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## Digital Transformation in Business and Accounting: Emerging Trends, Challenges, and Future Research Directions

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Vikrant Duhan<sup>1</sup>  
Tanishka Bedi<sup>2\*</sup>

<sup>1</sup>Department of Commerce, Government College, Rohtak, Haryana, India  
<sup>2</sup>Department of Accounting and Finance, DAV College, Chandigarh, India

**Corresponding Author:**  
Tanishka Bedi, Email ID:  
tanishkabedi.finance@gmail.com

### ABSTRACT

This article reviews digital transformation in business and accounting by examining how digital technologies are reshaping organisational practices, accounting systems, auditing, financial reporting, and governance. It aims to clarify digital transformation as a strategic, technological, organisational, and professional phenomenon rather than a narrow process of technology adoption. The article adopts a structured review approach by synthesising recent literature on digital transformation, digital business models, accounting information systems, emerging technologies, auditing, cybersecurity, ethics, and governance. The review integrates insights from business, accounting, information systems, and management research. The review shows that digital transformation is changing how firms create value, make decisions, manage operations, engage customers, organise supply chains, and pursue innovation. In accounting, technologies such as artificial intelligence, big data analytics, cloud computing, blockchain, robotic process automation, and generative AI are transforming bookkeeping, reporting, assurance, tax compliance, internal control, and financial analysis. However, these developments also create risks related to digital skills gaps, data quality, legacy systems, cybersecurity, privacy, algorithmic bias, ethical accountability, regulatory uncertainty, and uneven adoption. The article provides an integrated perspective on business and accounting transformation by linking digital technologies with organisational change, professional roles, governance issues, and future research needs.

**KEYWORDS:** Digital transformation; Accounting digitalisation; Artificial intelligence; Auditing and governance

## **1. Introduction**

The digital transformation has become one of the characteristics of business and accounting nowadays. Digital technologies are being applied by organisations in all sectors to redesign business models, automate business processes, enhance decision-making, build customer engagement, and make organisations more responsive. This change not only occurs in terms of the adoption of information systems or changing manual processes to a digital format. Instead, it is indicative of a larger strategic, organisational, technological, and professional transformation in which digital technologies will be integrated in the ways companies generate value, regulate information, take risks and how companies relate to their stakeholders. This is transforming the competition structure, as well as the nature of organisational capabilities, with the use of such technologies as artificial intelligence, blockchain, cloud computing, big data analytics, and digital platforms (Akter et al., 2022; Verhoef et al., 2021).

The growth of the sphere of digital transformation studies is an indicator of its growing significance in various areas. It has been analysed based on the strategy, information systems, innovation, operations, marketing, entrepreneurship, and organisational change. This interdisciplinary nature demonstrates that digital transformation is not a one-time technical process but an ongoing organisational revitalisation process. It influences the allocation of resources within firms, the design of processes, building capabilities, organising work and the response to environmental uncertainty. According to recent reviews, digital transformation demands that firms redefine their strategic rationale, organisational practices, and value creation processes instead of merely investing in new technologies (Hanelt et al., 2021; Kraus et al., 2021). Digital transformation, in this sense, is a structural change in technology/organization/market activity.

This trend was additionally enhanced by the COVID-19 pandemic, which compelled organisations to embrace digital tools more rapidly than at any point in history. Remote working, service provision via the internet, online payment systems, cloud computing, and a decision-making process powered by data became the keys to organisational survival. The pandemic has shown that digital capabilities are not discretionary resources but essential pillars of resilience and adaptability. Companies that were more digitally prepared experienced fewer disruptions as they could continue to operate, communicate with clients, and restructure operations (Fletcher & Griffiths, 2020; Soto-Acosta, 2020). Simultaneously, the crisis revealed disproportionate measures of digital maturity among firms, industries, and economies, and clarified the necessity to interpret

digital transformation as a chance as well as a source of inequality, vulnerability, and complexity of governance.

Digital transformation also has a very important implication in accounting. Accounting has been a traditional fundamental tool in the records of transactions, generation of financial reporting, facilitating compliance and control, as well as assurances. But with digitally transformed business environments, accounting information is evolving and the accounting professional changes too. Integrated enterprise systems, cloud accounting software, automated bookkeeping software, blockchain records, data analytics, and artificial intelligence are transforming accounting data capture, processing, verification, and communication. These changes are transforming accounting into a more ongoing, analytical and decision-supportive role than the more retrospective and compliance-focused role. With increasing amounts of structured and unstructured data produced by organisations, accounting professionals will be required to make sense of digital evidence, determine the reliability of the data, and evaluate controls provided by technology, as well as contribute to strategic decision-making (Nadkarni & Prügl, 2021).

Auditing and assurance also undergo change as a result of this transformation. Online systems produce novel types of audit evidence, automate control processes, and provide a capability to perform more comprehensive data analysis. There is an increasing ability of auditors to scan entire groups of transactions, determine abnormalities, determine cyber-related risks, and determine the credibility of information created by computers (Hilbert, 2020). Nevertheless, there are also new challenges that are brought by these possibilities. Automated systems can introduce scale errors, algorithms might not be transparent, and digital records can rely on complicated infrastructures that need special knowledge. Accounting and auditing transformation thus involves not just the adoption of technologies but also professional judgment, ethical awareness, governance of cybersecurity and adapting regulations.

The issue of digital transformation in business and accounting needs a concentrated analysis since the two areas are closely interdependent. Digital business models bring about new forms of transactions, data flows, performance metrics, risks and reporting requirements. The accounting systems, in turn, offer the information architecture, control, and assurance practices in order to govern digitally transformed organisations. However, a considerable part of the literature views digital transformation as a management problem in general or as a technical accounting problem.

A combined approach is required to see how digital technologies are simultaneously transforming the value creation, information governance, professional work and accountability.

There are also practical and scholarly issues that are of concern in the rising relevance of digital transformation. Companies are forced to embrace digital technologies and at the same time make sure that digital systems are reliable, secure, transparent and in line with organisational goals. The accounting practitioners are under the same pressure in terms of adapting to the new tools without compromise of credibility, comparability and utility of financial information. The developments render the concept of digital transformation a key concern to business competitiveness, accounting practice, audit quality, and organisational governance. An overview of this area is thus opportune as the digitalisation of business operations is immediately transforming the systems by which organisations generate information, exercise control, and perform, and demonstrate accountability.

