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Journal of Administrative Science

Biannual Publication, Vol. 6, No. 12 (2025) 1-9

ISSN: 2683-2119

Impact of digital transformation on socially responsible companies.

Impacto de la transformación digital en las empresas socialmente responsables

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Abstract:

We are in the era of knowledge and globalization, where the digital revolution is an avalanche of technological changes that affect the growth and consolidation of a socially responsible business model. Digitalization usually impacts this model, due to the implementation of technologies focused on caring for the environment and the reduction of traditional processes with more efficient digital processes. In this permanent challenge, it is necessary that new business models adapt to technological needs, as a key component for all companies. In this sense, this documentary research addresses the role of the impact of digital transformation in the framework of socially responsible companies, with the purpose of promoting their digitalization, with the understanding that, if companies do not adopt a culture of responsibility social, for digital transformation, will be left out of technological tools and therefore their appropriation as a link of innovation for the creation of quality products and services. To achieve the objective, the documentary analysis method was used to assess the topic in depth.

Keywords:

Digital transformation, Innovation, New business models, and Social responsibility

Resumen:

Estamos en la era del conocimiento y la globalización, donde la revolución digital es una avalancha de cambios tecnológicos que inciden en el crecimiento y consolidación de un modelo de empresa socialmente responsable. La digitalización suele impactar en este modelo, debido a la implementación de tecnologías enfocadas al cuidado del medio ambiente y la reducción de procesos tradicionales por procesos digitales más eficientes. En este reto permanente, es preciso que los nuevos modelos de negocio se adapten a las necesidades tecnológicas, como un componente clave para todas las empresas. En este sentido, esta investigación documental aborda el papel del impacto de la transformación digital en el marco de las empresas socialmente responsables, con el propósito de promover su digitalización, en el entendido de que, si las empresas no se adueñan de una cultura de responsabilidad social, para la transformación digital, quedarán al margen de las herramientas tecnológicas y por lo tanto de su apropiación como un vínculo de innovación para la creación de productos y servicios de calidad. Para dar cumplimiento al objetivo se utilizó el método de análisis documental, para valorar a profundidad el tema.

Palabras Clave*:*

Transformación digital, Innovación, Nuevos modelos de negocio, Responsabilidad social

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Received: 08/08/2024, Accepted: 11/09/2024, Published: 05/01/2025

DOI: https://doi.org/10.29057/jas.v6i12.13511

Introduction

Digital transformation, innovation, new business models and recently social responsibility are concepts that are linked to new information technologies which have developed rapidly changing the way in which companies carry out their activities 1. In the context of globalization and increasing competitiveness and productivity, it is essential that companies develop new ideas and adapt their business strategies to take advantage of business opportunities that arise in the market and thus ensure their sustained success 2.

In this sense, digital transformation, understood as the conversion of analog information and processes to digital processes 3, creates new ways of working, communicating and cooperating, having the capacity to change almost any way of working and lifestyle that is directly or indirectly associated with non-routine data and processes 4.

The term transformation indicates a deep and difficult change of an organization, while digital is the exploitation that technologies can provide, specifically those that generate, store and process data, therefore digital transformation consists of a profound change of business model through the use of the potential of new information technologies 5, are today a starting point to know, understand and develop the potential of the scenario of new business models and their responsibility to care for the planet by using data and digital technologies in a socially, economically, technologically and environmentally responsible way.

However, these technologies have not only facilitated many desirable changes in companies, they have also posed great challenges, because organizations need to reinvent themselves to respond to the challenges of an environment marked by the digital economy that are transforming the competitive scenario, giving rise to new business models that in turn require new organizational models. Therefore, digital transformation not only refers to technological changes, but also implies establishing organizational and environmental changes 6.

With the implementation of technologies such as the Internet of Things (IoT), Big Data, cloud computing, Artificial Intelligence (AI) and the analysis of large volumes of data, new business models contribute to the welfare of society in the field of sustainability, because technology is subject to social, cultural and economic relations. In addition, technological skills and their integration require a change in the business mentality, as well as in the way of working, focusing on cooperation and awareness of people towards the use of digital tools.

