

# Digitalization and Its Impact on Business

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## SUMMARY

*We are now in a new era of business management, where companies have understood that the sustainability and survival of their activities is based on mastering and adapting new technologies to their strategies. The result of the integration of technological power in the management of companies gives rise to digitalization that disrupts business strategies, contributing significantly to the creation of new business models. This profoundly affected the strategic context; changing the structure of competition, business conduct, and ultimately, performance across industries. This paper is a descriptive literature review of recent works discussing the impact digitalization has had on business. In this work, firstly, a theoretical overview of digitalization and its development is presented. Afterwards, the digitalization of business as well as its impact is discussed. The result of this review is a summary of the advantages and disadvantages that digitalization brings to businesses.*

*Keywords: Business; Covid pandemic; digitalization; small and medium-sized enterprises.*

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## INTRODUCTION

Technological revolutions are causing tremendous changes in the economic sectors of the 21st century, just as the industrial revolution did in the 19th century (Xu et al., 2018). The economy has drastically evolved. Technical progress, which opens up new economic prospects, gives rise to new products, services and working methods (Song & Wang 2019). In just a few years, a new component has emerged as the engine of economic growth: digitalization (Foster et al. 2020). Economic success no longer rests on the wealth of raw materials, as was the case before, but rather on intangible capital as a source of competitive advantage (Tambe et al. 2019). Foster had already predicted in the eighties, when computerization began to spread in economic and social life, that the production industries, and a large part of the service industries, would experience a major technological change in the 2000s (Foster 1986). Digitalization is considered the source of globalization, transforming therefore the nature of products, the processes to produce them, the definition of skills and jobs, the form of competition,

the balance of the market and the relationship between nations (Putilov et al. 2018; Jeske et al. 2021).

In the history of mankind, the introduction of new general-purpose technologies has spread like a wave, even if a large-scale introduction of technology sometimes takes time. Productivity growth comes from the useful uses of this technology spreading across different sectors of the economy (Carlsson 2019). The QR code now makes it possible to sell everything on a single small screen, spreading everywhere in online commerce. Thus the technique of banknote dispensers also made it possible to issue – after little technical adaptations – train or metro tickets. Everything hangs together; each novelty leads to another, even if this disrupts professions and certainties.

When the greatest benefits of new technologies have been exploited, productivity growth wanes (Carlsson 2019). Suddenly, something must again be invented to restart the machine. This is well known: it is innovations that create demand and grow trade (Sbarcea 2019). The high-speed trains created a demand for travel that did not exist before them.

Despite the social criticism to which it was subjected. Ryanair's economic model put a not only well-off population on planes who had traveled very little or not at all. The smartphone created needs that we did not know about in the '90s, such as online shopping. The needs of humanity are infinite – in theory, but how far? – and, therefore, products and services are not limited in their evolution and innovation. Consequently, digital technologies can be, according to some authors, considered as an advantage because they constitute an important source of future productivity gains.

## METHODOLOGY

The secondary research method was followed for this descriptive review to be prepared. The main objective of this paper is to present a theoretical overview of digitalization in business and to explore its impact. A thorough analysis of the secondary research papers gave shape to the discussed themes. Digitalization has touched all aspects of life and therefore is discussed in various disciplines. This resulted in the fact that various journals from different disciplines contained relevant information. Therefore, various databases, including among others Science Direct, Emerald Library and Google Scholar, were used to browse available articles. Since the trends and approaches immensely depend on the period of research, only recent articles (2019 to 2022) were taken into account and older resources were only used in the theoretical overview (definitions and history of development).

Taking into account the dynamic nature of the topic, the following keywords were used for searching: “definition of digitalization”, “digitalization vs. digitization”, “history digitalization”, “development digitalization”, “digitalization business”, “advantages disadvantages digitalization”, “SME digitalization”, “COVID digitalization business”, “pandemic SME digitalization”, “challenges digitalization” and “entrepreneurship and digitalization”, as well as different combination of these terms. In total, this search yielded 133 publications that were considered relevant. Each publication was studied and even the articles that did not have digitalization as the main topic were not eliminated if they presented relevant information in one of their sections. Even papers with mainly a technical focus were not excluded and relevant information was used in the study of the history of digitalization. After reviewing, it turned out that the sources were divided as follow: 99 journal articles (73.88%), 4 conference proceedings (2,98%) and 31 (23.14%) other scientific documents including academic theses, reports, books, etc.

## *Basis for the concept of digitalization*

The development of digitalization technologies has revolutionized businesses by reducing time and canceling distances. In fact, the period of production of the same amount of data at the level of the entire world decreased to 20 seconds in 2016, while it was 24 hours in 2012 (Bechary 2020). A precise definition of the phenomenon is given, followed by the origins and a brief overview of the history.

