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The contribution of digital technology to corporate performance

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Abstract---This article examines how digital technologies contribute to corporate performance by analysing, in turn, the foundations of digitalisation, contemporary organisational transformations, and the impact of digital solutions across operational, commercial, and strategic dimensions. The findings indicate that digital technologies, such as artificial intelligence, big data, cloud computing, the Internet of Things (IoT), and information systems, constitute major levers for efficiency, innovation, and competitiveness. However, the study also highlights several constraints, including adoption costs, skills shortages, cybersecurity risks, ethical issues associated with data, and organisational resistance. The article, therefore, emphasises that successful digital transformation depends on appropriate governance, effective change management, and sustained investment in human capabilities.

Keywords---digital technologies, human capabilities, cybersecurity, big data, cloud computing.

Introduction

In a context characterised by rapid change and increasingly demanding competition, digital technologies now occupy a central place in the evolution of the professional world. Digital transformation now affects all sectors of activity, reshaping practices, modes of organisation, and business models. Companies, regardless of size, must adapt to an environment in constant flux, where information circulates more rapidly and technologies are continually renewed. This dynamic creates new opportunities but also imposes unprecedented demands for adaptability and mastery of digital tools. Understanding the developments brought about by this widespread digitalisation is an essential step in

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analysing the changes affecting contemporary organisations. From this perspective, the present work is focused on examining current transformations in the entrepreneurial world.

1) Key Concepts of Digital Technologies: Definition, Evolution, and Challenges

A. Definition of Digital Technologies

The term *digital* encompasses a range of technologies, tools, and methods for manipulating, disseminating, and accumulating information in binary form. In an extended sense, the digital domain includes computing (hardware and software), networks and the internet, databases and data analysis, artificial intelligence (AI), cloud computing, connected devices (IoT), and software platforms and online services (João Carlos Gonçalves dos Reis, 2020). These elements are not autonomous; instead, they constitute an interoperable ecosystem in which data are transmitted, processed, and used to automate certain operations or support decision-making. Numerous review studies in the fields of management and information systems characterise digitisation as a set of technical and organisational changes enabled by these technologies (Esther Calderon-Monge, 2023).

At the conceptual level, it is helpful to distinguish between several notions that are frequently conflated. The term *digitalisation* refers to the integration of, and increased use of, digital technology by organisations or individuals; *digital transformation* denotes significant organisational changes in which technology reshapes business models, processes, and value creation; finally, *dematerialisation* involves replacing physical media (paper, manual processes) with digital workflows and documents (Xiaoli Ji, 2022).

B. Overview of Key Digital Technologies

The technologies that structure today's digital landscape are numerous, but they can be grouped into functional families:

- **Computing and software:** information systems, ERP, CRM, and sector-specific software; these form the application base that enables automation and operational management (Polkowski, 2016).
- **Internet and networks:** high-bandwidth connectivity, protocols, and network architectures that make ubiquitous access to information possible (Kowsar, 2022).
- **Data and analytics:** Relational and nonrelational databases, data warehouses, big data, data lakes, and extraction techniques (data mining, analytics) that transform massive volumes of data into actionable information (Sarker, 2021).
- **Artificial intelligence and machine learning:** machine learning models, deep learning, and intelligent agents that enable the automation of pattern recognition, prediction, and assisted decision-making (Paramesha, 2024).
- **Cloud computing:** IaaS, PaaS, and SaaS services that enable on-demand consumption of computing resources, scalability, and a reduction in initial capital expenditure (Soori, 2025).
- **Connected objects (IoT) and sensors:** hardware devices that collect real-time data (Industry 4.0, smart cities, connected health).

Each component provides specific functions (storage, computation, collection, analysis), and their combination fosters innovation and organisational agility. Reviews and synthesis articles on cloud computing and AI detail these contributions and highlights associated challenges (security, data governance, and performance) (Zebari, 2022).

C. Evolution of Digital Technologies: Digitalisation, Dematerialisation, and Automation

The evolution of digital technologies is better understood by examining three interconnected waves or processes:

- **Digitalisation:** Over the past twenty years, organisations have progressively adopted digital technologies to digitise their existing processes (e-invoicing, digital document management, e-commerce). Studies indicate that digital transformation frequently begins with local initiatives aimed at improving operational efficiency (Nazara, 2024).