We must also understand that technology is just a means within the digital business transformation and the beginning of the change that companies must embrace 7.

Industrial Revolutions: Technological Evolution

The evolution of the digital transformation is observed from different perspectives. Joseph Schumpeter establishes three great historical transformations, starting with the transformation of material, which includes stone, bronze and iron, being the longest period between one transformation and another. The second great transformation is based on energy, considering internal combustion and steam. Finally, the third change occurred with the transformation of information in the 1970s, when the proliferation of information and data began, generating algorithms with the aim of creating automated processes, giving rise to the digital era 8.

However, it is Schwab 9, who relates the evolution of the digital transformation with the different Industrial Revolutions, alluding that the first one took place ten thousand years ago with the Agricultural Revolution, the domestication of animals and the production of food that originated the increase of the population. The wheel was an invention that revolutionized and facilitated the movement and transportation of loads, being a vital component of several machines and inventions 10. The plow was a great step in agriculture and facilitated the control of weeds and the preparation of sowing, thus allowing the expansion of the cultivated area. From these times, the art of smelting and forging metals for the manufacture of tools, vessels, weapons and ornaments of greater hardness and resistance was learned 11.

Then came the first three industrial revolutions, the first during the 18th century, marked by the emergence of the steam engine, the spinning machine and the Cort process in the metallurgical sector.

These technological changes produced fundamental innovations in cotton spinning, the steam engine and the iron and steel industry. Coal mining became important in the development of coastal shipping, canals and railroads. In addition, coal mining generated more technical innovations than any other industry prior to the industrial revolution.

At the same time as this technological development, the need for energy increased, so that the use of coal increased considerably from the 18th century onwards 12, the greater demand by industry led not only to the extension of its extraction to a greater number of mining basins, but also to a greater deepening of excavations, likewise, textile manufacture and its derivatives required greater demand for both coal and steam engines, that is to say, greater energy 13.

On the other hand, although the economic change that took place in Great Britain at the end of the 18th and beginning of the 19th century was slower than previously thought, it marked the beginning of modern economic development 14. The basic characteristic of the economy shifted from land-population balance to technological change and capital accumulation. Revolutionary changes in industry were largely confined to the textile, iron and steel and transportation sectors.

The second Industrial Revolution occurred 100 years later at the end of the 19th century and the beginning of the 20th century, characterized by the development of electricity, the internal combustion engine, chemicals produced by science, the smelting of steel and the beginning of new communication technologies, such as the telegraph and the telephone 15. From the end of the 19th century until before the First World War, there were more profound social changes, due to the fact that the cities became the economic, social, cultural and political center, forcing the peasants to migrate to the great metropolises in search of better living conditions.

The 19th century was called “the century of progress” due to the evident benefits derived from industrialization 16. During this period, the use of science and the promotion of innovation were sustained, taking into account that the emergence of laboratories took place in the chemical industry in Germany at the end of the 19th century 17. Among these were: glass, artificial fibers, rubber, fertilizers, medicines, dyes and bleaches, and also other products needed in the new metallic alignments.

The third Industrial Revolution began in the 1960s, known as the digital revolution, with the emergence of microprocessors, the Internet, smartphones, multimedia technologies and virtual reality. Also known as the scientific-technological revolution, characterized in 1945 with the launching of two nuclear bombs in Japan when scientific development is promoted through the deployment of science and technology with an armament vision emanating from the Cold War 18, with the discovery of the steam engine and electricity, great economic and cultural changes took place. However, nuclear energy ushered in a new technological era.

Finally, the fourth Industrial Revolution began in 2010 with major advances such as digital, physical and biological technologies, Industry 4.0, Artificial Intelligence (AI), Robotics, the Internet of Things (IoT), Big Data, Nanotechnology and all those advances in fields such as gene sequencing, renewable energy and quantum computing. It is the convergence of digital, physical and biological technologies that will change the world.19 This revolution was first discussed at the Center for Information and Office Technology (CeBIT) in Hannover in 2011, when several German consultancies baptized it as “Industry 4.0” and it is based on the so-called “Smart Factories”,20 characterized by the interconnection of machines and production systems, by a fluid exchange of information with markets, competitors and other smart factories.

