

Digital transformation and performance: Literature review, synthesis, and research model

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Abstract:

In an increasingly interconnected world, the emergence of digital businesses is disrupting traditional business models. Leaders are left with no choice but to embrace digital transformation. In this rapidly changing world, organizations must respond and adapt, as failing to do so could result in their activity decreasing or even disappearing, while more agile players capitalize on the market and attract younger generations.

Digital transformation is seen as a significant driver of performance. It influences how companies operate and inspires them through paradigm shifts driven by current events and new technologies. It impacts internal relationships and interactions within the organization, as well as its external relationships. Moreover, the information processing and analysis capabilities offered by digital transformation have opened up immense opportunities across various areas, allowing companies to reduce costs, establish new customer dialogues, and enhance organizational efficiency.

The opportunities presented by digital transformation, the resources and skills it demands, and the challenges and concerns associated with undertaking such a project have prompted company leaders and researchers to view digital transformation as a focal point of interest. Within this context, this study aims to explore the effects of digital transformation on company performance and the expected objectives of a digital transformation project within a theoretical framework.

This research work seeks to synthesize existing knowledge on digital transformation in companies and derive a comprehensive theoretical framework through a literature review. This framework aims to provide a conceptual understanding of the factors that drive digital transformation, the organizational changes required in the digital era, and the anticipated outcomes of digital transformation projects. Furthermore, the proposed framework emphasizes the need for ongoing monitoring of digital transformation initiatives and making necessary adjustments to achieve the ultimate and primary goal of improving company performance to ensure long-term sustainability.

Keywords: Digital transformation, performance, technology, companies

JEL Classification: L25, M10, M20

Paper type: Theoretical Research

1. Introduction:

According to OCDE (2021), digital technology is widely recognized as the world's fourth industrial revolution, creating enormous economic and social opportunities through unprecedented change. The health crisis linked to the Covid-19 pandemic has further accentuated this reality. At the start of 2020, the world experienced a massive migration to the digital space, accelerating the digital transformation movement. Students with Internet connections at home began to take courses remotely, many employees embraced remote working, and many companies opted for digital-based business models to maintain their operations and preserve part of their revenues. At the same time, as the pandemic evolves, the number of mobile applications continues to grow, and researchers are increasingly using artificial intelligence (AI) to better understand viruses and accelerate vaccine development...

Digital transformation is not a new phenomenon: the expression first appeared in 2000 with KEYUR & MCCARTHY (2000). Since 2013, according to Dudézert (2018) the term "digital transformation" or "digital transformation" has become commonplace in corporate discourse. However, it sometimes encompasses very different realities. Some even argue that it's impossible to precisely define what a company's digital transformation is, as it's difficult to delineate its starting and end points. Although certain phenomena accompany the emergence of this term, such as the widespread use of smartphones and tablets, as well as the popularization of related application and hardware domains (applications, cloud computing, big data, etc.), there remains a certain diversity in interpretations and approaches to digital transformation. According to Nylén (2015), The definition of this digital transformation remains unclear. Digital transformation brings new, disruptive changes to the economy and environmental conditions are changing rapidly as a result of digital technologies and digitization according to Osmundsen, Iden, & Bygstad (2018). Karimi & Walter (2015) mention in their study that digital technologies, innovation, and digitization are fundamentally changing business processes, products, services, and relationships. In other words, many organizations have or are undergoing digital transformation.

These days, the attention of researchers is increasingly turning to the correlation between the notion of digital transformation and the preponderant interest it arouses among business leaders. According to Bartoli and al., (2014) the concept of performance implies the idea of accomplishing an action, without prejudging the nature, level, or measure of the results to be obtained. This definition goes back to the etymology of the term. According to AMIFI & BENLAKOUIRI (2019), Performance is a concept closely linked to a body of studies in management science, as improving organizational performance is the main objective. Paradoxically, Gavrea, Liviu, & Stegorean (2007) mentioned that there is no consensus on the definition of performance, and there are as many answers as there are points of view. It's an ambiguous, dispersed, and multidimensional concept that takes on its full meaning in a clearly defined context. Although the concept is an old one, it was only used in a management science book in 1979. Before this, performance was the productivity and profitability of an industrial company.

According to Berrah, BENKIRANE, & BENAZZI (2021), Digital technology is currently the essential tool for meeting market challenges. The urbanization of information systems makes it possible to achieve the efficiency so sought-after by companies, and consequently to achieve performance.