- **Dematerialisation:** The shift from physical media to digital formats has facilitated access to information, reduced logistical costs, and transformed interactions between customers and suppliers (such as digital signatures or electronic medical records). However, dematerialisation raises challenges in terms of governance and law (retention, evidentiary value, confidentiality) (Mohd Azim, 2018).
- **Advanced automation and digital transformation:** The integration of artificial intelligence, robotic process automation (RPA), and advanced analytics enables not only the automation of repetitive tasks but also the restructuring of business processes (e.g., predictive maintenance, autonomous supply chains). Technology is no longer limited to optimisation; it paves the way for the development of new products, services, and business models. Recent studies position digital transformation as an organisationally disruptive element that requires a well-integrated strategy (technology, human capabilities, organisational culture) (Ji, 2022).

D. Digital Challenges in Contemporary Society

Digital technologies raise multiple challenges of an economic, social, and ethical nature:

- **Digital technologies and the transformation of communication:** Communication has been radically transformed by digital technologies through immediacy, the viral dissemination of content, and the emergence of social platforms and decentralised information ecosystems. However, access to information has become more democratic; its quality, verifiability, and overabundance of information present challenges (misinformation, filter bubbles). Research indicates that, while access is improving, critical capacity and digital literacy have now become indispensable social competencies (Isnaini, 2025).
- **Digital technologies and access to information:** The evolution of digital technologies has changed how knowledge is accessed, enabling rapid, diverse, and broadly open dissemination. Individuals now have access to continuously updated resources and diverse content that was not previously easy to obtain through digital platforms, scientific databases, and collaborative tools. This process not only fosters broader dissemination of knowledge but also strengthens users' capacity for analysis and learning across sectors (Hattersley, 2018).
- **Digital technologies and innovation:** Currently, digital technologies constitute a crucial driver of innovation, operating simultaneously across technological, organisational, social, and economic dynamics. Innovative technologies such as artificial intelligence, big data, cloud computing, and the Internet of Things are reshaping economic patterns, improving internal processes through automation, and encouraging the emergence of innovative services such as telemedicine, e-learning, and smart cities. Digital technologies stimulate creativity, promote collaborative work, and support participatory, citizen-led innovation, creating a context conducive to cocreation and rapid recombination across industries. This dynamism is also evident in the transformation of the economic landscape and public institutions, as well as in social and technological progress (Qureshi, 2021).

2) Companies: Economic Role and Current Transformations

A. Definition of Companies

Table 1

Definitions of the Company

Definition of the company	Source
The company is, above all, a governance structure, an organised set of assets, contracts, and internal decisions chosen because it minimises transaction costs and enables uncertainties to be managed more effectively than the market.	(Williamson, 2002)
The company is a collection of unique and specific resources (capital, skills, know-how, routines, knowledge) on which it builds a sustainable competitive advantage.	(Grandori, 2018)
The company is a dynamic system of learning and adaptation: it stores routines, develops competencies, adapts to its environment, and evolves, making it more than a mere producer, rather a living actor capable of innovation.	(Coriat, 2010)

Definition of the company	Source
The firm (or company) is a legal person or an autonomous institutional unit capable of owning assets, entering into contracts, employing staff, and investing, thereby formalising its social, economic, and legal existence.	(Deakin, 2021)

Source: Personal compilation.

Within this broad definition, different categories of companies can be distinguished according to their size, structure, objectives, or degree of innovation:

- **SMEs (small and medium–sized enterprises):** These companies are generally modest in size, employing a limited number of staff between 10 and 49 employees for small enterprises and between 50 and 249 for medium-sized enterprises, with turnover and balance sheets that remain relatively modest. They play a crucial role in the local and national economy, particularly in job creation and in supporting large firms through subcontracting arrangements (Sadiki, n.d.).
- **Start-ups:** Young companies founded on an innovative idea, a novel product or service, or a disruptive business model. Various studies characterise them as entities seeking a "repeatable and scalable business model". Start-ups are frequently characterised by pronounced innovation, high adaptability, and a focus on rapid growth (Ouahdi, 2020).
- **Large companies/mature firms:** These organisations, which are typically structured and hierarchical, possess substantial resources (financial, human, and material), enabling them to operate at scale, invest in research and development, and maintain stability. However, they may lack the flexibility often associated with start-ups or SMEs (Testas, 2017).