This industrial revolution is triggered by the disruptive impact of digital technologies applied to the business models of industry, with the potential to introduce changes in the models of production, distribution and consumption of all types of goods and services and the ability to shape new economic and social systems on which the most developed cities will be based. However, the future of this new technological revolution will depend largely on the ability of societies to provide solutions that integrate the interests of the public and private sectors, including academia and civil society.

Determining technologies that marked the different Industrial Revolutions in history.

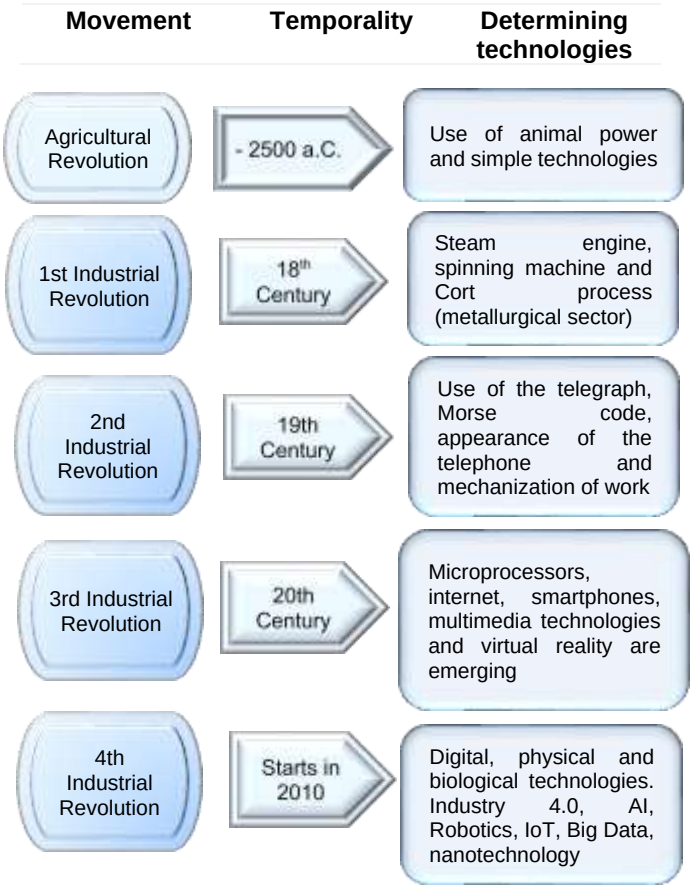

Figure 1. Industrial Revolutions in history

Disruptive Technologies Pillars of Industry 4.0

The intelligence of the new factory is the result of the convergence of information technologies, their union in a “digital ecosystem” with other industrial technologies and the development of new organizational processes. Therefore, IT and its professionals will be key elements in the industry 4.0 scenario, enabling the articulation of machine and man. Similarly, the different technologies and scientific advances that are driving the changes accompanying the fourth industrial revolution have in common that they all rely on digitalization to generate positive synergies 22.

Among the main technologies that mark the fourth industrial revolution are the following (see Figure 2).

