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Digital Transformation in Times of COVID

La transformación digital en tiempos de COVID

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ABSTRACT

The current situation in the world due to the COVID-19 pandemic has impacted the humanity in every sense and because of that the worldwide organizations have had to rethink whether their strategies are appropriate to face this challenge. Therefore, organizations must accelerate and strengthen their digital transformation processes to meet the new market needs and at the same time generate sufficient profitability to continue innovating on their services and / or products.

Keywords: Innovation, digitalization, resources

RESUMEN

La situación que se vive a nivel mundial por causa de la pandemia de COVID 19 ha impactado a la humanidad en todo sentido y por está razón las organizaciones han tenido que replantear si sus estrategias son las adecuadas para poder enfrentar este desafío. Es por esta razón que las organizaciones deben acelerar y fortalecer su proceso de transformación digital para poder atender las nuevas necesidades del mercado y al mismo

tiempo generar la rentabilidad suficiente para continuar innovando en sus servicios y/o productos.

Palabras clave: Innovación, digitalización, personas

Introduction

The health situation that humanity is currently experiencing has revealed the weaknesses that organizations must face the fourth industrial revolution (BBC, 2016) since many of them did not have technologies that would allow them to operate from any geographical location taking as center to its customers, collaborators, and suppliers.

Therefore, there is a need to research deeper about the digital transformation that organizations must generate, since said process is not only involving the technological trends that are on the rise, but also carrying out a transformation of thought that is led by the top management of the organizations, managing to create a culture of service that generates value and allows meeting the needs of the market, generating a differential factor.

For this, some guidelines will be given that organizations can follow to achieve the process of adaptation effectively and efficiently to the new normality that will occur when COVID19 is part of history, taking digital transformation and disruptive technologies as a reference.

Materials and methods

The present research is of a descriptive nature, a qualitative methodology was used, applying the documentary analysis technique, and using the analysis script as a tool. Once the information was obtained, its analysis was conducted.

Coronavirus (COVID 19) is a respiratory disease that is closely related to SARS-CoV, which began in December 2019 in Wuhan, Hubei province in China and was later declared a global pandemic on March 11, 2020, by the World Health Organization

(WHO). Currently the disease leaves more than 173 million people infected in the world, generating a health, economic and social crisis (WHO, 2021).