B. Fundamental Functions and Objectives of the Company

Regardless of their type, companies fulfil fundamental functions and pursue essential objectives:

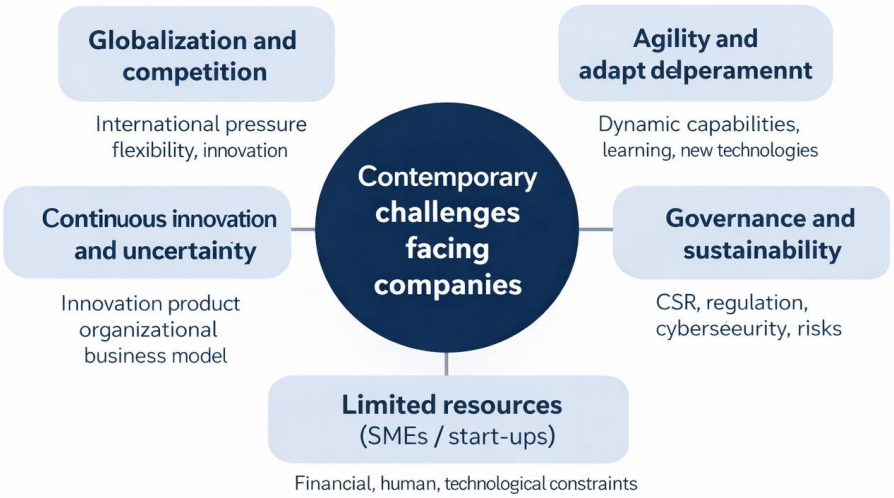
- **Value creation:** One of a company's core roles is to generate economic value, whether through the production of goods and services, innovation, improved resource efficiency, or profitability. This value creation may also take forms that are not exclusively financial, including social value, use value, and innovation value (Hmama, 2019).
- **Employment and socioeconomic dynamism:** Organisations play an essential role in employment: they recruit, train, and engage individuals; help reduce unemployment; and support income distribution. In particular, SMEs are frequently recognised for their capacity to create sustainable jobs and for their ability to contribute to structuring the local economy (Amoah, 2018).
- **Innovation and adaptation:** The company is a site of innovation, whether in terms of products, processes, business models, or organisation. The capacity to innovate is not limited to meeting market demands; it also enables differentiation, enhances competitiveness, and ensures sustainability. A systematic review of the literature on "innovation capabilities" in SMEs shows that, despite generally limited resources, these firms can generate innovation if they optimise resource use and encourage learning, risk-taking, and adjustment (Saunila, 2019).
- **Flexibility, strategic agility, and environmental adaptation:** In a globalised economic context characterised by continual change, companies must be flexible; that is, they must be able to respond, adjust, and reorganise their resources or operations in line with changes in markets, technology, or regulatory standards. "Dynamic capabilities, namely, the capacity to reconfigure internal resources and to innovate continuously, are indispensable for sustaining competitive advantage (Borch, 2007).

C. Contemporary challenges facing companies

In a context shaped by globalisation, companies face intensified competition that pits them against not only local but also international rivals, creating opportunities for expansion while heightening threats for SMEs and start-ups that lack resources or appropriate strategies. In parallel, the rapid evolution of the economic and technological environment compels a continuous pursuit of efficiency, agility, and

adaptation, requiring the development of "dynamic capabilities", such as organisational learning, the adoption of new technologies, and the regular review of processes (Surajwancy, 2024). However, these requirements often collide with the limited resources available to SMEs and start-ups, financial, human, or technological, which constrain their capacity for investment, innovation, and internationalisation (Deyassa, 2023). In this unstable context, companies must also innovate continuously, whether in products, services, business models, or internal organisations, while managing a high level of uncertainty and reconfiguring their resources to remain competitive. Finally, contemporary challenges include growing imperatives in governance, sustainability, regulatory compliance, and risk management, particularly cybersecurity, which companies, especially SMEs, must integrate to ensure their viability and meet societal expectations (Taghizadeh, 2023).

Figure 01: Contemporary challenges facing companies



Source: Personal compliation

3) Contribution of Digital Technologies to Corporate Performance

The growing prominence of digital technologies has profoundly reshaped the way companies organise their activities, manage their operations, and interact with their stakeholders.

A. Improvement of Operational Performance

Today, digital technologies constitute an essential tool for enhancing companies' operational performance. Digital technologies enable the automation of numerous repetitive tasks, the standardisation of procedures, and the optimisation of the value chain. The automation enabled by management software (ERP, CRM, computer-integrated production management systems, and specialised software) significantly reduces processing times, minimises human error, and improves overall productivity. According to Tarhini (2015), the implementation of ERP systems helps optimise operational performance by strengthening interdepartmental collaboration, facilitating information sharing, and reducing administrative and logistical costs. Real-time analysis enabled by digital technologies also facilitates process optimisation. The use of sensors and connected devices (IoT) provides detailed monitoring of production, equipment maintenance, and operational performance, thereby enhancing companies' responsiveness (Kahna, 2021).