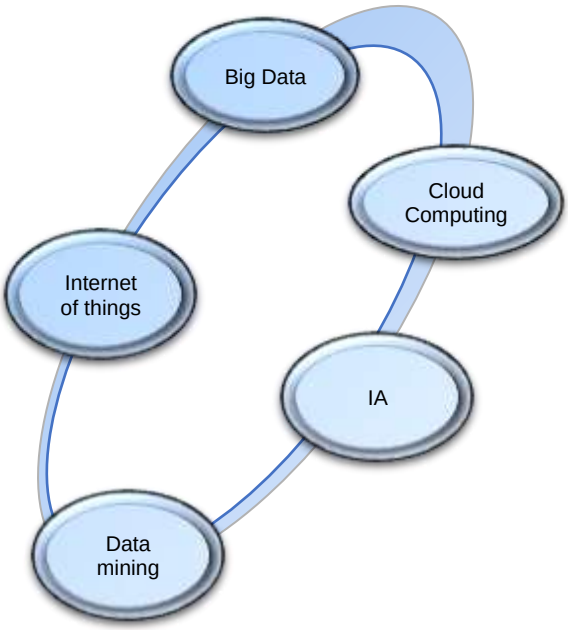

Figure 2. New information and communication technologies

Digital transformation

Currently, we are living in times when the digital revolution or the new era addresses countless changes that lead to global transformation affecting all stages of daily life 23. But we also live in a society, where not only Google is the Internet; there are social environments with a daily growth that are gradually becoming part of life being inevitable the need to navigate from a mobile device to check Facebook, Instagram, YouTube, Twitter and other applications that lead to socially interact with the world.

It is a fact that the Internet is the most outstanding progress of the 20th and 21st century, not only because of the technological revolution generated, but also because it involves cultural, social and economic aspects. A large number of companies that are known today would not exist if it were not for the Internet, and others have not only managed to maintain themselves, but have managed to innovate by meeting the new needs of the market. Digital transformation is a process that introduces new technologies to the structure of companies in order to make them more efficient, through a change of business model impacting everything related to customers 24. Undoubtedly, technological progress is marking the era of digitization as a necessary process for the competitiveness of companies 25, causing the creation or alteration in the competencies of professionals to adapt to these innovative business environments.

Given this scenario, it is important to understand that when we talk about digital transformation, we should not only talk about technology, but also about people, and although many people currently reject technology out of fear or lack of knowledge, it is essential that people see technology as a means for a change in digital culture, including actions of social responsibility, respectful of the environment.

In this regard, innovation in products or services generate a disruption making it possible for digital transformation to become the main strategic driver, demanding new skills and competencies for the development of digital culture, thanks to this, processes are produced that lead to the goal of social transformation and human development causing in turn a chain of innovation aimed at addressing social and sustainable challenges in different sectors.

Thus, in the last decade, public agencies have tried to generate socially innovative environments through various initiatives and the promotion of public policies, establishing collaboration agreements with science and technology parks and universities in order to promote Research, Development and Innovation (R&D&I) as a way to support and measure social innovation and the implementation of social advances in the search for better standards of living and social welfare.

In this context, digital transformation through Higher Education Institutions (HEI), civil society organizations, government and companies has the responsibility to structurally modify the way of relating, in order to raise the quality, efficiency and effectiveness of services by implementing improvements in processes, as well as digital and non-digital channels.

Therefore, the digital transformation will have a relevant importance in a globalized world generating new disruptions and technological advances that lead to new knowledge; however, the need to balance social development and economic growth, especially for the vulnerable population that due to lack of internet access, some disability, may not take advantage of the benefits of digitization, because the channels, media, products and services become increasingly dependent on information and communication technologies.

Definition of Innovation

Due to the way innovation works within organizations, its conceptualization is not simple and its implications are of different nature, therefore, there is a wide diversity of definitions about this concept; among the most outstanding ones is the OECD's Oslo Manual (2005), which states that innovation is:

> *"The introduction of a new or significantly improved product (good or service), process, marketing method, or new organizational method, in the company's internal practices, workplace organization, or external relations" (p. 56).*

On the other hand, Schumpeter (1934) makes mention of this term considering an economic approach and taking into account the results of the technological revolutions and drivers of economic growth, defining it as:

"The entry into the market of a new good or a new class of goods, the introduction of a new method of production, the opening of a new market, the conquest of a new source of supply of raw materials or semi-finished products, regardless of whether it already exists or has to be created, and the establishment of a new market structure" (p. 73).