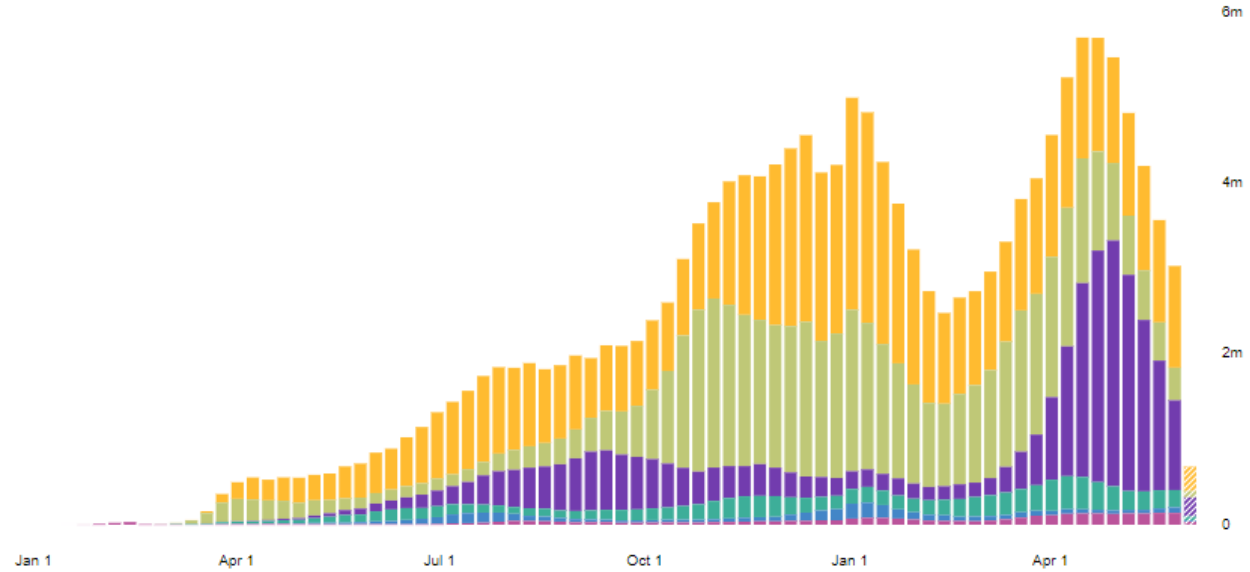

Chart 1 Numbers of accumulated infections in the world – Source. WHO21 \l 2058

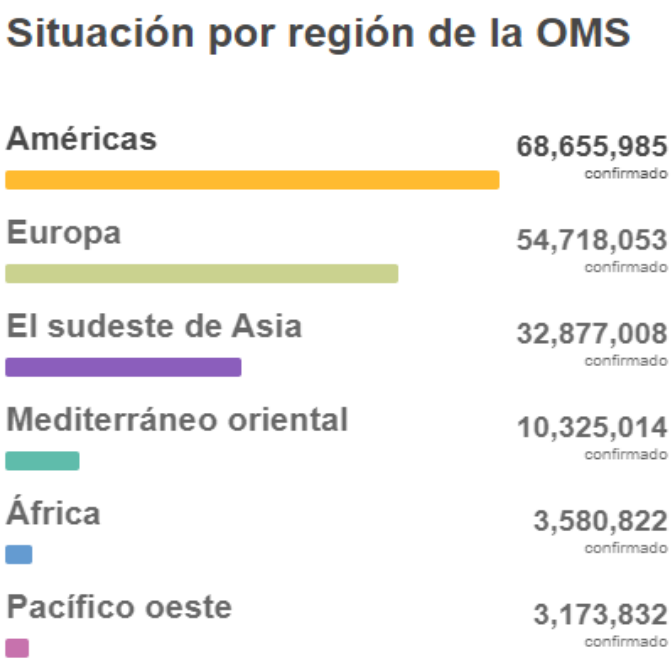

Image 1. Numbers of infections by region. Source: WHO21 \l 2058

The infection of this large amount of people has made different governments to confine their populations, leaving the economy and organizations around the world in an intensive care room.

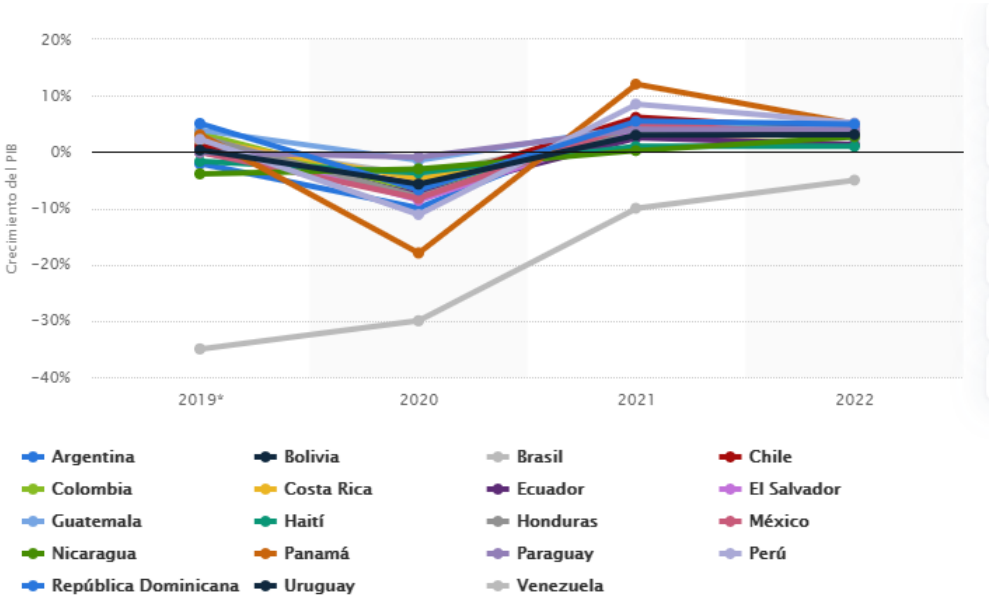

Chart 2 GDP increase in the region. Source: CEP21 \l 2058 (CEPAL)

The World Bank recently issued a report in which it warned that this pandemic would cause the greatest global crisis since 1870, causing a drastic increase in poverty levels in the world. (World Bank, 2020).