## **2. Conceptualising Digital Transformation in Business and Accounting**

The notion of digital transformation has become a key theme in modern business and accounting literature, but its definition is frequently applied in an inconsistent manner. Simply put, the digital transformation is the type of fundamental organisational change that may be facilitated by the digital technologies in which technology neither facilitates current activities but transforms value creation, processes, structures, capabilities and professional practices. It is thus more extensive than the implementation of individual digital tools. An effective conceptual differentiation can be drawn between digitisation, digitalisation, and digital transformation. Digitisation can be defined as the process of converting analogue data into digital data, including the scanning of invoices, the conversion of paper records to electronic data, or the storage of accounting data in digital databases. Digitalisation is the application of digital technologies to enhance or automate existing systems, e.g., the cloud-based accounting system, automated reconciliations, or analytics-aided reporting. Digital transformation, though, suggests a more strategic and organisational change whereby the digital technologies change the logic of organisational functioning, competitive behaviour, the control of information, and value creation. Digital transformation may be conceptualised as a stratified process whereby the adoption of technology facilitates process redesign, development of organisational capabilities, business model, and the transformation of professional roles. This conceptual progression is shown in figure 1.

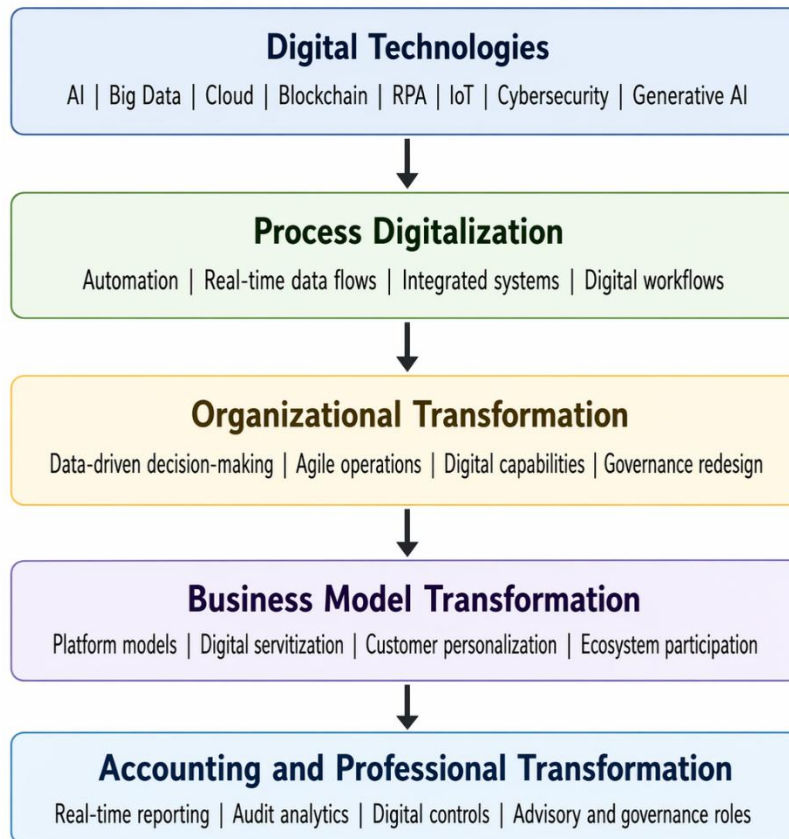


Figure 1. Conceptual Layers of Digital Transformation in Business and Accounting

This difference is critical since the concept of incremental technology adoption is defined as digital transformation in many organisations, when a business model, decision-making processes, and organisational capabilities remain largely the same. To have a cohesive interpretation of digital transformation, the focus should be on technological, organisational, strategic, and social aspects and not just technology implementation (Gong & Ribiere, 2021). Digital transformation is thus not similar to the previous versions of IT-enabled organisational change since it is not restricted to enhancing internal efficiency. It can change organisational identity, customer relationships, value propositions, ecosystem participation, and firm-digital platform boundaries (Wessel et al., 2021). In the case of business and accounting research, this implies that rather than looking at digital transformation as a limited information systems upgrade, it has to be considered as a systemic phenomenon.

In terms of business, digital transformation restores the way companies strategically plan, structure, and interact with the market. Digital technologies facilitate new business models, data-driven decision-making, platform-based interactions, and more responsive types of customer value

creation. The digitalisation of business models is based not just on the availability of technologies but also on the capacity of a firm to develop digitisation and transform the developed capabilities into commercial implications (Ritter & Pedersen, 2020). This applies especially to small and medium-sized businesses, where digital transformation can be used to enhance market access, interaction with customers, and value generation but needs managerial dedication, resource alignment, and organisational learning (Matarazzo et al., 2021). Accordingly, the digital transformation can be best thought of as a process of capability building in which companies adjust their strategies and operations in a continuous fashion to digitally mediated environments.

Digital transformation alters the business process management logic at the organisational level. Conventional process improvement presupposes steady work processes, routinization, and optimisation. Digital transformation brings more fluid, data-driven and adaptive process configurations, with automation, analytics and digital platforms reconfiguring how work is coordinated and monitored (Baiyere et al., 2020). This change is particularly dramatic to the field of accounting since the accounting systems are entrenched in the processes of the organisation. With an increasing digitisation of transactions, controls, reporting flows, and audit trails, accounting functions shift toward periodically record keeping to ongoing information processing, analytics-enhanced evaluation, and real-time decision support.

Digital transformation in accounting must not be limited to the use of software. It influences the character of accounting practice, the shape of accounting information systems and competencies demanded of accounting professionals. There is a growing trend towards integrated data structures, analytics, cloud-based infrastructures, automation, and platform-based reporting environments in digital accounting practices. These innovations shift accounting from a compliance-based role to a more strategic information and governance role. Accountants are supposed to analyse information, evaluate the risks of digital information, aid in the decision-making of the managers, and help to create value for the organisation. This career change demands technical abilities, analytical skills, moral discretion and a knowledge of digital business models.