Author	Concept
Freeman (1982)	"It is the process of integrating existing technology and inventions to create or improve a product, process or system, innovation in an economic sense consists of the consolidation of a new product, process or improved system" (p.42).
Drucker (1985)	"It is the specific tool of innovative entrepreneurs; the means by which they exploit change as an opportunity for a different business (...) It is the action of endowing resources with a new capacity to produce wealth. Innovation creates a 'resource'. There is no such thing until man finds the application of something natural and then endows it with economic value" (p.72).
Kline y Rosenberg (1986)	"It is a reorganization of production, strictly in the internal functions; substituting materials of a product, modifying the production process and thus generating a new product" (p.34).
Dosi (1988)	"The term innovation relates to the discovery, experimentation, development, imitation and adoption of new products, new production processes and new organizational forms" (p. 15).
Villavicencio (2012)	"It is understood as a process that goes from the conception of a novel idea, through design, prototyping and process scaling, to the commercialization of a new product for the global or regional market. This process includes various degrees of use and articulation of available knowledge, technological and organizational adaptations, relationships between actors located in different parts of one or more value chains, institutional links and exchanges at the productive, scientific and financial levels, among others, and innovation requires a permanent process of technological and organizational learning in companies" (p. 28).

Table 1. Definitions of Innovation

Types of Innovation

Schumpeter (1934) established the first innovation proposal considering a classification of five types (Figure 2).

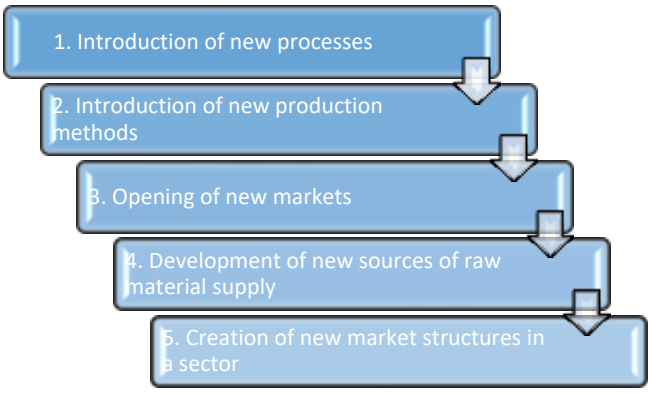

Figure 3. Schumpeter's Proposal on the Classification of Innovation

Business Model

While defining the concept of a business model has been among the first tasks of early researchers in the field, the definitions themselves have been the subject of much debate and a generally accepted definition has yet to emerge. However, different definitions have been arrived at throughout the literature in an attempt to explain the essence and purpose of a business model.

All these concepts are not mutually exclusive, however, there are differences with respect to the common view of the business model as a description or representation of a reality that exists beyond the company. In order to have a better understanding of this concept, an overview of some of the definitions highlighted over time is proposed, showing some similarities and differences of this concept (see table 2).

Author (s)	Definition
Timmers (1998)	It defines the business model in the following ways: a) It is an architecture for the product, service and information flows, including a description of the various business actors and their roles; b) It is a description of the potential benefits to the various business actors; and c) It is a description of the revenue streams.
Rappa (2000)	It is the method of doing business by which a company can sustain itself, i.e., generate revenue. It also details how a company makes money by specifying where it is positioned in the value chain.
Afuah and Tucci (2001)	It is the method by which a company builds and uses its resources to offer its customers better value than its competitors and make money by doing so. It details how a company makes money now and how it plans to do so over the long term. The model is what enables a company to have a sustainable competitive advantage, to outperform its rivals over the long term.
Amit and Zott (2001)	Represents the content, structure and governance of transactions designed to create value through the exploitation of business opportunities.
Chesbrough and Rosenbloom (2002)	It provides a coherent framework that takes technological characteristics and potentials as inputs, and converts them through customers and markets into economic inputs. Also, it is conceived as a focusing device that mediates between technological development and economic value creation. It "explains in detail how a company makes money by specifying where it is located in the value chain."
Shafer et al. (2005)	It is a representation of a company's underlying core logic and strategic choices for creating and capturing value within a value network.
Chesbrough (2006)	A business model performs two important functions: value creation and value capture. First, it defines a series of activities that will produce a new product or service in such a way that net value is created across the various activities. Second, it captures the value of a portion of those activities for the company developing the model.
Demil and Lecocq (2010)	It refers to the description of the articulation between different components of the business model, "building blocks" to produce a proposition that can generate value for consumers and therefore for the organization.

