have actual stock and logistics data while those in the services industry will depend on contractual agreements and other intangible forms of data. Young firms may lack historical data, but will have more extensive platform or transactional data. In poorly connected settings, cloud and open finance portals may not work or may exclude them.

Risk is not an afterthought. Cyber security breaches will disrupt accounting and supply chain operations concurrently. Automatic categorizations might propagate mistakes throughout the reports. Credit scoring algorithm will reproduce historic exclusions or discriminate against innovative but different business models. Incompatibilities might necessitate duplicate entries and prevent portability. Employees will not accept technologies that seem to increase their monitoring, and accountants will lack analytical and sustainability capabilities. (Kabra et al., 2021) therefore highlights the importance of interoperability, verification, incentives for SME reporting, and ethical artificial intelligence with documentation and human control.

This justifies the mixed findings from empirical research. Digitalization could lead to better outcomes in firms with complementary capabilities and governance but do poorly where there is just symbolism of adoption.

Digitalization could boost performance in symmetric relationships but expose firms in coercive relationships. Finance could help sustainability if the products match the cash flows and need of the firm, but damage sustainability when short-term debts fund unproven long-term innovations. Future empirical models thus should consider the quality of capabilities, governance, power symmetry, sector, and appropriateness of finance.

4.7 Managerial, financial-sector, and policy implications

For SME managers, the key lesson is to work backwards from a decision and financing use case. The goal is not to digitize everything but to build a trusted chain from original transaction through management decision to third party assertion. Key data points are cash flow cycle, concentrations, aged receivables, inventory quality, order book, margins, cushion under covenants, energy/material usage and disruption scenarios. The task requires collaboration among finance, operations, procurement, sales and IT with someone responsible for data definitions and access.

For banks, fintechs, investors and anchor corporations, the framework implies that improving SME assessment depends more on reusable and challengeable data rather than more documentation. APIs, standardized electronic invoices, consented open finance, invoice registries, and scalable sustainability templates can cut costs. Human oversight will still be needed for exceptions and negative assessments. Service providers should be clear about what data informs their decision process and provide a means to challenge it without locking SMEs into a proprietary platform.

Where policymakers are concerned, digital public infrastructure and reporting simplification complement the role played by credit guarantees or subsidized loans. Interoperable systems in the areas of identity, payments, taxes, invoicing, collateral, and corporate registries could assist firms in developing a credible history. Capacity-building must involve accounting, logistics, cybersecurity, and finance in tandem with software licensing. Table 7 provides an implementation roadmap based on the above implications by breaking down indicators of evidence, finance, sustainability, and control at each step. As can be seen in Table 7, development needs to be evaluated using capabilities and market success.

Table 7. Implementation roadmap and performance indicators

Stage	Priority actions	Evidence produced	Finance use case	Sustainability indicator	Control gate
1. Digitise	Controlled cloud ledger; e-invoices; master data; role-based access.	Reconciled statements and source-document trail.	Account, payments, basic credit profile.	Baseline energy/material cost.	Backups, access controls, monthly close.
2. Connect	Bank feeds; inventory, procurement, payroll, and sales links.	Current cash conversion and unit economics.	Overdraft, working-capital line, leasing.	Resource intensity by product/process.	Interface reconciliation and exception log.
3. Integrate	Shared forecasts; supplier/customer KPIs; traceability.	Order, delivery, receivable, and supplier reliability.	Factoring, purchase-order and trade finance.	Sourcing, waste, and Scope 3 proxies.	Consent, ownership, reciprocity, portability.
4. Validate	Scenario forecasts; assurance; ESG data definitions; lender pack.	Verified cash-flow and sustainability claims.	Term debt, investor due diligence, sustainable loan.	Targets, variance, impact evidence.	Independent review and correction rights.

5. Participate	Compare instruments; negotiate terms; monitor covenants and outcomes.	Renewal history, repayment, impact and resilience track record.	Diversified debt, equity, fintech, sustainable finance.	Resilience and triple-value dashboard.	Human oversight, suitability, leverage limits.

Note. Roadmap is a conceptual managerial tool derived from the evidence synthesis.