Sustainability is also a significant aspect of digital transformation. Digital technologies have the potential to assist in environmental monitoring, optimisation of resources, traceability, and sustainability reporting; however, they can also introduce new threats associated with energy consumption, data control, and disparities in accessing digital opportunities (Feroz et al., 2021). In the context of accounting, this relationship is especially applicable since sustainability reporting,

ESG data systems, and non-financial assurance are more and more reliant on digital infrastructures that have the capacity to capture, validate, and communicate complex data. Financial digitalisation thus involves the accounting profession not just in financial aspects of corporate accountability but in the wider transformation of corporate accountability.

Lastly, digital transformation entails building organisational capabilities that can help firms to transform digital resources into performance outcomes. The ability of big data analytics, such as the one, is not only helpful because companies have data, but can also gather, combine, analyse, and use data to enhance their decision-making and competitiveness (Mikalef et al., 2020). This reasoning can be directly applied to accounting and financial operations, wherein digital transformation value is based on the capability to convert raw transactional and operational data to quality, timely, and actionable information that can be used in decision-making. In principle, however, digital transformation in business and accounting can be viewed as a continuous strategic, organisational, technological and professional reconfiguration. It transforms the way companies generate value, accounting information is produced and regulated, and how accounting practitioners can play a role in decision-making in digitally intensive settings. The difference between digitalisation, digitisation, and digital transformation is significant as the terms denote the three degrees of change in technology and organisation. These conceptual differences are summarised in the context of business and accounting in Table 1.

*Table 1. Distinguishing Digitisation, Digitalisation, and Digital Transformation*

<b>Concept</b>	<b>Core meaning</b>	<b>Business implication</b>	<b>Accounting implication</b>	<b>Level of change</b>
Digitization	Conversion of analogue information into digital form	of Paper-based documents, records, or customer files are converted into digital formats	Paper invoices, receipts, or ledgers converted into electronic records	Technical and data-level change

Digitalization	Use of digital technologies improve or automate existing processes	Existing workflows or become faster, more efficient, and more connected	Bookkeeping, reconciliations, payroll, and reporting processes become automated or software-supported	Process-level change
Digital transformation	Strategic and organisational reconfiguration enabled by digital technologies	Business models, value creation, customer engagement, decision-making, operations are redesigned	Accounting becomes more integrated, analytical, time, and governance-oriented	Strategic, organisational, and professional change

### 3. Digital Technologies Reshaping Business and Accounting

A complex of mutually supporting technologies is driving digital transformation in business and accounting as opposed to a single technological advancement. The artificial intelligence, big data analytics, cloud computing, blockchain, robotic process automation, the Internet of Things, cybersecurity technologies, and generative AI are altering how companies gather data, transact business, design, run risk, and make strategic decisions. These technologies vary in their functionality, yet they all lead to changes in business and accounting processes, which used to be manual, periodic, and retrospective in nature, to automated, integrated, predictive, and real-time information settings.

One of the most effective technologies in this transformation is artificial intelligence. In the business setting, AI can be used to help organisations automate their decisions, identify trends, make predictions, personalise services and enhance efficiency in their operations. It is worth noting, however, that it is highly reliant on how the organization has developed AI capability, such as data resources, technical infrastructure, managerial knowledge, talent and capacity to integrate AI in the business processes. There is empirical evidence to indicate that AI capability can be utilised in

organisational creativity and firm performance once integrated into the greater organisational capabilities as opposed to being a separate technical resource (Mikalef & Gupta, 2021). The AI-based transformation projects can also create business value through enhancing process automation, the quality of decisions, customer interaction, and productivity outcomes (Wamba-Taguimdje et al., 2020). AI is used in accounting to aid with anomaly detection, fraud detection, audit sampling, predictive analysis and judgment support. Its increasing popularity transforms accounting workflow to less routine processing of transactions and more analytic interpretation and risk-based decision support.

Big data analytics is directly related to AI since AI systems need substantial, varied, and consistent data feeds. Big data analytics enables companies to do structured and unstructured data processing of transactions, customers, suppliers, operations, markets, and digital platforms. Such capabilities have the potential to enhance business performance because organisations that are capable of acquiring, integrating, analysing, and applying data to make decisions can enhance this aspect (Yasmin et al., 2020). In the case of small and medium-sized enterprises, the adoption of big data analytics depends on the technological readiness, organisational resources, the pressure of the environment, and the perceived business value (Maroufkhani et al., 2020). Big data analytics in accounting is the expansion of the evidentiary base of reporting, auditing, budgeting, forecasting, and internal control. Instead of solely using historical financial data, accounting professionals could include operational, behavioural, and external data to create more timely and decision-useful information.

Cloud computing is the platform upon which most of these digital technologies are based. Cloud-based systems enable organisations to store, retrieve and manipulate data using scalable digital platforms rather than using local systems only. Cloud computing is used in accounting to provide real-time bookkeeping, integrated enterprise resource planning, remote collaboration, automated updates and central access to data across departments and locations. It is also helpful in integrating accounting systems with customer relationship management, supply chain management, payroll, tax and reporting systems. The strategic value of cloud computing is based not only on cost savings but also on scalability, flexibility and the capacity to relate accounting information with the rest of the business processes.

Another significant pathway of transformation brought about by blockchain and distributed ledger technologies is related to transforming data quality and blockchain functions. Blockchain has the

potential to sustain transparent, non-reproducible, and traceable records, which can be applicable in supply chain management, transaction validation, smart contracts, and assurance activities. The studies of blockchain and supply chains reveal that it has the potential to enhance transparency, traceability, trust, and coordination between the participants of the network (Queiroz et al., 2019). Traceability can be enhanced through blockchain technology to add strength to the transparency of product flow and movement records throughout the supply chain systems (Kamble et al., 2020). These characteristics in the accounting context have ramifications on the audit trail, reconciliation, tracking of assets, transactions across organisations, and verification. Blockchain, however, does not remove the requirement of accounting judgment, governance or assurance but rather alters the location of verification issues and how accounting professionals determine reliance.