## *Digitalization vs. digitization*

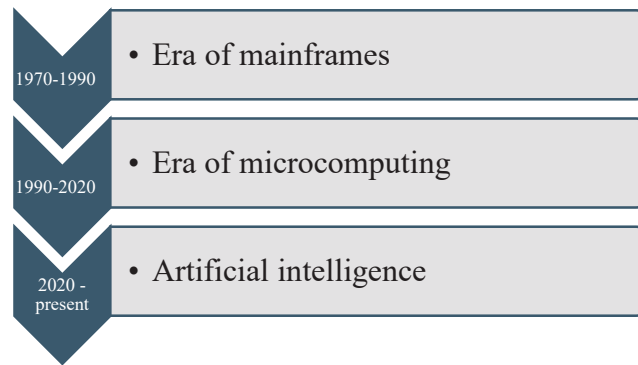
Even though the words digitalization and digitization are considered synonyms by a wide number of researchers, a debate in the academic field about an exact definition for these terms (Ross 2017; Frenzel-Piasentin et al. 2021). In fact, various academics have been using the two terms without distinction (e.g., Lyytinen et al., 2016). However, a consensus has emerged as the confusion and a need for clarification grew bigger. In fact, while digitization is considered as the technical process of converting, generating, storing or processing data, digitalization mainly refers to a socio-technical phenomenon resulting from using digital technologies and their impact on societies, businesses, and individual lives (Frenzel-Piasentin et al., 2021). Digital transformation involves technological innovation without leaving the human factor aside (Ross et al., 2019). In other words, digitalization is the process that aims to transform an object, a tool, a process or a profession into computer code in order to replace it and make it more efficient, taking into account the socio-technical impact of the adoption of digital technologies on the society, organizations, and individuals (Legner et al. 2017; Ritter and Pedersen 2020). Digitalization therefore completely transforms a company's business model or its entire value chain in a sector, by configuring its products, procedures, and customer experiences, with a fair balance between costs and benefits given to consumers or industrial buyers (Parida et al., 2019).

## *History of digitalization*

In 1945, John von Neumann introduced a standardized script for writing instructions for data processing and the data itself. Instructions and data were thus handled in the same way by a machine, paving the way for the modern computer (Macrae 2019). John Bardeen, William Schockley and Walter Brattain, three researchers from the American Bell Laboratories, invented the transistor in 1947 (Amiri et al., 2019). The microprocessor concept dates back to 1969 (Shima 2005). However, it was not until 1974 that Intel marketed its 8080 model, which was used in the very first PCs such as the Altair 8800

from MITS and the Intel 8080 (Crossman & Williams 1978; Shima 2005; Johnson 2014). The synergy between these components, becoming cheaper and more miniaturized as time went by, and the brilliant idea of Steve Jobs and later of Microsoft

to make an application out of it that was accessible to all, caused an explosive growth of computing (Yang et al. 2021).



Source: Own processing

Figure 1. Development of digitalization

The development of digitalization can be summarized in three stages (Figure 1). The first is the era of mainframes (1970–1990). These were large mainframe computers used to perform a very small number of repetitive tasks, such as company paylips or other administrative tasks (Kaufmann-Buhler 2021). After that came the era of microcomputing (1990–2020), where computers became accessible to everyone and offered the user a graphical interface to manage different tasks (Mazor 1995; Power 2000). This era made IT user-friendly and did not require a group of trained staff (Barnes 2010). Open source was first introduced in the 2000s, i.e. "open source code", which applies to software whose license respects criteria are precisely established by the Open Source Initiative, i.e. the possibilities of free redistribution, access to source code and creation of works (Johnson-Eilola 2002). This novelty upset the traditional business of large firms, such as IBM, as well as that of software publishers (Hars & Ou 2014). Social networks have for their part shaken up the business of the media, in particular by putting access to and filtering of information in the hands of the masses.

A cluster of emerging companies and innovations transformed the way people and machines communicated, created, collaborated and thought. First, there was Steve Jobs, who unveiled a revolutionary little object that you put in your pocket: the iPhone (Garcia-Swartz et al., 2019). A little earlier, in the fall of 2006, a social network reserved for university students, Facebook, opened up to all individuals around the world over the age of thirteen and with an e-mail address (Facebook News Room 2006). Also in 2006, a microblogging platform called Twitter was created (Twitter Inc. 2012), while Google launched its Android operating

system, popularizing smartphones other than the aforementioned iPhone and its iOS system (Elgin 2005). In an apartment in San Francisco, Airbnb was born while Amazon marketed the Kindle (Dudley 2007; McCann 2015). And it was in 2007 that an IBM team began developing a cognitive computer named Watson (Chen, Argentinis & Weber 2016). Finally, Intel reinvented the building block of the digital age, paving the way for a new generation of faster, more energy-efficient processors.

The final era is that of artificial intelligence, making it possible to solve complex tasks with a high degree of uncertainty: to translate a human question, evaluate the probability of correct answers, among the choice of several million, in a millisecond, and provide the appropriate answer in an understandable form (Helm et al. 2020). With this technological development that has crossed all borders, companies are adopting strategies increasingly dependent on information and communication technology in order to predict various customer expectations (Tang & Gekara 2020).