B. Commercial Performance and Customer Relationship Management

Digital technologies have a significant effect on companies' commercial performance, particularly through the evolution of digital marketing, e-commerce, and customer relationship management (CRM) systems. Companies can reach broader audiences, refine their campaigns, and personalise customer relationships through digital platforms. Digital strategies strengthen customer acquisition and retention through consumer behavioural analysis, advanced segmentation, and automated marketing (Paendong, 2023). E-commerce is also a key factor in improving commercial performance, as it enables firms to develop new business models, reduce intermediation costs, and optimise transaction fluidity (Laudon, 2016).

C. Strategic Performance and Innovation

Digital technologies also represent a major driver of strategic performance and organisational innovation. Technologies such as big data and artificial intelligence (AI) enable companies to process vast volumes of data to inform strategic decisions and strengthen competitiveness. Firms that exploit advanced analytics are better able to understand market trends, identify opportunities more rapidly, and improve strategic decision-making (Aljehani, 2024). Companies that adopt advanced analytics therefore develop enhanced insight into market dynamics, detect opportunities more quickly, and optimise their strategic choices.

4) Limitations of Digital Technologies within Companies

Despite the crucial role that digital technologies play in enhancing performance and transforming organisations, their integration also involves constraints that limit their actual impact. Numerous scientific studies indicate that, when not adequately managed, digitisation can produce the opposite effect.

- **High investment and maintenance costs:** Implementing digital technologies, such as information systems, artificial intelligence, big data, cloud computing, and the IoT, requires substantial financial expenditure, which is often difficult for SMEs to manage. Costs are not limited to hardware; they also include maintenance, upgrades, software licences, and organisational integration (Aliyev, 2025).
- **Shortage of digital skills:** The digital domain requires technical competencies that are often difficult to source, including data analysis, cybersecurity, information systems administration, and artificial intelligence. Many companies face a shortage of qualified talent, which limits their ability to benefit fully from digital tools (Tee, 2024).
- **Heightened cybersecurity risks:** The expanding use of digital technologies exposes companies to a broader range of cyber threats, such as cyberattacks, data theft, malware, and industrial espionage. This increased exposure stems from the expansion of information systems, the growth in access points, and, in some cases, inadequate management of existing digital tools (Frolova, 2018).
- **Data protection issues and ethical concerns:** The growth of large-scale data storage and processing, particularly through big data technologies, has raised significant concerns regarding privacy and compliance with regulations such as the GDPR. The algorithmic use of such information also raises significant ethical questions, including the transparency of models, fairness in treatment, and the risks of algorithmic discrimination (Klein, 2022).
- **Internal resistance and organisational change difficulties:** By radically altering processes, roles, and organisational culture, digital transition frequently generates substantial internal resistance. Employees may feel apprehensive about change, fear their jobs, anticipate workforce reductions, or feel overwhelmed by cognitive overload as they integrate new digital tools, which can lead to digital stress. A range of studies indicate that these human factors constitute a significant obstacle to the successful implementation of digital projects within companies. In this respect, the human element through fears, routines, and resistance often proves to be the primary barrier to digital transition, even outweighing technical or financial obstacles (Bagrationi, 2022).

- **Technological integration problems:** One of the principal challenges of digitalisation is the complexity of integrating recent technologies into established infrastructures. Many organisations continue to rely on legacy systems that are often inflexible, outdated, and poorly suited to contemporary solutions such as artificial intelligence, next-generation ERP, intelligent CRM, or IoT devices. This difficult coexistence generates technical incompatibilities, complex maintenance, implementation delays, and considerable additional costs associated with the necessary upgrades or adjustments (Vial, 2019).

Conclusion

The analysis of the contribution of digital technologies to corporate performance demonstrates that digital tools now constitute an essential lever for competitiveness, innovation, and adaptation. They enhance operational efficiency, optimise customer relationships, strengthen strategic capabilities, and support the development of new business models. However, this transition is not limited to adopting technological tools; it involves a comprehensive transformation of organisations, mobilising skills, fostering a renewed internal culture, and establishing robust governance. The identified limitations, investment costs, skills shortages, cybersecurity issues, ethical concerns, and human resistance underscore that digitalisation is not a mechanical process but a complex change that requires preparation, support, and strategic vision. Consequently, digital performance depends less on technology itself than on companies' ability to integrate it intelligently, mobilise their human resources, and develop an organisational framework conducive to sustainable innovation.

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