Accounting is one of the areas where robotic process automation is especially significant since a significant portion of accounting tasks are repetitive, rules-driven, and transaction-driven. RPA may be applied to automate invoice processing, bank reconciliation, posting of journal entries, payroll checks, preparation of tax data and compliance workflows. The short-term effect is efficiency, but the long-term one is reallocation of accounting labour. With the automation of routine tasks, accountants are likely to shift more of their time and attention to exception handling, controls, interpretation, advisory services, and governance. RPA is thus part of digital transformation when incorporated in re-engineered workflows and not implemented simply to duplicate the manual practice.

The Internet of Things also increases the data field of business and accounting. IoT devices produce flowing information about machines, products, logistics, energy usage, inventory flow and physical assets. This facilitates predictive maintenance, real-time supply chain visibility, resource optimisation, and service innovation in the operations of the business. The abilities are particularly applicable in complicated supply chains, wherein resilience and feasibility is defined more by visibility, adaptability, and coordinated digital infrastructures (Ivanov & Dolgui, 2020). In the case of accounting, IoT-provided data can enhance monitoring of assets, measuring costs, valuing inventory, sustainability reporting, and assessing operational risks.

The use of cybersecurity technologies has become critical due to the fact that organisations are getting more reliant on interconnected systems and data flows as a result of digital transformation. With the increased digitisation of accounting and business information, the risks of unauthorised access, manipulation, ransomware, fraud, and system disruption increase. Cybersecurity is thus

not an IT issue; it is an issue of financial reporting, internal control, governance, and audit. Secure digital transformation necessitates data integrity, system access controls, and identity management controls; encryption control; monitoring control; incident response control; and third-party digital dependency control.

Generative AI is a more recent phase of digital transformation. ChatGPT and other tools can generate text, code, summaries, explanations, reports, and decision support. Generative AI may be used in business to aid customer service, market analysis, document drafting, knowledge management, and managerial decision-making and also bring up issues of accuracy, accountability, intellectual property, and overreliance (Rane, 2023). Generative AI could be helpful in accounting to draft reports, explain variances, interpret policy, audit documentation, and perform financial analysis. Nevertheless, its outputs need to be professionally reviewed since accounting information should meet the criteria of reliability, verifiability, and accountability. The key technologies that are related to the digital transformation vary in functionality, yet they all redefine the way business processes are performed, accounting systems, audit evidence, and decision-making. Their main implications are summarised in Table 2.

*Table 2. Major Digital Technologies Reshaping Business and Accounting*

<b>Digital technology</b>	<b>Main business application</b>	<b>Main accounting and auditing application</b>	<b>Key implication</b>
Artificial intelligence	Forecasting, automation, personalisation, risk prediction, and decision support	Fraud detection, anomaly identification, audit risk assessment, and predictive financial analysis	Shifts decision-making from descriptive analysis to predictive and intelligent support
Big data analytics	Market analysis, customer insights, operational optimisation, and performance monitoring	Full-population testing, financial forecasting, variance analysis, and audit analytics	Expands the evidence base for managerial and accounting decisions
Cloud computing	Scalable data storage, remote access, enterprise	Cloud accounting, real-time bookkeeping,	Enables continuous access to financial

	integration, and digital collaboration	integrated reporting, and remote audit work	and operational information
Blockchain	Transaction traceability, smart contracts, supply chain transparency, and interorganisational trust	Audit trails, transaction verification, reconciliation, and asset tracking	Changes how trust, verification, and record integrity are established
Robotic process automation	Automation of repetitive administrative and operational tasks	Invoice processing, reconciliations, journal entries, payroll checks, and tax workflows	Reduces routine manual work and shifts accountants toward review and exception handling
Internet of Things	Real-time asset monitoring, logistics visibility, predictive maintenance, and operational control	Inventory tracking, cost measurement, asset verification, and sustainability data collection	Connects physical operations with accounting and control systems
Cybersecurity technologies	Protection of systems, networks, customer data, and digital operations	Data integrity, access controls, financial system protection, and audit risk assessment	Makes cybersecurity a core accounting, control, and governance concern
Generative AI	Content generation, customer support, coding assistance, knowledge management, and decision support	Report drafting, policy interpretation, audit documentation, and financial explanation	Creates new efficiency opportunities but requires a strong professional review

Taken together, these technologies reshape business and accounting by expanding data availability, automating processes, increasing analytical capacity, and changing the role of professional judgment. Their value depends less on isolated adoption and more on integration with strategy, governance, capabilities, and organisational redesign. Digital transformation, therefore,

emerges from the combined effect of technological infrastructure, data capability, process automation, and professional adaptation.

#### **4. Emerging Trends in Digital Business Transformation**

The digital business transformation is becoming more apparent in how organisations redesign business models, decision-making systems, operations, customer relationships, supply chains, work arrangements, processes of innovation and sustainability practices. Big technology-based companies are not the only ones to undergo these changes. Digitally mediated competition is inviting small and medium-sized enterprises, family firms, manufacturing firms, service organisations, and platform-based businesses into the digitised arena of competition. The new trend is that digital technologies are no longer peripheral support systems; they are becoming part and parcel of the fundamental fabric of how companies produce, deliver and capture value.

One of the trends is the digital redefinition of business models. Digital technologies help companies to transition beyond the traditional models of products to the models of services, platforms, subscriptions and ecosystems-dependent models. With digitally servitized environments, companies leverage data, connectivity, software, and analytics to expand their services beyond physical goods to integrated solutions and ongoing services (Kohtamäki et al., 2019). It is particularly noteworthy in manufacturing and industrial industries where digital platforms, sensors, and analytics enable companies to track the use of their products, provide predictive maintenance, and create outcome-based value propositions. Business model transformation thus entails the implementation of digital tools in addition to the redesign of the logic of revenue, interaction with customers, partnering with other companies and the ability of the organisation.

Digital transformation is transforming decision-making as well. Companies are gradually turning to data-driven systems to help in planning, forecasting, measuring performance, analysing customers, and allocating resources. Digital technologies enhance decision-making by increasing the amount of information, speed, and diversity of information. Nonetheless, the effectiveness of digital decision-making lies in the fact that organisations must have the capabilities to interpret data and integrate the digital insights into managerial practices. The digitalisation of small and medium-sized enterprises demonstrates that the results of digital transformation depend on the orientation of the leadership, the level of skills of employees, their digital preparedness, and the

ability to implement the change in an organisation (Eller et al., 2020). Therefore, the process of data-driven decision-making needs technological support and management skills.