### *Development of digitalization*

The invention of the Web and related new technologies have changed the means of communication in general. This had forced companies to change their operating methods to be more competitive (Hinings et al., 2018; Leonardi 2019). The integration of digitalization became crucial to meet customer expectations (Leonardi & Treem 2020). To ignore such an evolution could lead to the disappearance of a company, giving way to a new generation of companies called start-ups (Urbach & Röglinger 2019). Significant changes

appeared in 2010, when the Web already offered new possibilities for exchanging information and encouraged the design of new communication tools (Hilbert 2020). In fact, two powerful vectors have accelerated the digitalization of society: mobile phones and the web. After being developed separately in the 2000s, they merge by making the digitalization process deeper and faster (Musik & Bogner 2019). Boosted by the fall in the price of computer components, mobile phones and the web have enabled the emergence of new consumer and worker behaviors. The digital wave in society has had a major impact on the way companies produce goods and services, going beyond the simple fact of equipping themselves with computers in order to automate processes. It disrupted structures, jobs, impacting all stakeholders: employees, customers, suppliers, shareholders, as well as actors in the external environment, such as legislators. This major change, which upset the usual view of the economic world, undeniably affected many customer behaviors (Blštáková et al. 2020).

To keep up with society and sell better, businesses had to meet with what customers were looking for while communicating with them in a timely manner. The digital transformation began at the beginning of the Internet, as mail was replaced by emails, trade fairs by web forums, stores by e-commerce websites (Hilbert and López 2011). Another example of the digital transformation is customer relationship management tools. In order to predict customer expectations, companies are counting on customer relationship management tools to store and analyze their data, but the digitalization of customer relations is encountering a major difficulty such as convincing all the businesses that they must update and pool their data, a dynamic that involves a profound reconsideration of traditional organizational models (Aloulou 2019; Westerland 2020; Gavrilá Gavrilá & de Lucas Ancillo 2021). The digital revolution is also apparent in the proliferation of mobility tools (Smartphone, tablets) and digital communication channels (social media, websites, etc.) which Attie (2019) claims have transformed the customer into a digital customer. The more the consumer is connected, the more he is informed and demanding, sharing his opinions on social networks and commenting live on his online purchases. Thus, the link between companies and their customers is undergoing major transformations, which means that the digitalization of the customer relationship is now perceived as a necessity. The company must anticipate the changes of the world of tomorrow, its constraints and its requirements by analyzing the actions of its customers.

### *Digitalization in relation to the business*

The use of the Internet, and even more particularly of the smartphone, is growing every year, among both young and older audiences and becoming therefore a real strength for businesses (Ma et al., 2020). Buying, working, managing daily life, communicating or getting information from a smartphone has become a convenience for everyone. This general observation shows that the integration of digitalization in a company is necessary in its strategy (Guan et al. 2020). Not taking into account the evolutions of the market can compromise the future of a company in the long term. Nowadays, it is more than being present online. It is above all a question of maintaining activity, improving relations with customers and optimizing processes, which is essential for businesses (Gavrilá Gavrilá & Lucas Ancillo 2021).

Digitalization generates a network, carried by complementary goods and services, which give rise to digital innovations, such as bankcards and vending machines. Businesses become therefore increasingly immaterial. In fact, business competitiveness is based more on the experience expected by the consumer rather than on the actual product (Reketye & Reketye, 2019). That is why competitive logics and strategies rely mostly on information technologies and networked systems, first and foremost the Internet (Allen et al. 2021). Such an information-based business model results in information management processes replacing the physical product and taking on different constraints (Kerpedzhiev et al., 2021). Another important aspect of the new digitalized business models is the new forms of intermediation. In fact, traditional intermediaries, where consumers go directly through service providers, are starting to disappear. Thanks to the Internet, the relationship between companies and customers is facilitated, allowing the company to collect information on the tastes of current or potential customers (Bacher and Manowicz, 2020). With a click, a customer can compare the prices of different suppliers, resulting in a dynamic price: the price is constantly adjusted according to supply, demand and the remaining life of the good or service, so it varies in real time according to the motivations of the buyer(s) compared to those of the seller(s) (Friedrich & Selcuk 2022). The direct link with the supplier informs customers about the evolution of sales (Hennelly et al. 2020). This real-time information reduces or removes inventory from many industries; factories only produce according to customer orders (for example the print-on-demand businesses). It is therefore inevitable that the offer is personalized. This can be in two forms. It is either implicit where a commercial proposal is made to the Internet user, taking into account his centers of

interest without him being aware of it (Gleißner 2020). Alternatively, it can be explicit: some customization software can build the pages of a website according to the customer's profile, by analyzing their online behavior. This practice achieves substantial savings on promotional costs (saving of catalog expenses, for example) (Saura, 2021).

### *Impact of digitalization on business*

The impact of digitalization on production processes can be summarized in removing the barriers of distance, making it possible for companies to relocate their production facilities to countries with low production costs, while having control over access to information in real time (Butollo 2020). In addition, digitalization has greatly changed the world of work. New technologies make it possible to automate the most basic and repetitive tasks. Processes become simpler and steps can be eliminated. Admittedly, the technology requires a significant financial investment, but companies make it profitable by saving costs afterwards. It is, after all, saving companies time in the process. An example of this in the retail industry is Zara (fashion store), which sells more on its online store than in its brick-and-mortar stores. Moreover, digitalization has made it possible to minimize transport costs up to 50 times thanks to the automation of loading and unloading (Ferhane 2019). Financially, digitalization has allowed banks to simultaneously access financial markets around the world with the possibility of carrying out transactions in real time thanks to powerful algorithms (Zhou et al. 2021).