5. Conclusion

This study makes clear why digital accounting transformation and supply-chain integration must be developed as complementary market-participation capabilities. Digital accounting provides timely, comparative, detailed and auditable information about finances. Supply-chain integration links this information to orders, stock levels, deliveries, receivables, supplier trustworthiness, and sustainability conditions. Together, they generate information and operational credibility, minimize assessment frictions, and expand the scope of available financing technologies for SMEs. Engagement in credit, trade finance, equity, fintech, and sustainable finance may improve liquidity, resilience, innovation and responsible development.

The core theoretical contribution consists in mediation and conditioning effects. Neither digital accounting nor supply chain integration alone ensures entrepreneurial sustainability. Their impact is partly mediated by the scope, quality, and persistence of financial market participation and conditioned by data governance, competence, cybersecurity, interoperability, institutional factors and power relationships. The theory thus does not succumb to technology determinism. Digital technologies become strategic assets only when incorporated into routines which enable the firm to detect changes, verify claims, coordinate partners, access adequate finance, and adapt its business model.

Practical recommendation is a stepwise process from digitization to entering into the market. This includes creating controlled documentation, linking operations data, integrating partners, validating outputs, and accessing financial markets based on evidence from specific use cases. Financial entities need to reduce transaction costs with consented and interoperable data while having clear human supervision. Authorities need to align digital infrastructure, capacity building, streamlined sustainability reporting, and diversified financing. The above is especially relevant in situations where small firms have to pay substantial collateral and scattered data.

The limitations of the paper are related to the 30 source integrative approach, the limitation to the English language only, the interpretation coding process, and the lack of primary data or meta-analysis. The propositions need further longitudinal testing by firm size, industry, country, and financial tool type. The future research needs to evaluate the concept of the effective quality of the digital accounting, balanced supply chain integration, data governance, and finance suitability; differentiate between access and usage and renewal; and test whether the presence of financial market involvement moderates survival, innovation, environment performance, and social values. Quasi experimental research related to the mandate of the electronic invoices, open finance initiatives, invoice registration, and digital sustainable reporting programs will be especially useful.

REFERENCES

1. Abdullah, A. A. H., Al-Hattami, H. M., Al-Hakimi, M. A., & Al Koliby, I. S. (2026). Blockchain adoption and its impact on sustainability of accounting education. *Environment, Development and Sustainability*, *28*(6), 13179–13199. https://doi.org/10.1007/s10668-024-05466-9
2. Al-Hattami, H. (2025). The Impact of Digital Accounting Systems on Financial Performance in the Banking Sector: Advancements in the Digital Era. *International Journal of Intelligent Information Technologies*, *21*, 1–19. https://doi.org/10.4018/IJIIT.377599
3. Al-Hattami, H. M. (2022). Impact of AIS success on decision-making effectiveness among SMEs in less developed countries. *Information Technology for Development*, *30*, 472–492. https://api.semanticscholar.org/CorpusID:250401998
4. Al-Hattami, H. M. (2026). Sustainable accounting in the digital age: Integrating technology for a greener future. *Sustainable Futures*, *11*, 101835. https://doi.org/https://doi.org/10.1016/j.sftr.2026.101835