Before establishing a model for the relationship between the concepts of digital transformation and performance, it is essential to define them precisely. To do this, we need to examine the various theories that have already studied the connection between these two notions. This approach will enable us to create a solid theoretical conceptual framework.

In this research context, we aim to develop a research model by combining existing knowledge

on the relationship between digital and performance. To this end, we will conduct an in-depth literature review. The goal is to propose a comprehensive theoretical framework that will facilitate a conceptual understanding of this relationship, to answer the following research question:

To what extent can digital technology contribute to improving business performance and achieving objectives?

This question leads us to formulate the following research questions:

- What is the definition of digital transformation?
- What are the fundamental axes of digital transformation?
- How can we define the relationship between digital transformation and performance?

To answer these questions, this article will be divided into three parts. The first part will be devoted to the concept of digital transformation, while the second part will focus on the concept of performance in management sciences, and the last part will be a theoretical study of the relationship between the two concepts, which is the main objective of our research model.

2. The concept of Digital transformation

2.1. Defining digital transformation:

According to Bilgeri , Wortmann, & Fleisch (2017), Hartl & Hess (2017), Heilig, Schwarze, & VoB (2017) , Mueller & Renken (2017), digital transformation is a major organizational change, driven, built, or enabled by digital technologies, and which alters the way business is conducted. According to Stolterman & Fors (2004), Digital transformation, also covering digitization and dematerialization, remains a protean concept, some practitioners characterize it as "the changes induced by digital technologies in all aspects of human life". For DELTOUR & LETHIAIS (2014), digital transformation is an innovation strategy that supports business performance by introducing new technological investments or enhancing the use of existing technologies. In the same context, Westerman (2016) defines digital transformation as the use of technology to radically improve business performance or scope.

According to the same author, management's vision for the next five or ten years should not involve a world where all employees are seen as contract resources working under close, mechanical supervision. It shouldn't be a world where automation eliminates workers and managers from the system. On the contrary, it should be a world where computers help employees collaborate fluidly, make decisions scientifically, and manage more effectively through automation, in ways they couldn't achieve without it . Westerman (2016) mentions that In the long term, companies that know how to harness the potential of digital technology and value the hearts and minds of their employees will outperform those that view individuals as mere machines. According to Westermann, digital transformation is distinguished by its ability to generate better performance by completely reshaping a company's business model or its entire value chain within a sector. It involves configuring products, procedures, and customer experiences with the right balance between costs and the benefits offered to consumers or industrial buyers. In the age of digital innovation, leaders in all sectors must strive to transform every aspect of their business, from customer experience to business models to operational management. However, we must never forget that it's people who make businesses work.

The concept of digital transformation is often used interchangeably with concepts such as digitization and innovation. However, despite some similarities, it's important to differentiate between the three to enable more meaningful conversations based on consistent use of terminology. Digitization as RHERIB , EL AMILI , & ELLIOUA (2021) define, is the use of digital technology to change social structure. By structure, we mean anything that consists of parts organized together, such as products, services, user experiences, processes, etc. The socio-technical structure refers to both social structures (human interactions, relationships,

norms, etc.) and technical aspects (techniques, tasks, routines, etc.). According to Yoo, Henfridsson, & Lyytinen (2010), during the digitization process, the physical and social aspects of buildings have changed. Digitization therefore goes beyond the purely technical process of encoding analog information in a digital format. Yoo, Henfridsson, & Lyytinen (2010), define digital innovation more as a process, while Fichman, Dos Santos, & Zheng (2014), focus on the outcome of digital innovation. Fichman, Dos Santos, & Zheng (2014), mentioned that Digitization, innovation, and digital transformation are closely linked and interconnected in different ways. The fruits of digital innovation can be digitized by absorbing individuals into the diffusion stage of the digital innovation process.

Finally, we suggest that digitization and digital innovation can bring about significant changes in business behavior, leading to the digital transformation of an entire organization or sector. To achieve the objective of this work, Table 1 below compares several definitions, to draw out the common ground between them and better understand the theoretical framework of digital transformation.