In finance, the digitalization of several processes allows financial services to be more efficient (Mosteanu 2020). In fact, thanks to online banking services, the customer, can do a variety of tasks such as money transfer, checking their balance or applying for loans (Carbó-Valverde et al., 2020). Using the right digital tools therefore enabled financial advisors to have more time to execute more complex tasks such as advise clients. In manufacturing, digitalization manifests as the automation of several tasks such as inventory control, monitoring of manufacturing processes, storage, etc. (Björkdahl 2020). A great example of this is the food industry. Several crop and field monitoring processes are carried out more efficiently thanks to digitalization, such as digital tools that improve soil parameter control (Buklagin & Goltyapin 2021). Within insurance companies, digitalization makes it easier to carry out many processes: the assessment of insurance applications, filing, etc. (2019). Digital transformation has enabled customer self-service in various sectors. Broader and more efficient digitalization is now taking place in

situations such as automatic checkouts, automated answering machines, and communication via social networks. Digitalization has become a natural phenomenon that combines the appearance of the Internet and daily advances in computing (Schneider et al.2019).

Another example is coaching. Nowadays, most coaches use electronic means to communicate, to organize or modify appointments. But coaching goes further in this process, with the Internet and online tools being used strategically in the coaching relationship (Carlsson 2019). Some e-coaches say they practice “distance coaching”, “remote mentoring” or “telementoring”, when coaching is done only online using instant messaging software and video conferencing. This method has several advantages: saving time and money, eliminating geographical borders, flexibility, etc. For example, the coachee can receive advice and assistance directly, without having to travel. E-coaching can also be extremely collaborative, as professionals from all over the world can, through online discussions, work together to pool their skills (Helal 2020). It is also a way to provide resources, build relationships, solve problems, motivate and create interactions between coach and coachee. Face-to-face coaching can entail several costs such as the service itself, travel, and absence from work. Online coaching reduces all these costs. Despite all these advantages, not all coaches believe in e-coaching. Some believe that the relationship of trust and credibility cannot be built from a distance. For them, using only emails and instant messages can lead to misunderstandings because you cannot see the other person reaction or hear his voice. The compromise would be coaching using digital means of communication but with at least one face-to-face meeting or a video-conference (Busch et al., 2022).

Moreover, the impact of digitalization on railway companies is quite impressive. The tens of thousands of bytes that can pass through optical fibers make it possible to monitor or order railway interlocking for dozens of kilometers in diameter, in a few milliseconds (Du et al. 2020). Besides, various sectors are already impacted by the arrival of AI and promise to be largely reinvented in the coming years, in particular by the progress of research in key areas: machine learning, computer vision, robotics, automatic language processing, collaborative autonomous systems, crowdsourcing, game theory, Internet of things, and neuromorphic electronics (artificial imitation of neuro-biological networks) (Winfield et al. 2019; Callister 2020; Chamola et al. 2020; Jiménez-Crespo 2021). Moreover, quantum computing will allow us to achieve great breakthroughs in science using computers which will no longer be attached to the simple binary digits 0 and 1 (Gyongyosi & Imre 2019).

Digitalization is no longer a choice for businesses but rather a necessity. Currently 70% of the major companies listed in the Fortune 500 no longer exist. Some have lost their place in the top 500 or have literally disappeared because of the digital revolution (Ferhane 2019). Since 2011 the digital revolution has affected large companies, as start-ups and agile competitors find ways to transform their business (Bernoff et al. 2011).

### *Digitalization and entrepreneurship*

Entrepreneurs create value by transforming existing markets. However, profit is not the only motivation. They are creative adventurers, explorers who take pleasure in creating and countering their competitors (Daspit et al. 2021). Cacciotti et al. (2020) go so far as to say that the financialization of the economy and the growing rise of control and profitability systems have eliminated the daring entrepreneur who exploited his intuitions in an uncertain environment. He was replaced by a director, team manager, analyzing all the proposed projects in order to ensure their short-term profitability. The human interface only gives its “Go” if all the indicators are favorable (Argento et al. 2018; Koudstaal et al. 2019). But in reality, the future cannot be predicted, it is necessarily uncertain and unpredictable, it is realization, in the sense of adaptation.

The decisions made by entrepreneurs may seem surprising or even incoherent, which is explained by the fact that they decide the allocation of resources using information to which others do not have access (Koudstaal et al. 2019). These creative entrepreneurs thus favor exceptional periods of sustainable expansion. Without entrepreneurs, the traditional business world is doomed to stagnation or decline. They identify an unsatisfied market and develop it using their business network (Ivanović-Đukić & Stevanović 2019; Kan et al. 2019). The effectual character of this approach is therefore framed by a causal logic allowing the results of the entrepreneur to be optimized and maximized.

Digitalization has created business models described as holomorphic, where the entrepreneurial model would dominate and where each individual would become the actor of his project (Olsson & Bernhard 2021; Omrane 2020; Varenne 2020). In this emerging ecosystem, business opportunities have never been so numerous; this is partly due to the increased information available to everyone. It is a permanent invitation to entrepreneurship. Man is forced to become an entrepreneur, not only in the narrow sense of start-up creator, but also from the perspective of coordinating collective action, which is a source of value creation (Fossen & Sorgner 2021).