5. Al-Hattami, H., Mady, K., & A. Al-Bukhrani, M. (2025). Green digital accounting and sustainable entrepreneurship in emerging economies: impacts on financial sustainability and performance. *Cogent Business & Management*, *13*, 2601944. https://doi.org/10.1080/23311975.2025.2601944
6. Alshahrani, A., & Hakim, T. (2026). Advancing Sustainable Organizational Performance Through Digital-Enabled Sustainability Management Accounting: An Empirical Investigation. In *Sustainability* (Vol. 18, Issue 3, p. 1349). https://doi.org/10.3390/su18031349
7. Altaany, A., Al-zaqeba, M., Maabreh, H., & Jarah, B. (2024). Exploring the impact of digital accounting and digital zakat on improving business sustainability in the Middle East and Malaysia. *International Journal of ADVANCED AND APPLIED SCIENCES*, *11*, 56–67. https://doi.org/10.21833/ijaas.2024.01.007
8. Antonini, C. (2024). Accounting digitalization in the quest for environmental sustainability. *Current Opinion in Environmental Sustainability*, *66*, 101399. https://doi.org/https://doi.org/10.1016/j.cosust.2023.101399
9. Arnaud, J., S. Mamede, H., & Branco, F. (2024). The relationship between digital transformation and digital literacy - an explanatory model: Systematic literature review. *F1000Research*, *13*. https://doi.org/10.12688/f1000research.146991.1
10. Cosa, M., & Torelli, R. (2024). Digital Transformation and Flexible Performance Management: A Systematic Literature Review of the Evolution of Performance Measurement Systems. *Global Journal of Flexible Systems Management*, *25*(3), 445–466. https://doi.org/10.1007/s40171-024-00409-9
11. De Silva, P., Gunarathne, N., & Kumar, S. (2024). Exploring the impact of digital knowledge, integration and performance on sustainable accounting, reporting and assurance. *Meditari Accountancy Research*, *33*(2), 497–552. https://doi.org/https://doi.org/10.1108/MEDAR-02-2024-2383
12. Elmobayed, M., Al-Hattami, H., Al-Hakimi, M., Mraish, W., & Al-Adwan, A. (2023). Effect of marketing literacy on the success of entrepreneurial projects. *Arab Gulf Journal of Scientific Research*, *42*, 1590–1608. https://doi.org/10.1108/AGJSR-06-2023-0266
13. Fülöp, M. (2025). Balancing Technology and Sustainability: The Role of Digital Transformation on Romanian SMEs. *Business Strategy & Development*, *8*. https://doi.org/10.1002/bsd2.70239
14. Grewal, J., Hauptmann, C., & Serafeim, G. (2021). Material Sustainability Information and Stock Price Informativeness. *Journal of Business Ethics*, *171*(3), 513–544. https://doi.org/10.1007/s10551-020-04451-2
15. Henseler, J., Ringle, C., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*, 115–135. https://doi.org/10.1007/s11747-014-0403-8
16. Kabra, J., Al-Hattami, H., & Hashed, A. (2021). Effect of AIS success on performance measures of SMEs: Evidence from Yemen. *International Journal of Business Information Systems*, *36*, 144–164. https://doi.org/10.1504/IJBIS.2021.112399
17. Kock, N. (2015). Common Method Bias in PLS-SEM: *International Journal of E-Collaboration*, *11*, 1–10. https://doi.org/10.4018/ijec.2015100101
18. Li, Z., Rasool, S., Cavus, M. F., & Shahid, W. (2024). Sustaining the future: How green capabilities and digitalization drive sustainability in modern business. *Heliyon*, *10*(1), e24158. https://doi.org/https://doi.org/10.1016/j.heliyon.2024.e24158
19. Lodhia, S., Farooq, M. B., Sharma, U., & Zaman, R. (2024). Digital technologies and sustainability accounting, reporting and assurance: framework and research opportunities. *Meditari Accountancy Research*, *33*(2), 417–441. https://doi.org/https://doi.org/10.1108/MEDAR-01-2025-2796
20. Lu, H. T., Li, X., & Yuen, K. F. (2023). Digital transformation as an enabler of sustainability innovation and performance – Information processing and innovation ambidexterity perspectives. *Technological Forecasting and Social Change*, *196*, 122860. https://doi.org/https://doi.org/10.1016/j.techfore.2023.122860
21. Mashhadi Rajabi, M., Shen, Y., Linnenluecke, M., Sidhu, B., Nguyen, H., & Smith, T. (2026). Climate-related financial disclosures: a meta-theoretical synthesis for accounting research and practice. *Meditari Accountancy Research*, *34*(1), 328–361. https://doi.org/https://doi.org/10.1108/MEDAR-10-2025-3345
22. Melville, N. (2010). Information Systems Innovation for Environmental Sustainability. *MIS Quarterly*, *34*, 1–21. https://doi.org/10.2307/20721412
23. Mondejar, M. E., Avtar, R., Diaz, H. L. B., Dubey, R. K., Esteban, J., Gómez-Morales, A., Hallam, B., Mbungu, N. T., Okolo, C. C., Prasad, K. A., She, Q., & Garcia-Segura, S. (2021). Digitalization to achieve sustainable development goals: Steps towards a Smart Green Planet. *Science of The Total Environment*, *794*, 148539. https://doi.org/https://doi.org/10.1016/j.scitotenv.2021.148539
24. Nikou, S., Reuver, M., & Mahboob Kanafi, M. (2022). Workplace literacy skills—how information and digital literacy affect adoption of digital technology. *Journal of Documentation*, *78*, 371–391. https://doi.org/10.1108/JD-12-2021-0241
25. Petcu, M. A., Sobolevschi-David, M.-I., & Curea, S. C. (2024). Integrating Digital Technologies in Sustainability Accounting and Reporting: Perceptions of Professional Cloud Computing Users. In *Electronics* (Vol. 13, Issue 14, p. 2684). https://doi.org/10.3390/electronics13142684
26. Ramos, V., García, G., Romero, I., Requeni, C., Gusmeroli, S., Bante, I., Sierra, J., Nikolakis, N., Koeva, M., Kovacs, K., Aguirre, G., & Ocaña, I. (2026). *Digital Twins in Europe: Driving Sustainable Innovation and Sovereignty: A Comprehensive Overview of Digital Twin Technologies, Strategic Applications, and Their Role in Europe's Digital and Green Transitions* (pp. 51–76). https://doi.org/10.1007/978-3-032-10561-5_4