Table 1 Literature review of digital transformation

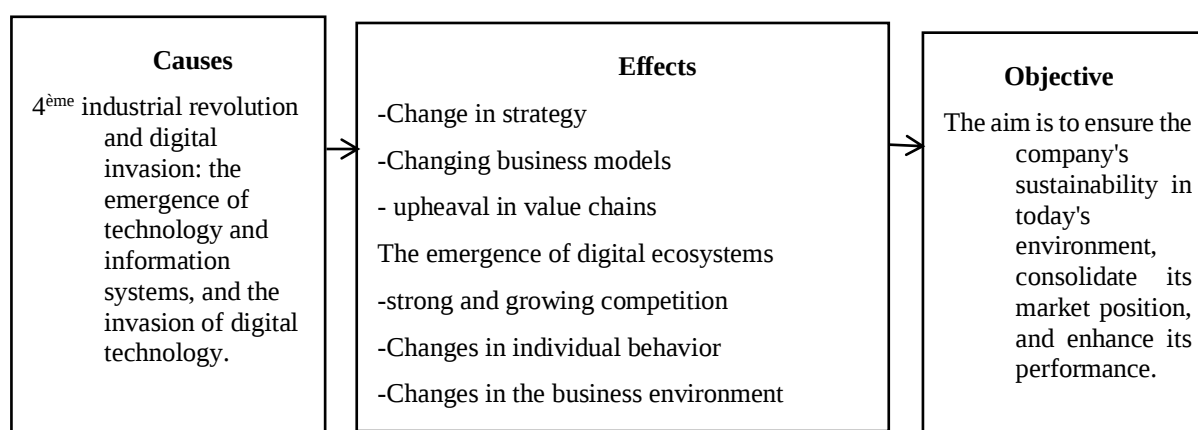
Source	Definitions	Keywords
Stolterman & Fors, (2004) "Information Technology and the Good Life"	"The changes brought about by digital technologies in all aspects of human life" (Stolterman & Fors, 2004)	Change, digital technologies, human life
DELTOUR & LETHIAIS, (2014) "Innovation in SMEs and its support by ICT: what effects on performance?"	"Digital transformation as an innovation strategy, supports business performance by bringing in new technology investments or enhancing the use of existing technologies." (DELTOUR & LETHIAIS, 2014)	Innovation strategy, corporate performance, technological investments, technologies
(Westerman, 2016) "Why Digital Transformation Needs a Heart?"	"Digital transformation is the use of technology to radically improve business performance or reach." (Westerman, 2016)	Technology; performance
Reis, Amorim, Melao, & Matos (2018) "Digital Transformation: A Literature Review and Guidelines for Future Research".	Identify aspects of digital transformation in three distinct classes: -A technological aspect where digital transformation relies on the use of new digital technologies such as social networks, mobile technology, analytical or integrated tools (FITZGERALD, KRUSCHWITZ, BONNET, & MICHAEL WELCH, 2013) - An organizational aspect where digital transformation requires the creation of new business models (Ross, et al., 2016) - A final social aspect or digital transformation is a social phenomenon that influences all aspects of human life. (Reis, Amorim, Melao, & Matos, 2018)	New technologies; new business models; social phenomenon
Matt, Hess, & Benlian(2015) "Digital Transformation Strategies	"Digital transformation strategy is a blueprint that helps companies manage the transformations that result from the integration of digital technologies, as well as their operations after a transformation." (Matt, Hess, & Benlian, 2015)	Master plan; digital technologies
Hanelta, Bohnsack, Marz, & Marante,(2021) "A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change".	"We define DT as organizational change triggered and shaped by the widespread diffusion of digital technology. The content of this change, we argue, includes a shift towards malleable organizational designs that are embedded in and driven by digital business ecosystems." (Hanelta, Bohnsack, Marz, & Marante, 2021)	Organizational change; digital technology; digital business ecosystems

Piccinini, Hanelt, W. Gregory, & Kolbe (2015) « Transforming Industrial Business: The Impact of Digital Transformation on Automotive Organizations ».	"Digital transformation is about leveraging digital technologies to enable major business improvements, such as improving the customer experience or creating new business models." (Piccinini, Hanelt, W. Gregory, & Kolbe, 2015)	Digital technologies; business improvements
Haffke, Kalgovas, & Benlian, (2016) « The Role of the CIO and the CDO in an Organization's Digital Transformation »	"Digital transformation encompasses the digitization of sales and communication channels, which offers new ways of interacting and engaging with customers, and the digitization of a company's offerings (products and services), which replaces or augments physical offerings. Digital transformation also describes the triggering of tactical or strategic business actions by data-driven insights, and the launch of digital business models that enable new ways of capturing value." (Haffke, Kalgovas, & Benlian, 2016)	Digitization; sales channels; communication channels; company offers; sales actions; sales actions