The entrepreneur is at the heart of the digital transformation of organizations. Digitalization

promotes the emergence of a mode of growth where the economy would constantly reshape its criteria of efficiency and its markets (Hervé et al. 2020). The new growth is marked by the dematerialization and the opening of the perimeter of the company to the various actors and partners. The emergence of new sources of wealth, such as data or collective intelligence, is disrupting traditional business models (Kraus et al. 2019). Digitalization allows access to better quality services to a greater number of people at a lower price. It challenges a large number of sectors (Awe & Ertemel 2021). Rent markets are disappearing and historical monopolistic regulations are being called into question. The digital transformation model follows the fundamental ideas of the Lewis model (1954) and the entrepreneurial character identified in Nelson and Pack (1999), Ciccone and Matsuyama (1996) and Dias and McDermott (2006) (see Varenne, 2020). Although the model of Lewis (1954) can be classified among the traditional archetypes of growth, the innovative element of digitalization is the emergence of entrepreneurial capacity in the modern sector. This new sector is conducive to new business start-up opportunities (Ben Youssef et al. 2021). The significant change in the number of start-ups can be considered an identical indicator to that of the 2000s. In this new growth model, effectuation highlights the entrepreneurial spirit as a driver of growth and of structural change. Entrepreneurial capacity is an important dimension of human capital. Some work focuses on human capital and the identification of business opportunities that support the link between information and identification of these opportunities (Varenne, 2020).

The entrepreneur is at the heart of digital transformation: in an effective logic, the entrepreneur imagines and builds future business opportunities. For this business model to be digital, the company must have a real digital maturity of the information systems. As this model evolves in an uncertain and complex environment, the company must adapt and adjust to the vagaries of daily life. This model therefore integrates an entrepreneurial dynamic. The company adjusts on a daily basis through changes that promote learning, strategic changes being identified by entrepreneurial decisions. These entrepreneurial changes are only a direction indicated by the entrepreneur, who leaves the means available to the operational staff to improve and optimize the operational processes (Rosin et al. 2020).

The impact of digitalization on entrepreneurship is tremendous. In fact, scaling up has never been easier. It is the spearhead of the startup nation. Digital technologies allow companies to scale up more easily, i.e. to generate revenues with increasing returns to scale. The principle of scale is simple: each produced unit costs less than the previous one, thanks to economies of scale. Therefore, in order to

reduce unit costs, production volumes are increased, aiming to spread fixed costs over a greater number of produced units (Vadana et al. 2020). Under the impetus of digitalization, everything is going drastically faster: connections, information sharing, massive collection and processing of data, decision-making processes, collection of feedback, interaction with users, etc. Digitalization completely created short cuts in the entrepreneurial process (Ben Youssef et al. 2021). In addition, it gives companies a dynamic, very flexible organization, allowing them to constantly and easily adapt their infrastructure to market requirements. Finally, in addition to giving new scope to alliances and strategic partnerships, digital technologies create “network effects”: the more the number of users of the product/service increases, the more the value of this same product/service increases. Therefore, the scale makes it possible to aim for a growth curve that is no longer linear, but exponential. This is facilitated by digitalization (Rosin et al. 2020).

Moreover, digitalization provides a tenfold strategic reach. Creating value is good; but delivering this value proposition to its customers is even better. Digital technologies make it possible to involve an ever larger, more diverse and constantly evolving set of actors. Implementing an effective digital strategy is a great way for businesses to reach more prospects. Digitalization implies the creation and mobilization of different networks, which bring together all the material and immaterial resources that entrepreneurs share by creating connections and relationships (information networks, personal entourage, technological resources, networks of alliances, networks of investors, social networks, etc.). Digital technologies multiply connections, allowing one to easily reach previously inaccessible markets, customers or partners (Aloulou 2019). Another important aspect of digitalization that has impacted entrepreneurship is a particularly fast operational speed. It has never been faster to bring a product or service to market than in the digital age. Digital technologies impact the speed of business strategy in four aspects: they accelerate the speed of product launches, they enable faster decision making, they accelerate the orchestration of the supply chain, and they greatly accelerate the creation and mobilization of different networks (Rosin et al. 2020).

### *Digitalization in small and medium-sized enterprises*

The literature shows that traditional marketing theories are not applicable in small and medium-sized enterprises (SMEs), as the informal and sometimes chaotic nature of marketing done in SMEs can be radically different from the marketing

guidelines offered in textbooks (Ahlame 2019). In general, the marketing techniques used by SMEs are informal, reactive and spontaneous. SMEs tend to be sales- and networking-centric, unlike larger companies, which are more structured and have formal processes like systematic market research and sales and market development planning (Sadiku-Dushi et al., 2019). Such flexibility and fast adaption to the changing factors of the market has been a rather important advantage for SMEs during digital transformation. In fact, even though the literature based on digital marketing shows that SMEs generally lack knowledge about practices of digital marketing (Amin 2021), digitalization has made acquiring knowledge and learning new skills quite accessible for SMEs (Ballestar et al. 2020; Thrassou et al. 2020). Business networking and expanding to new markets has been made easier by the digital transformation (Rivza et al. 2019).

Tarutè and Gatautis (2014) analyzed the literature to explore the impact of information and communication technologies on companies and more particularly. Dumitriu et al. (2019) confirm the positive effect of Information and Communication Technologies (ICT) on business performance in terms of productivity, profitability, market value and market share. This study also found that ICT had some impact on intermediate performance measures: process efficiency, service quality, cost reduction, organizational and process flexibility, and customer satisfaction (Eller et al. 2020). All dimensions of strategic performance could be considered indirectly affected by ICT (Tarutè & Gatautis 2014; Delahaye 2019).