The other trend is operational transformation. Automation, cloud computing, enterprise applications, digital processes, and analytics are transforming the way organisations plan and organise activities and manage processes. Online technologies enable companies to standardise daily activities, track the work in real time, and react faster to any disturbances. The digital transformation in the context of family-owned Mittelstand companies is directly associated with dynamic capabilities, especially those of perceiving digital opportunities, capturing them by investing and redesigning them, and reorganising current organisational resources (Soluk & Kammerlander, 2021). This implies that the transformation of operations is not a technical process. It entails companies to change habits, organisational frameworks, staff functions and strategic focus.

The interaction with customers has also become more digital, interactive and data-intensive. The use of digital channels, platforms, mobile interfaces, analytics, and AI-enabled tools by firms is growing to gain insight into customer behaviour and personalise offerings. This alters the way the firm and customers relate to each other from episodic to relational. Online customer interaction enables companies to receive feedback, optimise offerings, anticipate demand, and improve customer retention. Digital transformation in the context of entrepreneurship and SMEs may pose new possibilities in reaching markets, communicating with customers, and quickly experimenting, especially when entrepreneurs are equipped to integrate digital technologies in the context of business model innovation (L. Li et al., 2018). The implication in strategy is that customer value is more co-created in the digital interaction as opposed to being offered in the form of traditional products or services.

The same is happening to supply chains. Digital technologies help networks of suppliers, logistics providers, distributors, and customers to be seen, traced, coordinated, and resilient. Digital supply chains enable companies to trace inventories, track flows, exchange information, and react to uncertainty in a more efficient way. These trends are intimately related to platform ecosystems, in which companies cease to be solitary organisations and instead are members of digitally interrelated networks. Competition in global business environments is being redefined through global platforms and ecosystems, redefining boundaries of firms, interdependence, access to

markets, and value creation (Nambisan et al., 2019). Consequently, competitive advantage is more and more a question of the capability to engage in, arrange, or complement digital ecosystems.

The electronic revolution is also reshaping work structures. Work in organisations has been made less physical in proximity as a result of remote and hybrid work arrangements, digital collaboration tools, and cloud-based systems. This trend has some effects on coordination, productivity, worker autonomy, organisational culture, and control systems. Online work arrangements have the potential to enhance flexibility and access to talent, but they also pose communication, surveillance, cybersecurity, employee engagement, and knowledge sharing challenges. In trying to address these conditions, agile organisations create adaptable structures, quick learning, and adaptive management styles that enable them to traverse digitally turbulent environments (Bresciani et al., 2021).

The practices of innovation are getting more open, data-driven and ecosystem-based. Specifically, AI features are facilitating business model innovation through the assistance of recognising opportunities, learning through data, automating experimentation, and scaling solutions through digital means by using iterative feedback systems (Sjödin et al., 2021). The digital innovation can be the result of the co-evolution of technologies, users, partners, and organisational routines. This implies that companies need to keep changing their capabilities as technologies and market demands keep changing. Digital technologies thus impact not only the pace of innovation, but its structure, sources and governance as well.

Another trend that is significant is sustainability-based digital transformation. Digital tools have the potential to aid resource efficiency, track emissions, and models of circular economy, sustainable supply chains and more transparent reporting. Digitalisation, business model innovation, and sustainable industry development are all becoming integrated as companies can apply digital technologies to minimise waste, optimise assets, and come up with service-driven models that facilitate sustainability objectives (Parida et al., 2019). Nevertheless, further sustainability-focused digital transformation should consider the energy use, digital inequity, data sovereignty, and the environmental impact of digital infrastructure.

In general, digital business transformation is generating a transition of linear, firm-centred, efficiency-oriented business models to connected, data-driven, ecosystem-based and adaptive types of value creation. It is indicated that digital technologies have the potential to enhance the performance of firms, yet the performance impacts are conditional on complementary capabilities,

strategic alignment, organisational readiness, and the governance mechanisms (Oduro et al., 2023). The emergent trends consequently indicate that digital transformation is not a one-off technological occurrence. It is an ongoing process whereby companies redesign business models, operations, relationships and systems of innovation in reaction to digitally intensive competitive environments.

### **5. Transformation of Accounting, Auditing, and Financial Reporting**

Digital transformation is transforming accounting, auditing, and financial reporting by altering the process of capturing, processing, verifying, reporting and interpreting financial data. The conventional accounting systems were mainly structured on the basis of periodic accounting, manual control and historical reporting. Conversely, digitally transformed accounting environments are based on integrated information systems, automated workflows, cloud-based analytics, blockchain solutions, and artificial intelligence. This change does not merely accelerate accounting endeavours, but it transforms the character of accounting information, the form of assurance practice, and the professional responsibility of accountants.

This transformation is centred on accounting information systems. The contemporary systems are becoming more interlinked with transaction processing, enterprise resource planning, customer information, supply chain information, taxation reporting, and modules into an interconnected digital architecture. These systems improve the reliance on disjointed manual records and enable the organisations to generate more timely, consistent and decision-useful financial information. The digital transformation in accounting and auditing has thus been linked tightly with integrating data, automation, analytics, and redesigning professional workflows (Liew et al., 2022). With the increased integration of accounting systems, accounting as a function gains a new role beyond recordkeeping and is integrated into a broader information infrastructure of an organisation.

The most visible areas that have been transformed include bookkeeping and the routine processing of transactions. Invoice entry, bank reconciliation, expense classification, payroll processing, and journal posting are examples of tasks that are more and more automated by accounting software, robotic process automation, and AI-assisted classification. This minimises the repetitive manual labour and may enhance the processing speed and uniformity. Nevertheless, despite automation, professional supervision remains. The accountants are still in charge of exception scrutiny, measuring classification accuracy, compliance with accounting policies and control of automatic

processes. The end result is that the practical impact is a movement toward manual preparation to review, interpretation, and governance.

Financial reporting is turning out to be more data-driven and continuous, too. The digital systems enable organisations to capture and consolidate financial information more quickly to support faster closing cycles, real-time dashboards and increased management reporting. The technologies surrounding the internet have broadened the range of data that accountants can access and have provided new avenues of research on how the process of accounting is influenced by digital connectivity, data flows, and systems based on platforms (Moll & Yigitbasioglu, 2019). Financial reporting in this environment is not as tied up in periodic statutory reporting but rather becoming more connected with internal performance analytics, risk monitoring and strategic decision support.