Source: authors

To summarize the definitions of digital transformation, the diagram below summarizes the various common points in the literature review:

Figure 1: Definition of digital transformation



Source: Authors

2.2. Fundamental axes of digital transformation:

According to REGRAGUI (2020) The digital transformation of companies is not just about the intensive adoption of tools and technologies, or the dematerialization of internal and external processes, but is also challenging business models, value chains, the competitive environment, organizations and the way they operate, professions, how men and women work and collaborate, and the daily lives of employees.

In this context, VIVIER & DURCEY (2019), confirmed in their « The guide of digital transformation » that digital transformation consists of developing a company's business in a digital and connected world around three fundamental axes:

Review the business model:

According to BENGRICH & ABDON (2022), for a company, digital transformation shakes up all the pillars on which it rests, starting with the business model. The fundamental question posed to companies by digital transformation is how to generate sales and profit in a digital world. By running businesses based on the business, organization, and distribution models of

the last century, it is unlikely that companies will continue to be profitable in the long term. Who would have thought to speak of "digital transformation" for startups? Nobody, of course. Since they are themselves digital, they live and think "digital first". They build their business based on digital channels because they adapt and modify their organization in real-time. They are constantly adapting their offer by familiarizing themselves with their customers' behavior. Some are also moving towards changing their business model along the way, to discover a more efficient one.

Customer experience:

The second key aspect of digital transformation as demonstrated by BENGRICH & ABDOU (2022) is the customer experience, which requires in-depth knowledge of customers, made extremely precise thanks to digital technologies such as online behavior tracking and geolocation. Data collection and analysis play an essential role in this customer understanding and serve as a crucial starting point for improving the experience of products, brands, companies, and consumers. Web analytics and big data tools, particularly for processing often unstructured data, are at the heart of digital marketing. Marketing personalization is increasingly important, with a focus on creating a seamless customer journey. What's more, this customer knowledge must also consider the multiple points of contact consumers have with a brand, product, or service, from cell phones to physical stores to social networks. Thus, the major challenge for digital marketing is to implement a cross-channel strategy to satisfy this digital customer.

Rethinking the organization:

To tackle digital transformation, it's essential according to BENGRICH & ABDOU (2022) to start by focusing on a preliminary analysis of digital maturity, examining each point in detail. The integration of digital technology into all dimensions and departments of a company is a crucial issue that should guide its leaders. This is usually supported by a Chief Digital Officer (CDO) within the company, whose responsibilities include developing and implementing an overall digital strategy, supporting managers and teams, establishing a measurement plan, and identifying key performance indicators. The CDO is also responsible, as a member of the management committee, for assessing the impact of digital technology on the company's business, and for challenging the fundamentals that define it:

What does the company sell: its product or service?

How does it sell: commercial platforms, social media, mobile, etc.?

How is it sourced: digital marketplaces, crowdsourcing, etc.?

How it's made: 3D printing is revolutionizing the industry and could soon revolutionize biotechnology.

Who it's for shopping habits have evolved, with practices such as ROPO (Search Online, Buy Online), click-and-collect (online purchase with in-store pick-up), and drive-to-store (attracting customers to a store using their cell phone's geolocation data).

How it is organized and managed: digital work environment, collaborative management, corporate social networks, etc.

From the literature review carried out based on previous works, it emerges that various authors approach the concept of digital transformation in terms of objectives, effects, and impacts on the company, as well as the causes that lead to this transformation.

In short, digital transformation encompasses all the actions undertaken within an organization to integrate digital technologies into its processes. This can take the form of automating repetitive tasks, improving the flow of information within the organization through ERP (Enterprise Resource Planning), for example, or dynamic management of customer and prospect portfolios. This transformation aims to strengthen the company's competitiveness and

radically improve its performance.

The concept of performance

General definition:

The concept of performance has been studied extensively in management sciences. This research aims to improve the performance of businesses and organizations. However, these studies have not led to a universal and consensual definition.