With all the advantages that digitalization offer to SMEs, various challenges face them when going through a digital transformation. In fact, SMEs do not exploit the full potential of digital marketing tools (Ahlame 2019). Consequently, they do not take advantage of the opportunities offered by digital technology. This is the result of various factors such as financial investment, human and managerial resources, short time and especially the underdeveloped innovation culture (Thrassou et al., 2018). When it comes to managerial and innovative vision, many SMEs seem to fail to understand the repercussions of digitalization on the level of organization, operation and strategies (Rivza et al. 2019; Thrassou et al. 2020). This generally causes problems when choosing the right tool to fulfill their business needs (Bouwman et al., 2019).

### *Digitalization and the impact of the Covid pandemic on business*

For the past couple of years, the world has been facing a health crisis, the Covid-19 pandemic. This pandemic, through its manifestations, has brought

about profound change at all levels. This crisis is transforming the geopolitical configuration of the world and the balance of power between states. In many ways, the pandemic has brought to light the weaknesses and fragilities of current business policies and systems (Abodohou 2020). The use of home offices to keep global economies afloat and to provide education, teaching and other services on all sides has been mobilized differently among countries around the world and has also revealed inequalities in access to these means within the same countries, even in the most developed ones (Bouedja et al. 2020). Digitalization has proven to be crucial for the global economy to continue to function in this period of crisis (Shkalenko & Fadeeva 2020). It has also allowed people to continue to work and keep in touch during quarantine. Digitalization has also enabled telemedicine, which changed from being the exception to a perfectly accepted or even indispensable practice, especially in developed countries (Contreras et al. 2020). Online commerce has experienced a historic boom as well (Holland & Hennessy 2019).

The Covid crisis has had an accelerating effect on the digital transformation strategy of industrial companies. Decision-makers have become aware of its benefits, particularly in terms of agility in dealing with risks (Harianto & Sari 2021). In the future, companies in the industry sector should equip themselves with more digital tools in order to prevent risks, particularly related to their supply chain (Lichtenthaler 2021). This is the observation made based on the results of a study on the effects of the health crisis on the digital transformation of companies in the industry, conducted by Infopro Digital, with 207 industry decision-makers (Décision Achats, 2021). Overall, the health crisis has been beneficial for the digital transformation of companies in the industry: in fact, it is believed that it has made it possible to accelerate the digital transformation of companies working in certain sectors such as digital communication (Wieringa 2020). Unsurprisingly, decision-makers from large companies are more likely to think that the crisis has had an accelerating effect on the digitization of their company, unlike professionals from VSEs/SMEs, who are more likely to not have seen any change in this level. However, organizational difficulties were noted in the deployment of these changes (Harianto & Sari 2021). Difficulties were experienced related to data, in particular to their collection and use (Nielsen et al., 2018). Some companies, particularly from VSEs/SMEs, also expressed the lack of financial means, as well as a difficulty in justifying the Return on Investment (Bai et al., 2021).

The level of investment in digital tools to manage companies' supply chain has increased since the health crisis (Lichtenthaler 2021). However, there is

low satisfaction with the digital tools currently used, such as business intelligence/reporting tools, data analysis, internal/external collaborative tools, supplier management and production and planning (Schrage 2020; Srinivasan & Eden 2021). Digital tools are therefore necessary to manage supply issues. Among the main difficulties that the current crisis has highlighted in the supply process for companies in the industry, we can see that the lack of suppliers' transparency comes first, followed by lack of business agility due to a lack of internal skills or resources (Quayson et al., 2020; Zhu et al., 2020). The relocation of the company's activities, the lack of equipment in purchasing/logistics management tools, the lack of connections between the management of the supply chain and that of purchasing, the just-in-time delivery of goods as well as the poor management of the supplier relationship are also noted (Iyengar et al. 2020; Zhu et al., 2020).

## RESULTS

Digital technologies are considered a driver of development (Table 1). In fact, all experts agree that digital technologies have greatly reduced costs and created new products and services (Ribeiro-Navarrete et al. 2021). They facilitate the search, comparison and sharing of information, contributing to the strengthening of relations between businesses and customers, with an increased influence on the way businesses operate, and consumers interact with these technologies (Met et al. 2020). Digital technologies offer therefore new opportunities for creating business models in a wide range of industries (Urbach & Röglinger 2019). Moreover, digitalization drives efficiency. By making transactions faster thanks to digitalization, companies are automating a large part of their activity, resulting in a better return on human capital and better control of tasks, and de facto better profits for customers and consumers (Urbach et al. 2018). Furthermore, digitalization fosters innovation, since the Internet promotes new service delivery models such as e-commerce platforms; even if their cost of deployment is relatively high, the cost of a transaction or of adding a user is relatively low, which allows companies to have better returns, competing with conventional competitors (Apostolov & Coco 2021).

However, alongside the opportunities made possible through digitalization, various threats are also to be noted (Table 1). In fact, the frenetic pace of change driven by digital technologies is having a disruptive impact on doing business, threatening existing business models (Pemer 2020). Such disruptions can take place at various levels. On the individual level, life practices are deeply disturbed by digitalization. The most evident example of that is how mobile connectivity disrupts social life.