The area of auditing and assurance is being transformed, in particular, significantly. Auditors can analyse more data and detect suspicious transactions, control deficiencies and risk patterns more efficiently with the help of big data analytics, artificial intelligence, process mining, and visualisation tools. New technologies are affecting audit evidence, audit planning, substantive testing, and the skills of assurance professionals needed (Kend & Nguyen, 2020). Rather than using sample-based processes as the main ones, auditors can resort to full-population testing and continuous monitoring methods increasingly. The possibility to provide more timely and risk-sensitive assurance is reinforced by this development, yet there are questions regarding the reliability of the data, transparency of the algorithms, and competency of the auditors.

The blockchain technology brings additional implications for accounting and auditing. Distributed ledger systems have the potential to generate common, time-stamped, and tamper-resistant records of transactions, which can help minimise certain reconciliation issues and enhance traceability. Blockchain in the accountancy organisations has been linked to the organisational process changes, trust relations, and verification procedures, as well as adaptation of the professionals (Tiron-Tudor et al., 2021). In the case of auditing, blockchain can enhance the transparency of transaction records, although it does not necessarily provide any checks on the economic substance of transactions or the suitability of accounting judgments. Professional assurance is still required, as accounting does not just involve recording transactions but also involves valuation, classification, estimation, disclosure and interpretation.

Internal control and tax compliance is also being changed. The digital tax system, e-invoicing, automated reporting interface, and analytics-based compliance tools allow tax authorities and companies to handle tax data more effectively. In-house, access permissions, authorisation processes, transactional abnormalities, job separation, and system modifications may be tracked using digital controls. These tools have the potential to enhance control environments, though they introduce new dependencies on system design, cybersecurity, data governance and technology vendors. A poorly regulated digital system has the potential to scale up errors or hide dangers behind automatic procedures.

The financial analysis process has taken a more forward-looking and predictive approach. Forecasting, scenario analysis, fraud detection, liquidity planning, credit evaluation and performance analysis can be aided by AI and analytics. The application of artificial intelligence to accounting and auditing is a growing topic in the sphere because this type of technology can be used to classify, predict, identify anomalies, and assist in decision-making (Hasan, 2022). However, the analysis of accounting cannot be brought down to an algorithmic output. Professional judgment is also relevant in the interpretation of results, challenging assumptions, and ensuring that the analytical outputs are in line with accounting standards, business realities and ethical responsibilities.

It is the role of accounting professionals that is thus being redefined. Accountants and auditors must integrate technical literacy and professional scepticism, analytical thinking, ethical consciousness, and business acumen in a digital transformation. Previous accounts on disruptive technologies in accounting education highlighted that the profession should reconfigure its competencies, curricula, and training models to the change in technology (Zhang et al., 2018). More recent studies also demonstrate that emerging digital technologies provide opportunities and challenges to auditing firms, such as efficiency, new services, skills gaps, and barriers to implementation (Vitali & Giuliani, 2024). It is probable that the accounting professional of the future will be less of a data cruncher and more of a data-driven consultant, assurer, systems auditor and governance stakeholder. Digital transformation has an uneven impact on accounting and auditing in the functional areas. Table 3 summarises the key accounting information systems, reporting, assurance, tax, internal control and professional work changes.

*Table 3. Digital Transformation of Accounting, Auditing, and Financial Reporting*

<b>Accounting area</b>	<b>Traditional orientation</b>	<b>Digital effect</b>	<b>transformation</b>	<b>Professional implication</b>
Accounting information systems	Fragmented systems and periodic data processing	Integrated platforms, cloud systems, and real-time data flows		Accountants must understand system integration and data governance
Bookkeeping	Manual entry, classification, and reconciliation	Automated transaction capture, classification, and reconciliation		Routine processing declines while review and exception handling increase
Financial reporting	Periodic closing and historical reporting	Faster close, dashboards, continuous reporting, and analytics-supported disclosure		Reporting becomes more timely, analytical, and decision-oriented
Auditing and assurance	Sample-based testing and manual evidence collection	Full-population testing, audit analytics, AI-assisted procedures, and continuous monitoring		Auditors require stronger data analytics and technology assurance skills
Tax compliance	Manual preparation and periodic submission	E-invoicing, automated tax reporting, digital tax platforms, and compliance analytics		Tax work becomes more system-driven and data-dependent
Internal control	Manual approvals and retrospective checks	Automated controls, access monitoring, workflow controls, and anomaly detection		Control evaluation must include system design, cybersecurity, and automation risks
Financial analysis	Historical ratio analysis	Predictive analytics, and scenario modelling, AI-		Accountants become strategic analysts and

	spreadsheet-based forecasting	assisted interpretation, and real-time performance tracking	decision-support professionals
Professional role	Compliance, recordkeeping, and transaction processing	Advisory, analytics, and strategic decision support	governance, assurance, and digital, analytical, ethical, and interpretive competencies

Overall, digital transformation is not eliminating accounting, auditing, or financial reporting. It is changing their foundations. Accounting information is becoming more integrated, auditing is becoming more analytical, reporting is becoming more timely, and professional work is becoming more interpretive and technology-mediated. The central challenge is to ensure that digital efficiency is matched by reliability, accountability, ethical judgment, and professional competence.

## 6. Challenges, Risks, and Governance Issues

Digital transformation brings great opportunities to business and accounting, yet to business and accounting, it also presents complicated issues that should be carefully managed. With the implementation of artificial intelligence, analytics, cloud systems, blockchain, automation, and the digital platform, organisations are ever more reliant on the quality of data, technological capabilities, system integrity, and regulatory clarity. These interdependencies render the digital transformation a technological undertaking, as well as a managerial, ethical, professional, and governance issue. The main problem is that digital systems have the potential to enhance speed, scale, and analytical ability, yet they also have the potential to increase errors, biases, privacy threats, cybersecurity risks, and accountability loopholes.