Discussing the concept of performance first leads us to the historical origins of the word. According to Pesqueux (2004), the term "performance" comes from the Old French "performer," which meant "to accomplish, to execute" in the 13th century. The English verb "to perform" emerged in the 15th century with a broader meaning. It refers both to the completion of a process or task and to the results achieved and the success one can claim.

Moreover, according to BOURGUIGNON (1997), the term "performance," before being adopted by businesses, was primarily used in two specific fields: sports, to indicate the results of a competition or race, and mechanics, to specify the potential and technical capacities of a machine. Thus, the word "performance" is not new to human life ; it is a term with roots in the past. However, its initial appearance was not in the field of management but in other areas such as sports, mechanics, and physics. The use of this concept across various domains has given it different meanings, making it difficult to define or confine it to a single field.

In the same vein, according to Pesqueux (2004), the difficulty in grasping this term is due to its ambiguity. He presents several uses of the word in different areas.

In the field of physics, performance is considered a "useful" effect about its object, as reflected in the Larousse definition: "A set of qualities that characterize the capabilities (acceleration, maximum speed, autonomy, etc.) of a car, an aircraft, or similar vehicles."

In the field of sports : The most common reference today relates to sports seen as a conventional game, where rules establish the standards for both measuring and evaluating performance. These two aspects constitute the process of performance assessment.

Performance, therefore, encompasses multiple meanings and fields (theater, sports, mechanics, society, physics, etc.). It is thus a "catch-all" term that has received and continues to receive various interpretations.

The concept of performance in the field of Management Sciences

In the field of management sciences, performance is generally defined as the achievement of an organization's objectives, or even surpassing them. According to (Saulquin & Schier, 2007) performance is a concept focused on the stated result, but it also conveys a value judgment on the outcome (whether positive or negative) and the approach that was used to achieve it.

According to Saulquin & Schier (2007), the concept of performance has as many meanings as some individuals or groups use it. For an executive, performance may represent the profitability or competitiveness of their company; for an employee, it could be the work environment; and for a customer, it may be the quality of the services provided. The variety of possible approaches makes it an over-determined concept, yet paradoxically, it remains indeterminate due to the diversity of groups within the organization."

However, according to Bessire (1999), the word "performance" has become a common term, encompassing many aspects of our societies, creating a sort of devotion to performance. In this sense, according to Bourguignon (1995), and as confirmed by Cherkaoui Benslimane, (2020) the use of the term "performance" in the field of management indicates various meanings, which he has attempted to group into three categories based on the original sense of the term:

Performance as « result »: which must be compared to a reference point (the objective).

Performance represents "the level of achievement of objectives."

Performance as « action »: which distinguishes competence (the ability to act, to produce) from performance (actual production). There is performance when it is possible to observe the

transition from potential to realization. This understanding of performance relates to the process, not just the result.

Performance as « success »: Success is not immediately an attribute of performance, as it depends on the ambition of the set objective and the social conditions for evaluating success. Thus, evaluation categories must be introduced about a reference point. "A performance is neither inherently good nor bad. The same result can be seen as a good performance if the objective was ambitious, or a poor performance if the objective was modest."

We can conclude that in the field of management sciences, the notion of performance encompasses the idea of a process, an action, and a result. Simply put, performance is the outcome of an action. In other words, it is a post-evaluation of the results achieved.

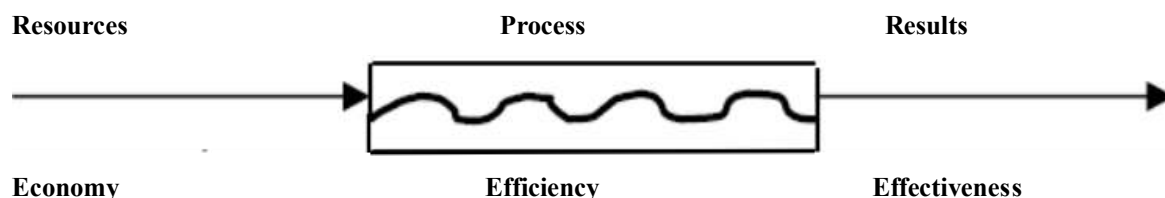
2.3. Financial performance:

According to Cherkaoui Benslimane (2020), company performance is a fundamental concept in business management. Since its first appearance, it has been a one-dimensional concept, reduced to the financial dimension, measured only in terms of profit. This achievement consists of achieving the profitability expected by shareholders through sales and market share, ensuring the stability and sustainability of the company. This reasoning can be explained by the weight of the owners in the decision-making process, which is why performance is mainly aimed at creating value for shareholders. The prospect of reducing performance to a single dimension appears in two definitions: French and English.