Professional practices can also be disrupted, as was noted during the Covid pandemic, where working from home was favored to working in offices (Nöhammer & Stichlberger 2019). As for businesses, typical practices such as the way information flows through the organization and induces changes in power relations were disrupted by digitalization in the forms of social media or cybernetic attacks in the workplace (Luo 2022).

Furthermore, digitalization of media content and user-generated content is disrupting traditional content production and delivery value chains in industry structures. Disruptions on the level of societal systems can be seen in social media involvement, which disrupts traditional practices of forming public opinion.

Table 1:

*Advantages and disadvantages of digitalization*

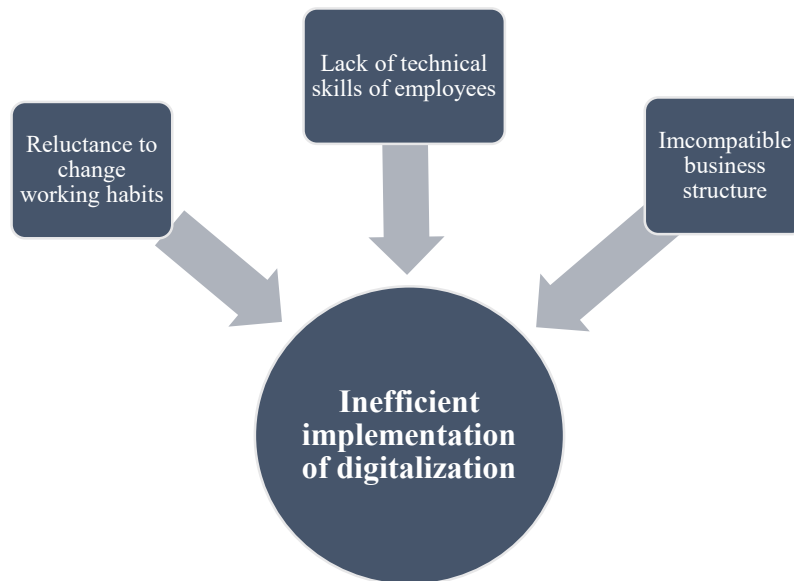
Advantages of digitalization	Disadvantages of digitalization
Reduction of costs and creation of new products (Ribeiro-Navarrete et al. 2021)	Disruptive impact on existing business models (Pemer 2020)
Ease of search for, comparison of and sharing of information (Met et al. 2020)	Disturbance of life practices both on individual and professional level (Nöhammer & Stichlberger 2019)
Strengthening of relations between businesses and customers (Met et al. 2020)	Change of information flow between business and customer (Luo 2022)
Creation of new business models (Urbach & Röglinger 2019)	Social media involvement in forming public opinion (Luo 2022)
Efficiency (Urbach et al. 2018)	
Innovation (Apostolov & Coco 2021)	

Source: Own processing

## DISCUSSION

Even though digitalization is a great asset for companies, its implementation poses major challenges (Figure 2). Indeed, change seems hard to embrace, especially within a company. The change does not only concern the improvement of its working tools but also involves changes in habits and mentality (Almeida, Duarte Santos & Augusto Monteiro 2020). Some employees may be reluctant to change. Others fear job losses (Krutova et al. 2021). To guarantee the success of the digitalization, the company must be transparent with its employees informing them of the benefits of such changes both for them and for the company. This requires personalized support to facilitate the assimilation of new work processes. Besides, the use of new tools may be rather challenging. In any given company, the implementation of an effective digital strategy remains essential to guarantee its sustainability. This

seems difficult for some companies and is considered a source of blockage. An update of technological trends is essential for a successful digitalization (Sbarcea 2019). However, mastering digital channels makes it possible to adopt effective digital marketing strategies. Moreover, technology must be handled skillfully to ensure successful digitalization (Gjellebæk et al. 2020). Most business leaders do not have the skills required to handle digital tools properly (Moşteanu 2020). This is a major obstacle to digital transformation. Some technologies may also be incompatible with the current business structure. Selecting the right digital tools adapted to its structure and the needs of its customers remains crucial for business leaders and managers (Bai, Quayson & Sarkis 2021). To deal with this, an outside intervention, such as a specialist agency, becomes essential. This will facilitate audits, proposals and the application of new processes. Errors and delays will therefore be avoided.



Source: Own processing

*Figure 2. Challenges for the implementation of digitalization*

## CONCLUSION

The diffusion of digital technologies can differ greatly across industry categories or regions, and the speed of potential changes is not easy to assess. Development can be as evolutionary as it is disruptive, as some technologies such as robotics might not be feasible in economic terms and might not be accepted due to national cultures (Telli & Aydın 2021). We can already observe nations that are more advanced than others, by the simple fact of their willingness to move forward (Sbarcea 2019). Former industrial regions and “old-fashioned” industries – such as the railways – are struggling to convert due to the skepticism of their workers and the fear of changing habits.