Next, we can see the economic situation of Latin America:

Chart 3 Poverty index in Latin America. Source: Ban20 \l 2058

This picture generates an impact in Latin America and its small companies (MiPymes in Colombia), since it is estimated that about 2.7 million companies are forced to permanently close their operations due to not having the physical, technological, and financial infrastructure to be able to maintain productivity. of its employees and overcome the downturn in the global economy. (CEPAL, 2021).

Chart 4 – Number of companies that could shut down by economy sector. Source: CEP21 \l 2058 (CEPAL, 2021)

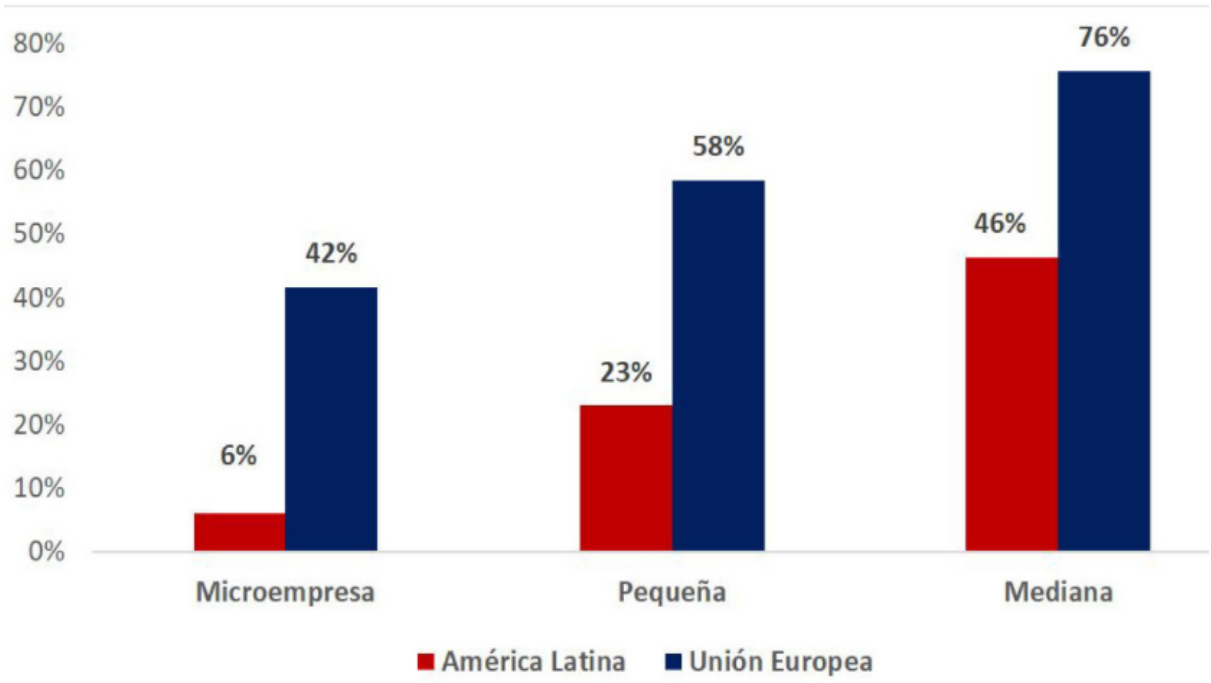

Chart 5 Work productivity by companies' size. Source: CEP21 \l 2058 (CEPAL, 2021)

Transformation based on technology has occurred on separate occasions. Alvin Toffler is an example of this, when he predicted in 1979 that the next transformation of the world would be an information and communication revolution in his book the third wave and where two technological changes were identified that affected society. (Toffler, 1979).

The first wave of transformation occurred with the agricultural revolution, when men ceased to be nomads and created the first civilizations, bringing with it a change in the way of socializing and producing food. (Toffler, 1979).

The second wave occurred with the scientific revolution, giving birth to the printing press, marking the foundations of scientific thought and thus a brief expansion of the concept of knowledge and later, the creation of the steam engine initiates the first industrial revolution, which brought with it a stage of economic development, opening the way to unidirectional communications (radio or press). (Toffler, 1979).