According to Bourguignon (1995), in the French definition, achievement is the result of an action, success, or achievement. Contrary to the French meaning, achievement in English "includes both the action, its result and, possibly, its extraordinary success". Therefore, both definitions of performance aim at achieving success in the financial sense.

Thus bouquin (2004) represents the general problem of performance in the following way:

Figure 2: Definition of digital transformation



Source: Bouquin (2004), « Management control »

The author explains with the following figure that frugality is about obtaining the company's resources at the lowest cost; efficiency means maximizing the number of products or services obtained from a given amount of resources: profitability (the ratio of profit to invested capital) and productivity (the ratio of the amount received to the amount consumed) are two examples of efficiency. Finally, effectiveness is the achievement of goals and objectives. Defining performance only in terms of effectiveness and efficiency may be reductionist. Therefore, according to MEGZARI, EL YANBOIY, & HEMMI (2019), the financial logic of performance has been questioned, and the performance debate has encouraged companies to supplement specialized financial and economic management criteria with measures that describe other aspects of their operations. In this context, the debate on performance has become richer, especially with the emergence of concepts such as social responsibility, stakeholders, etc...

2.4. Non-Financial performance:

According to Cherkaoui Benslimane (2020), financial performance alone is no longer sufficient to evaluate a company's overall success.

In the 20th century, the concept of performance expanded to include non-financial aspects, particularly corporate social responsibility (CSR). Non-financial performance stems from the broader and often debated concept of performance, which remains complex and lacks a universally accepted definition. According to (Pesqueux, 2004) performance is a measurable outcome evaluated against a set benchmark, emphasizing its multidimensional nature.

A study of GUENNOUN & CHTOUROU (2016), indicates that non-financial performance is influenced by factors such as product quality, customer satisfaction, employee motivation, and innovation. These elements directly impact a company's profitability and extend beyond the interests of shareholders, traditionally the focus of financial performance, to encompass the concerns of other key stakeholders like customers and employees. With differing and sometimes conflicting objectives among stakeholders, performance takes on diverse meanings depending on the perspectives of various groups within the organization.

In line with this, Saulquin & Schier (2007) highlight that a manager's view of performance might center on strategic achievement, whereas an employee might prioritize the working environment, and a customer might value the quality of services provided. The concept of performance, therefore, shifts depending on the stakeholder's role within or outside the organization.

Contrary to the notion that financial performance has been supplanted by non-financial measures, Giraud, Saulpic, Naulleau, Delmond, & Bescos (2005) argue that the concept has evolved to include a broader range of practices without discarding financial metrics. Both financial and non-financial dimensions play critical roles in enhancing overall corporate performance. Achieving a balance between these dimensions is essential for fostering long-term sustainability and corporate longevity.

3. The concept of performance

3.1. The effect of digital transformation on performance: a literature review

With the advancement of information technology, the interaction between its use within companies and their performance has aroused growing interest within the scientific community. The "IT productivity paradox, the theory of Carlaw & Oxley (2008) is the most notable example of this, giving rise to two divergent opinions within the scientific community.

One view asserts that the "IT productivity paradox" is an objective reality. According to this perspective, the use of IT will have little, if any, positive impact on business performance, but will instead create an additional burden for companies. A survey of 30 companies. Pan, Han, Song, & Wang (2020), revealed that the adoption of information and communication technologies led to only a marginal improvement in performance for only a few companies. This improvement was most marked in science- and technology-oriented companies, while other types of companies showed no significant gains.