27. Sahibzada, U. F., Janjua, N. A., Afshari, L., & Shakil, M. (2025). Leading the transition toward sustainability through digital capabilities and digital innovation: The role of employee characteristics. *Journal of Innovation & Knowledge*, *10*(3), 100723. https://doi.org/https://doi.org/10.1016/j.jik.2025.100723
28. Soomro, R. B., Memon, S. G., Dahri, N. A., Al-Rahmi, W. M., Aldriwish, K., A. Salameh, A., Al-Adwan, A. S., & Saleem, A. (2024). The Adoption of Digital Technologies by Small and Medium-Sized Enterprises for Sustainability and Value Creation in Pakistan: The Application of a Two-Staged Hybrid SEM-ANN Approach. In *Sustainability* (Vol. 16, Issue 17, p. 7351). https://doi.org/10.3390/su16177351
29. Swalih, M., Ram, R., & Tew, E. (2024). Environmental management accounting for strategic decision-making: A systematic literature review. *Business Strategy and the Environment*, *33*, 6335–6367. https://doi.org/10.1002/bse.3828
30. Trivedi, V., Pandey, K., & Trivedi, A. (2022). Analyzing the challenges of e-waste management practices in India during COVID-19. *Management of Environmental Quality: An International Journal*, *33*, 1611–1628. https://doi.org/10.1108/MEQ-12-2021-0273
31. Trueba, L., Somohano, F., & Torre-Olmo, B. (2024). Does digitalisation enable small and medium-sized enterprises to become more sustainable? *Corporate Social Responsibility and Environmental Management*, *31*, 4893–4909. https://doi.org/10.1002/csr.2838
32. Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, *122*, 889–901. https://doi.org/https://doi.org/10.1016/j.jbusres.2019.09.022
33. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, *28*(2), 118–144. https://doi.org/https://doi.org/10.1016/j.jsis.2019.01.003
34. Zahoor, N., Zopiatis, A., Adomako, S., & Lamprinakos, G. (2023). The micro-foundations of digitally transforming SMEs: How digital literacy and technology interact with managerial attributes. *Journal of Business Research*, *159*, 113755. https://doi.org/https://doi.org/10.1016/j.jbusres.2023.113755
35. Zhao, L., He, Q., Guo, L., & Sarpong, D. (2023). Organizational Digital Literacy and Enterprise Digital Transformation: Evidence From Chinese Listed Companies. *IEEE Transactions on Engineering Management*, *71*, 11884–11897. https://doi.org/10.1109/TEM.2023.3241411
36. Zhao, Y., Pinto Llorente, A. M., & Sánchez Gómez, M. C. (2021). Digital competence in higher education research: A systematic literature review. *Computers & Education*, *168*, 104212. https://doi.org/https://doi.org/10.1016/j.compedu.2021.104212