The digital skills gap is one of the most common obstacles. There are not many companies that have employees who are able to integrate a technical background with business acumen and accounting skills. This is a particularly crucial gap in the accounting and auditing professions since individuals need to comprehend how digital tools work as well as the impact of their outputs on financial reporting, assurance, internal control, and decision-making. The introduction of AI-based audit tools, data analytics, and automated controls imposes new skills on auditors and accountants, including the ability to interpret data, think in an algorithmic manner, evaluate systems, and

evaluate risks using technology. In the absence of these competencies, organisations might embrace the use of new technologies without the ability to assess their reliability, constraints or implications.

Another significant challenge is resistance to change. Digital transformation tends to change traditional procedures, lines of reporting, professional functions, and systems of control. The problem with new systems is that employees can be hesitant to implement new systems due to uncertainty, a feeling of job loss, surveillance, or uncertainty in automated decision-making. Resistance in accounting functions can occur when automation alters the customary bookkeeping, reconciliation, audit documentation or reporting procedures. This kind of resistance is not just behavioural, but might be a way of expressing valid issues to accountability, professional judgment, and the trustworthiness of processes mediated by technology.

Another issue that makes digital transformation difficult is data quality problems. AI, analytics, automation and reporting tools rely on high-quality, full, consistent, and timely information. Low quality of data may result in inaccurate predictions, erroneous categorisations, ineffective audit trail and misrepresentative management statements. This is a serious risk, especially in accounting, where financial information should meet the requirements of reliability, comparability, and verifiability. Automated systems have the capability of processing large amounts of data smoothly; however, they may likewise create errors at scale, in case the underlying data are incomplete, biased, duplicated or poorly structured. Digital transformation is thus made to be dependent on data governance.

Other barriers are generated by legacy systems. There are still numerous organisations that are currently running on disjointed enterprise systems, old accounting software, and poorly integrated databases and manual control processes. Such systems complicate the process of performing real-time reporting, analytics, integration with clouds, and automated assurance. Older infrastructures may also contribute to cybersecurity risks as older systems might not have sufficient security patches or access control measures, or interoperability capabilities. Consequently, the move towards digital accounting and business systems can be costly in terms of infrastructure, process redesign and change management.

One of the most critical governance issues is cybersecurity. Organisations are increasingly vulnerable to cyber-attacks as accounting records, audit evidence, customer records, tax records and operating systems become digitalised and digitally interconnected. Cybersecurity has a direct

implication on accounting in that cyber events may influence the value of the assets, the effectiveness of internal controls, disclosure requirements, audit risk, and reliability of the financial statements. Examples of cyber incidents include stealing data, ransomware, hacking into systems, committing financial fraud, and interfering with reporting systems. Studies have thus highlighted the necessity to relate cybersecurity incidents with accounting consequences and organisational reactions (Janvrin & Wang, 2022). There is also some evidence that external auditors react to cyber incidents by audit pricing, which means that the risk of cybersecurity is becoming more pertinent to audit assessment and assurance work (H. Li et al., 2020).

Digital transformation also increases privacy and data protection risks. The amount of customer, employee, supplier and transaction data collected, integrated and analysed by firms is increasing in volume. These data, though providing an improved personalisation, efficient operation and strategic decision-making, generate conflicts between the use of data and personal privacy. Digital technologies have the ability to create value by enabling data-driven interaction, yet they can also lead to consumer distrust, surveillance issues, and reputational risk when data practices are not explicit or intrusive (Quach et al., 2022). In the case of accounting and governance, privacy risks are significant as financial and operational data can contain sensitive personal, commercial, and transactional data.

Ethical responsibility and algorithm bias are of particular concern in AI-based business and accounting systems. Biased or unfair results can be achieved through the use of algorithms being trained on incomplete, unrepresentative or historically biased data. AI may be helpful in auditing in areas of fraud detection, identifying anomalies, and assessing risks, yet it can contribute to the lack of transparency, excessive dependence, and responsibility issues. The transparency, explainability, professional scepticism, responsibility over the outputs of the algorithm, and the fact that automation can undermine human judgment are all ethical issues (Munoko et al., 2020). The normative questions of fairness, accountability, autonomy, and ethical obligations of professionals relying on the output of the machine also emerge in the context of AI-based decision-making in accounting and auditing (Lehner et al., 2022).

The uncertainty in regulations is another issue that adds complexity to the governing of digital transformation. There is a tendency for technologies to develop quicker than accounting regulations, auditing requirements, data protection policies and corporate governance models. This poses confusion on how digital evidence is to be validated, how to record algorithmic decisions,

how to provide security to blockchain-based transactions, and how to control AI-enhanced judgment. Regulators are confronted with the issue of striking a balance between competition, innovation, data protection, and platform accountability in larger digital ecosystems (Kira et al., 2021). The problem impacts businesses and accountants since digital ecosystems are becoming more influential in determining access to data, market control, reporting duties and compliance requirements. The threats posed by the digital transformation demand governance mechanisms that touch on technology management, accounting controls, audit oversight, ethical accountability, and regulatory adaptation. Figure 2 demonstrates how there is a correlation between the key areas of risk and governance response.