In addition, a study of the world's 500 largest companies from 2010 to 2014 by DANY & FODA (2019), revealed that, despite their leading position in the field of information technology, these companies did not record any significant increase in their assets and profit margin on sales over the five years studied. On the contrary, their operating costs rose considerably. Another view argues that the "IT productivity paradox" has no basis. As IT continues to advance, the Big Data industry is gradually developing, and the application of this technology can improve business performance. Studies such as that conducted by Liying (2015) and Ren, Lee, & Hu (2023) have demonstrated that investment in metadata applications can foster economic growth, increase labor productivity, and boost profit margins at national, industrial, and corporate levels. Other research, such as the one by Rehman et al.(2020), has analyzed the link between the application of Big Data in a company's human resources and its overall performance. These studies highlighted that the use of big data in personnel management by the human resources

department can improve the company's efficiency and performance. Awan, et al.(2021), have highlighted the positive impact of digital decision-making in the transition to a circular economy. The work of Rehman and al, (2020) has also highlighted that digital-based decision-making is linked to increased productivity and higher market value, as evidenced by certain profitability indicators such as return on equity (ROE) and asset utilization. Overall, this research offers a better understanding of the benefits of digitization and highlights how the application of Big Data can help improve business performance and competitiveness.

A study by Tambe & Hitt (2012) found that the short-term rate of return of medium-sized companies is considerably lower than that of Fortune Global 500 companies, and this improvement is slower in large companies. In medium-sized companies, the short-term contribution of information and communication technologies (ICT) to production is similar to the long-term contribution. Moreover, between 2000 and 2006, the marginal output of IT spending reached an unprecedented level.

The table below summarizes previous studies on digitization. All the research presented in Table 2 has substantiated the inconsistency of the view that digitization systematically improves corporate performance. What's more, the effects of digitization on corporate performance vary between emerging markets and developed countries, and even from one region to another.

Table 2 Theoretical framework of the relationship between digital transformation and performance

Author	description	Attitude
Cardona, Kretschmer, & Strobel (2013)	The paper presented convincing evidence that over the past two decades, a 10% increase in investment in information and communication technologies (ICT) has translated into higher output growth of between 0.5% and 0.6%. (Cardona, Kretschmer, & Strobel, 2013)	Positive
Koc & Bozdag, (2009)	In this study, the authors demonstrated that local area networks, computer-aided design, and computer-aided manufacturing technologies are the most frequently used and automated in small and medium-sized enterprises (SMEs), generating favorable results. In contrast, storage, robotics, and wide-area network technologies are the least commonly adopted and automated in these SMEs.	Positive
Boadi, Mawutor, Dzorka, & Kubaje, (2022) Ren, Lee, & Hu, (2023)	The study revealed that there is a significant and negative relationship between IT, investments, and the cost/income ratio used as a proxy for bank efficiency. (Boadi, Mawutor, Dzorka, & Kubaje, 2022) (Ren, Lee, & Hu, 2023)	Negative
Chen, Jaw, & Wu, (2016)	In this research, the moderating effects of professional training on the relationship between information technology (IT) investment and the financial performance of auditing firms in Taiwan were investigated. Empirical results show that chat-based professional training is significantly positively associated with productivity, but showed no significant correlation with profitability. (Chen, Jaw, & Wu, 2016)	Negative
Stratopoulos & Bruce Dehning, (2000) Ren, Lee, & Hu, (2023)	Comparing high-performing IT users with those with lower levels of performance, the study revealed that high-performing IT users show better financial performance than the others. However, any financial advantage gained is short-lived, probably due to competitors' ability to imitate IT projects. (Stratopoulos & Bruce Dehning, 2000) (Ren, Lee, & Hu, 2023)	Neutral

Source: Authors

3.2. The changes generated by digital transformation on corporate functions and performance:

A study by DELOITTE (2016), digital transformation is driving lasting change in the way companies operate and relate to customers, by encouraging connectivity and the adoption of digital tools. It fosters creativity and innovation, increasing their impact on customer satisfaction and loyalty. Digitization offers the possibility of broadcasting advertisements on

sites, making it possible not only to convey a message to a wide audience but also to further personalize that message.

Digitization represents an opportunity to increase efficiency, foster growth, and, ultimately, adapt and meet customer expectations. Such improvements require greater organizational agility and an overhaul of internal processes and functions, and consequently improved corporate performance. These changes have been illustrated by FAYON, TARTAR, & Babinet, (2019) and Lahchame & Chafik (2021) as follows:

- **Facilitating collaborative work:**

According to FAYON, TARTAR, & Babinet, (2019) and Lahchame & Chafik (2021), The integration of agility within their organizations responds to the need for responsiveness and flexibility, which are essential to guarantee customer satisfaction. This satisfaction requires solid adaptability and contributions of value that go beyond the simple notion of return on investment. However, agility is not achieved by a simple command; it must be learned and developed to generate value for customers while improving productivity. Consequently, training and awareness-raising are essential to instill this mindset.