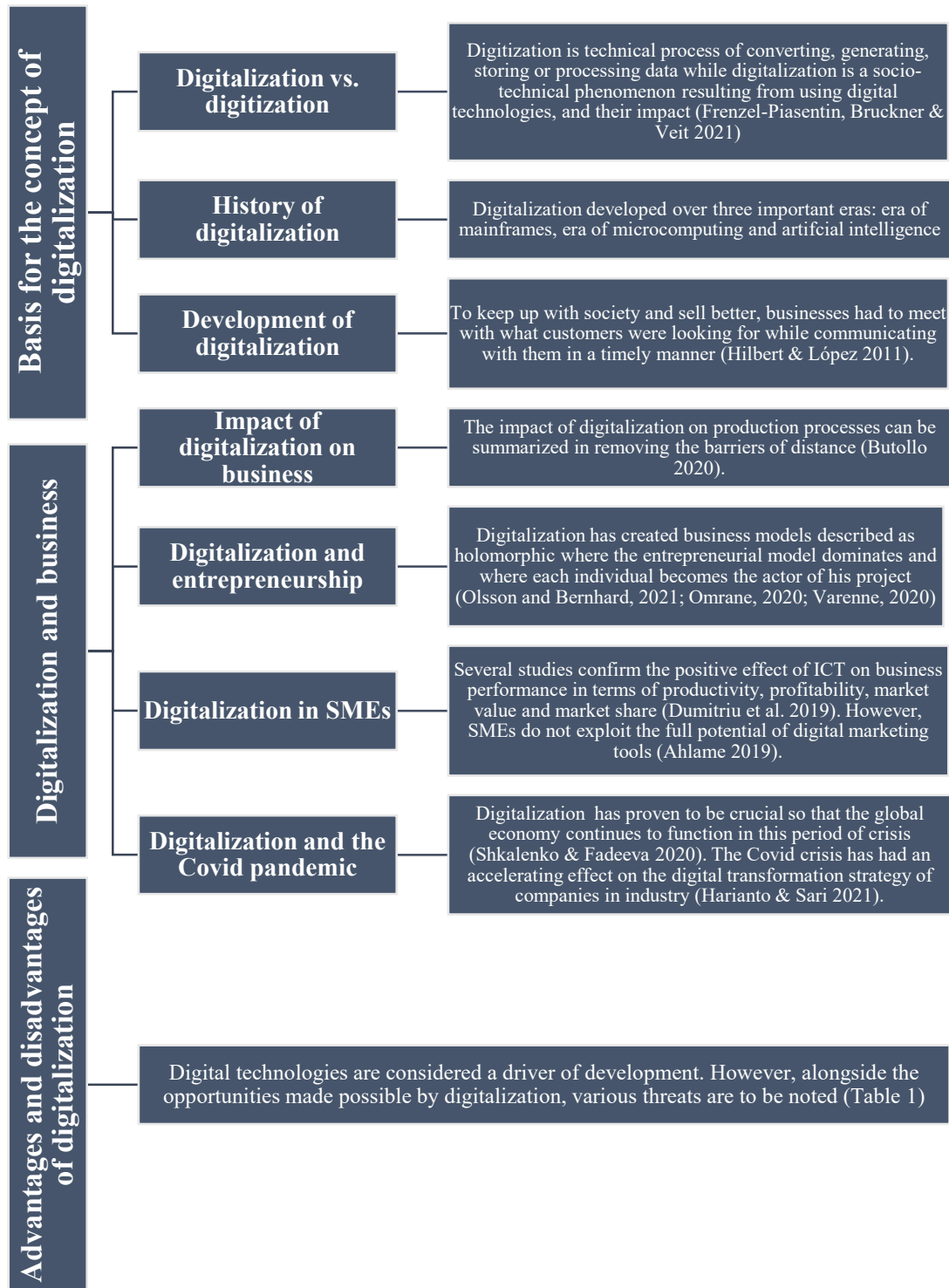
The speed at which technological progress spreads also depends on legislation, itself dependent on the social and political context of a given region, which speeds up or slows down the speed of innovation. Different types of opportunities or risks may arise for the parties involved. Companies may require new forms of flexibility as well as new types of skills, which can create social tensions.

The difficulty of understanding the digital phenomenon therefore shows that technological progress is both an opportunity and a threat – everything depends on the cultural context. It may be a threat for some and an opportunity for many. The ten countries that rely the most on innovation are mostly European (Sbarcea 2019), including

Switzerland, Germany, and the Scandinavian countries.

In this review, the difference between digitalization and digitization was addressed in the literature. Even though some researchers use these two terms interchangeably, it was established that digitization is the mere transfer of data to digital form while digitalization includes the socio-economic consequences. The history of digitalization and its development in businesses were examined. It was found that the phenomenon started with the beginning of the Internet and was massively accelerated by the pandemic. The impact of digitalization on businesses was studied. It was found that digitalization is no longer an option for business but rather a necessity to survival. In fact, businesses have to adapt their business models and business strategies to go along with the digitalization that the entire world is going through. Digitalization was expected to be an advantage for SMEs, thanks to their flexibility and a quick reaction but it was frequently reported that it was overwhelming for them from a financial and cultural point of view. A graphic summary of the review is shown in Figure 3.

At the end of this review, it is worth mentioning that this research work is not without limitations. The main limitation concerns the absence of an empirical framework. It would also have been interesting to conduct a quantitative analysis of the literature treating the subject of digitalization in business.



Source: Own processing

Figure 3: Graphic summary of the review

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