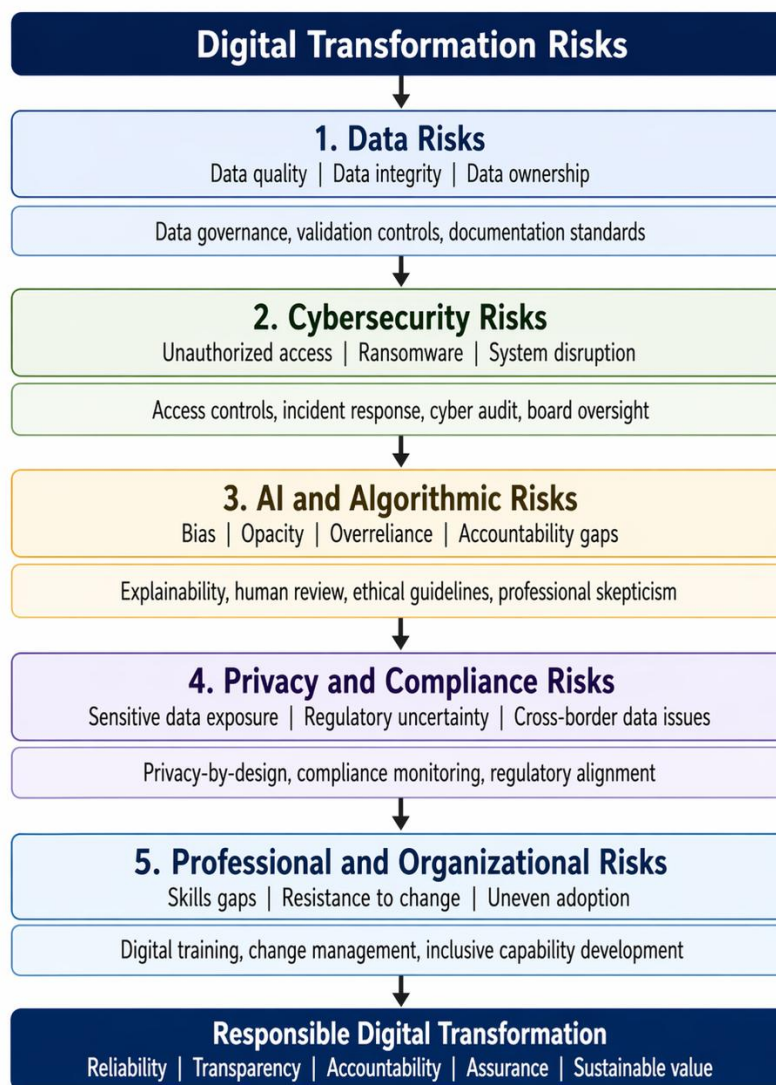


Figure 2. Governance Framework for Digital Transformation Risks in Business and Accounting

Lastly, there is unequal digital transformation among firms, industries and economies. Big companies might be able to invest in the development of advanced systems, cybersecurity infrastructure, and digital talent, whereas smaller companies might be limited by costs, capabilities, and implementation concerns. Inequality in adoption may increase the spread of productivity and inequality of access to digital markets, and generate uneven reporting quality and readiness to provide assurance. To realise a sustainable digital transformation, the governance structures need to focus on efficiency, not only on the technical side but also on equity, inclusion, risk mitigation, and professional responsibility. Therefore, the central issue is not about the adoption of digital technologies by firms, but about the ways in which they can adopt them responsibly, safely and fairly.

### **7. Future Research Directions**

Future studies on the digital transformation of business and accounting are needed to go beyond the conceptual discussions of technology adoption and investigate how digital systems redefine organisational capabilities, professional judgment, governance, and accountability. One of the directions is the human-AI collaboration. With the introduction of AI into accounting, auditing, forecasting, and decision-support systems, future research should explore how humans engage with AI outputs, when they trust or disregard algorithmic suggestions, and how human judgment can be the focus of technology-mediated contexts. This is particularly so in the spheres of estimates, risk assessment, fraud detection and assurance decisions.

A second area of research is related to digital accounting competencies. Future research needs to consider what mixes of technical, analytical, ethical, and professional skills accountants need in digitally transformed organisations. Substantial empirical studies are required in terms of how accounting education, professional training, and learning in the workplace can prepare accountants to work in the field of data analytics, automation supervision, cybersecurity awareness, and digital governance.

Blockchain assurance is another area that needs to be researched. The blockchain might enhance the traceability of the transaction, as well as minimise certain reconciliation issues, but it does not necessarily eliminate the valuation, ownership, classification, and economic substance issues. Future studies ought to focus on how to verify blockchain records, evaluate smart contracts, and assure decentralised systems by auditors.

Another significant research agenda is real-time reporting. The effect of continuous data flows on internal decision-making, audit timing, regulatory oversight and financial reporting quality is a future research question. The risks of speed, such as premature reporting, data overload, and decreased professional reflection, also require research.

Another opportunity is presented by digital sustainability accounting. With companies more and more using digital resources to measure their ESG, track their emissions, and gain transparency across their supply chain, future studies ought to evaluate the reliability, comparability, and assurance of sustainability data produced digitally.

The relationship of cybersecurity governance with internal control, audit risk, financial disclosure, and board accountability should also be looked into more thoroughly. In the same manner, regulatory adaptation needs additional research since digital technologies may change more quickly than accounting standards, auditing regulations, and data protection models.

Lastly, new studies must come up with more robust indicators of the results of digital transformation. Research must not just measure efficiency benefits, but also quality of reporting, audit performance, professional competence, ethical responsibility, sustainability performance and organisational value in the long term. Such a wider agenda can assist in explaining when digital transformation brings about substantial institutional change and not cosmetic technological modernisation.

## **8. Conclusion**

Digital transformation is an emerging phenomenon in modern business and accounting. This review has demonstrated that digital transformation is not limited to the utilisation of specific technologies but is a more widespread strategic, organisational, technological, and professional change. Digital technologies are transforming the business models, decision-making process, operations, customer engagement, supply chains, innovation systems, and sustainability-oriented practices in business. They are changing the accounting information systems, bookkeeping, financial reporting, auditing, assurance, tax compliance, internal control and financial analysis in accounting. The review notes that the technologies of artificial intelligence, big data analytics, cloud computing, blockchain, robotic process automation, the Internet of Things, cybersecurity systems, and generative AI are not separate tools. Their impacts are contingent on their incorporation with organisational capabilities, governance, professional competencies, and strategic objectives. The digital transformation has the potential to enhance efficiency,

transparency, timeliness, analytical ability, and decision usefulness. Nevertheless, it also poses significant risks to the quality of data, cybersecurity, privacy, bias in algorithms, moral responsibility, regulatory ambiguity, and unequal uptake by firms and economies. One of the main contributions of this review is that it offers an integrated view of transformation in business and accounting. It shows that accounting is not only a supporting operation influenced by the digital change, but a core governance and information operation in digitally transformed organisations. The future of accounting will rest on the capability of the professionals to integrate technological literacy and judgment, scepticism, ethical reasoning, and strategic insight. Future studies must subsequently investigate the impact of digital transformation on the human-AI collaboration, digital accounting dexterity, blockchain assurance, real-time reporting, sustainability accounting, cybersecurity governance, regulatory adjustment, and the way the transformation results can be measured. In sum, the digital transformation must be undertaken responsibly, which means it must be accompanied by technological innovation, robust governance, professional responsibility, and development of inclusive capabilities.

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