Osterwalder and Pigneur (2011)	Describes the logic of how an organization creates, delivers and captures value.
George and Bock (2011)	It is the design of organizational structures to enact a business opportunity. Three dimensions of the organizational structures outlined in the definition are considered: resource structure, transactional structure and value structure.
Fielt (2014)	Describes the logic of an organization's value chain, in terms of how it creates and captures customer value and can be concisely represented by an interrelated set of elements that address the customer: value proposition, organizational architecture and economic dimensions.

Table 2. Business Model Definitions

These definitions view the business model as an architecture, approaching the business network with a focus on the different roles of the actors, their interactions and relationships, highlighting the economic aspect, emphasizing the organizational and strategic aspects, arguing that a business model does not cover the entire strategy.

Definitions such as those of Osterwalder and Pigneur 27 combine the ideas of a representation of the network architecture and revenue generation for the organization. Meanwhile, Chesbrough and Rosenbloom 28 focus on technological innovation and position the business model as a mediator between technological development and economic value creation.

For authors such as Chesbrough 29, Osterwalder and Pigneur 30, Teece 31 and Zott, 32 the central reasoning of the business model deals with the creation of value for the customer and its link with value capture, aspects highlighted by Peter Drucker when he states that “there is only one valid definition of business purpose: creation of the customer” and “it is the customer who determines what a business is”.

Subsequent work refers to the term business model as a broad range of descriptions that represent the fundamental aspects of an organization, including offerings, strategies, infrastructures, organizational structures, business practices, and operational processes and policies. In the broadest sense, the business model is the basic architecture through which an organization generates revenue by creating value for its customers.

Based on the business model definitions, there are compositional elements that describe what a business model is made of. These elements are called, for example, building blocks, components, key questions or functions.

Social responsibility

The growth and economic, social and technological transformation were factors that led to the development of industries and their production, marking a starting point in the increase of processes and the need for more labor, the benefits shown by the companies were their workplaces, however, they began to have negative impacts on working conditions due to the increase of people migrating to larger cities in search of better income.

It was in Paris (1919) when the World Labor Organization (ILO) held a multinational meeting, with the objective of promoting decent and dignified work in all companies. In 1940, the “Declaration of Philadelphia” was published, establishing the basic principles of relations between companies and their workers, stating that human beings, regardless of race, creed or sex, have the right to pursue their material well-being and spiritual development in conditions of freedom and dignity, economic security and equal opportunities (Montt, 1998).

In 1945, the United Nations Organization was created with the purpose of maintaining peace and security at the international level. In 1953, Howard Bowen mentioned for the first time that companies should take into account social responsibility in the decisions they make in order to reach agreements on internal problems and the needs required by society in general 33. In 1962, Milton Friedman established the principle of corporate social responsibility, stating that only people have responsibilities, including companies in this consideration. However, in 1971, Kewnneth R. Andrews described social responsibility as a commitment to the welfare of society, seeking to orient actions towards positive contributions that promote the betterment of human beings 34. In 1975, Keith Davis published the Davis model, known as the “Golden Law of corporate social responsibility”, setting out five proposals as to how and why companies should exercise the fundamentals of social responsibility.

Several subsequent events have contributed to the development of this concept, including the Greenpeace Foundation (1971), the Stockholm Conference (1972), which focused on environmental preservation, and the enactment of the Social Balance Sheet Law (1977), which represents a model for the evaluation, management and strategic planning of companies, facilitating the identification of opportunities to improve social, environmental and financial aspects. The enactment of the Social Balance Law (1977), representing a model for evaluation, management and strategic business planning, facilitating the identification of opportunities to improve social, environmental and financial aspects. In 1980, the term “Circular Economy” was coined to describe a closed system of interactions between the economy and the environment.

In 1987, the UN published the report “Our Common Future”, which identified practical actions to reverse environmental and developmental damage, claiming that society is destroying the environment. In 1991, Archie B. Carroll, exposes the pyramid of corporate social responsibility highlighting economic, legal, ethical and philanthropic responsibility. In 1992, the Rio Declaration was made emphasizing the need to conserve and sustainably manage natural resources. In 1999, during the World Economic Forum, the UN proposed ten universal principles in four areas: human rights, labor standards, environment and anti-corruption.