- **Adjust your back-office tools:**

FAYON, TARTAR, & Babinet, (2019) and Lahchame & Chafik (2021) confirmed that to guarantee agility and accelerate cycles, it is essential to adapt reliable back-office tools to improve efficiency and responsiveness. However, these tools are often associated with cumbersome processes that are difficult to develop. As a result, companies need to equip themselves with ERP systems that are specialized, collaborative, and open to partners and suppliers.

For example, digitization enables the dematerialization of pay slips and improves employee training using e-learning platforms. Digitization also offers more flexible technologies, such as SaaS (software as a service) solutions and especially PaaS (platform as a service) platforms, which companies need to invest in. These platforms provide the building blocks for the rapid design and development of specific applications in the cloud.

- **Changing uses and functions:**

According to FAYON, TARTAR, & Babinet, (2019) and Lahchame & Chafik (2021), the use of digital tools to support professional behavior and actions is designed to encourage changes in practices and functions in the field, on the factory floor, or in sales, to improve efficiency and productivity. This involves integrating new technologies into processes to provide real-time information. The aim is to be able to guide actions by providing dashboards and efficiency indicators for established processes. Processes need to be optimized, shortened, and better integrated. Fleets of mobile terminals are a good example of process digitization: communication with field staff becomes rapid, itineraries are easy to modify and priorities become transparent to staff.

- **Digitalization of business processes:**

According to FAYON, TARTAR, & Babinet, (2019) and Lahchame & Chafik (2021), digitizing business processes is often not approached rigorously. Some people mistakenly believe that introducing a new device or replacing paper with an app is all that's needed to achieve this. However, this digitization must be well-established with a consistent approach and clear objectives. Otherwise, there's a risk that the process will be uncontrolled, ill-conceived, and therefore rarely accepted, as well as inefficient.

- **Business process digitization objectives:**

- ✓ Socialize the process: encourage dialogue and collaboration between different players,

- increasing task efficiency through sharing.
- ✓ Circulate information: dematerialize documents and processes, identify and share successes and best practices.
- ✓ Reallocate tasks: identify optimizations to enable the most relevant actors to carry out activities.
- ✓ Open to third parties: give authorized partners, suppliers, and customers easy access to external interactions.
- ✓ Facilitate access to data: enable data to be used and managed in real-time, and the repository to be updated.

▪ ***Approach to digitizing business processes:***

Thanks to cross-functional project management methodologies and processes, as well as a transformation process offering a value proposition, a holistic approach to the organization is adopted to find the solution best suited to the challenges, the budget, the deadlines, and, above all, the corporate culture.

- ✓ Define use cases: get to know users, identify profiles and associated uses, taking into account business expectations.
- ✓ Use the right terminal: take advantage of market innovations, ensure compatibility with all terminals, and take advantage of the diversity of terminals depending on the use case.
- ✓ Modeling pathways: building the different stages of the pathway and working on the user experience.
- ✓ Accompanying change: assessing change and defining strategies to support and promote a digital culture

4. Conclusion

Companies are facing new challenges to improve their economic, organizational, and commercial performance while recognizing that customers now have the power to decide when, where, and how to interact with brands.

Understanding the customer journey is therefore essential if we are to meet their changing needs. In this respect, digitalization can be a solution.

Digital transformation is the strategic adoption of digital technologies to improve processes and productivity and deliver a better experience for customers and employees while managing risks and controlling costs. This transformation encompasses a multitude of tools, solutions, and processes, requiring strategies tailored to each company to be effective. It is essential for maintaining competitiveness, as few companies can survive without a strategy for adopting cost-effective technology.

Digital transformation can improve business performance by simultaneously developing the customer experience and the employee experience. As such, every company needs to embark on both paths to cope with the new digital revolution, which includes advances such as 3D printing, smart data, and artificial intelligence. However, to succeed in this evolution, it is essential to guarantee internal efficiency.

Ultimately, it's crucial to understand the tools, their use, and their purpose. Each organization must find its winning combination by developing and adopting its digital model. A holistic understanding of the digital ecosystem will enable all its dimensions to be identified and the appropriate tools and methodologies to be selected and articulated to reap the full benefits of the company's projects.

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