In 2001, the European Union publishes the Green Paper with the aim of promoting transparency, increasing business confidence and the development of innovative socially responsible practices. Finally, in 2015, the UN adopted the Sustainable Development Goals establishing universal strategies promoting the eradication of poverty and the protection of the planet.

The rise of new information and communication technologies is an unstoppable process, they are positioned as key tools to improve the efficiency of organizational processes, their adoption was accelerated by the COVID-19 crisis, a period in which companies became aware of their fundamental role in guaranteeing the interconnection and continuity of productive activities in emerging situations. When we speak of social enterprises, we are referring to a recent term that has emerged in the last decade and alludes to a new business model that does not only seek economic profitability. It is an essential component in the strategies of organizations aligned with the sustainable development objectives of the United Nations.

Methodology

The research work was carried out through a systematic review of the literature, on the impact of digital transformation, innovation and new business models in socially responsible companies, establishing a qualitative cross-sectional study in a delimited period of time, descriptive and deductive-inductive methods were used, which allowed organizing, classifying and synthesizing the information presented. Likewise, documents from the Academy of Management, Academy Management Society and other sources specialized in the subject were used as main sources of information. For the search of the documents, the following keywords were used: Digital Transformation, Innovation, New Business Models and Social Responsibility, words that were conceptualized from different authors.

filtering only those specialized articles with recent dates (period 2018 onwards) related to the topic of the present research work, With the data collected, the preponderant qualitative information that sustains and strengthens the importance of the present work and future research of greater depth was organized, classified, analyzed and synthesized.

Results

1. Digitalization is a phenomenon that requires the interaction of different dimensions, aligned to the structure of the organization and to the strategic change that digitalization requires in socially responsible companies.

2. It is necessary to have a leadership capable of promoting and including cultural transformation as one of the key objectives to achieve greater efficiency in the processes through the implementation of strategies aligned with the objectives of the organization.

3. In the face of new technological challenges, it will be crucial to understand how to combine values, culture, capabilities, skills and technology in order to establish a roadmap that will help guide those companies that begin a process of transforming their business model in line with social responsibility.

4. Facing the challenges will allow companies to trace the path to follow in their transition to digital transformation, understanding that the digitization process must start from within and from the top management.

5. Faced with the new digital scenario, several authors point out that digital transformation is not something optional, but an inevitable and irreversible imperative, and those socially responsible companies that fail to adapt to a world in a constant process of transformation will not survive.

6. The particular challenges of each action plan should focus on closing the gaps that the organization presents in the dimensions of: digital leadership, digital culture, processes, strategies, infrastructure, technology, as well as environmental care.

Conclusions

Faced with the new reality that we live after the pandemic, characterized by new consumption habits, disruption of traditional processes, options turned into needs, the new business models responded strategically by accelerating their digital transformation, enhancing the benefits in a sustainable way.

It is undeniable, that we are facing the new digital revolution and the transformation in companies not only means the incorporation of new technologies, it is about adapting procedures and organization to the new business models, implementing to their processes another series of solutions, applications, uses and tools, focused on the development of products or services aimed at promoting the development of its business in an increasingly technological and globalized field of activity, taking social responsibility and environmental care as strategies to create competitive advantage in obtaining positive results that influence the image, prestige and higher level of productivity and competitiveness by providing added value to its customers.

However, digital transformation is not only introducing technologies in companies, it is a change of mentality on a large scale, becoming aware that technological tools allow the optimization of traditional processes to faster, safer and more efficient digital processes, ensuring traceability and security of information. When we talk about socially responsible companies, we refer to new business models that emerge in business management seeking not only economic profitability but also concerned about the problems of their environment. The key is to find a balance between digital innovation and sustainability, allowing companies to survive this new reality.

Incremental improvements to established business models through digital transformation and big data

analytics can replace less efficient business models, however, with an increasing level of digitization and ICT adoption, it may not be enough for a lasting competitive advantage.

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