These changes have produced gigantic advances in technology, industry, or society. Because of this, it is estimated that COVID19 will change the behavior of consumers based on fear of getting infected, as well some other practices such as teleworking, electronic commerce, among other trends. (CCB, 2020).

Image 2 Customers' behavior changes. Source: CCB20 \l

Digital transformation is not something that has emerged with the pandemic, on the contrary, it is the result of changes in the way of doing businesses derived from the different industrial revolutions that have arisen throughout history.

The first industrial revolution arose from 1750 to 1850, there a process of social, economic, and technological transformation was experienced, starting in England in the mid-eighteenth century. In this revolution the economy was based on the industrialization of agriculture; thanks to this revolution, companies slowly change their business strategies, generating efficient means of transport for the distribution of their merchandise and thus being able to expand trade. With this revolution it was possible to overcome the situation of poverty and starvation, increasing the productivity of human work and originating sustained economic growth for the first time in history. (Escudero, 2009).

The most relevant technological advances of this time were: the steam engine created in 1770 by James Watt, the internal combustion engine created by Jean Joseph Étienne, the electrical energy created by Thomas Alva, which allowed them to expand production capacity; Advances were also generated at the level of communications such as the telegraph and the radio (Escudero, 2009).

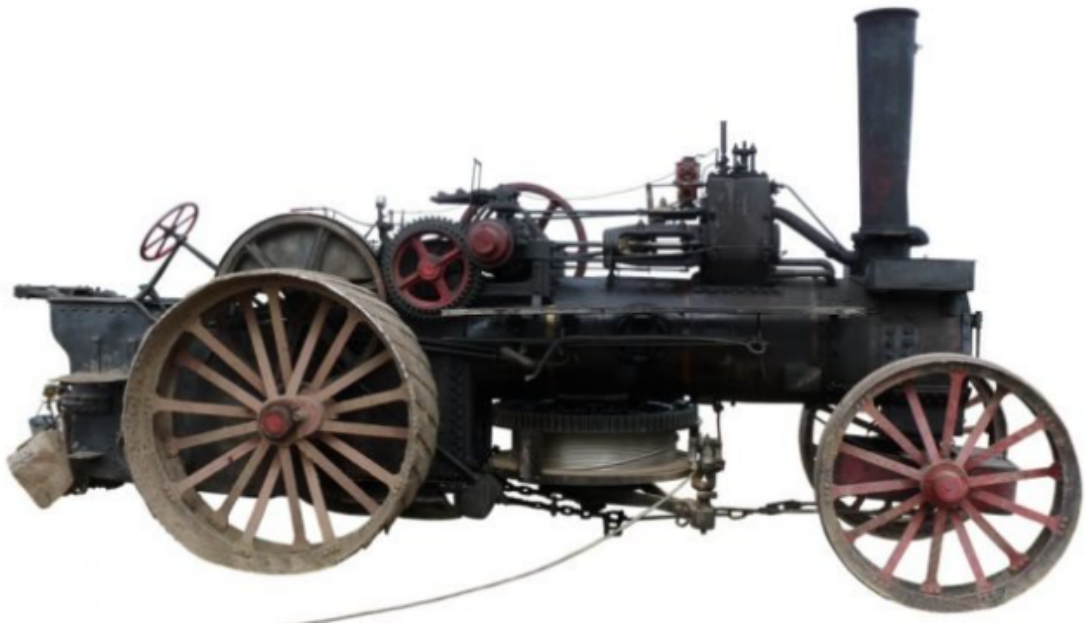

Image 3 Steam machine. Source: His19 \l 2058 (History, 2019)

The second industrial revolution took place from 1870 to 1914. The technology has changed the world in many ways, but this was the period that introduced more changes than ever, as cities grew, factories expanded, and people's lives were ruled by the clock instead of the sun. The great advances in the creation of new energy sources such as oil and gas, which allowed the development of the chemical industry to use aluminum, steel, or nickel. This allowed the generation of new work models, economic and market models to obtain higher income and better commercial performance. (History, 2019).

Serial production was also implemented, getting more efficient production processes at low costs, giving rise to the working class and union groups that fought to improve their working conditions. (History, 2019).

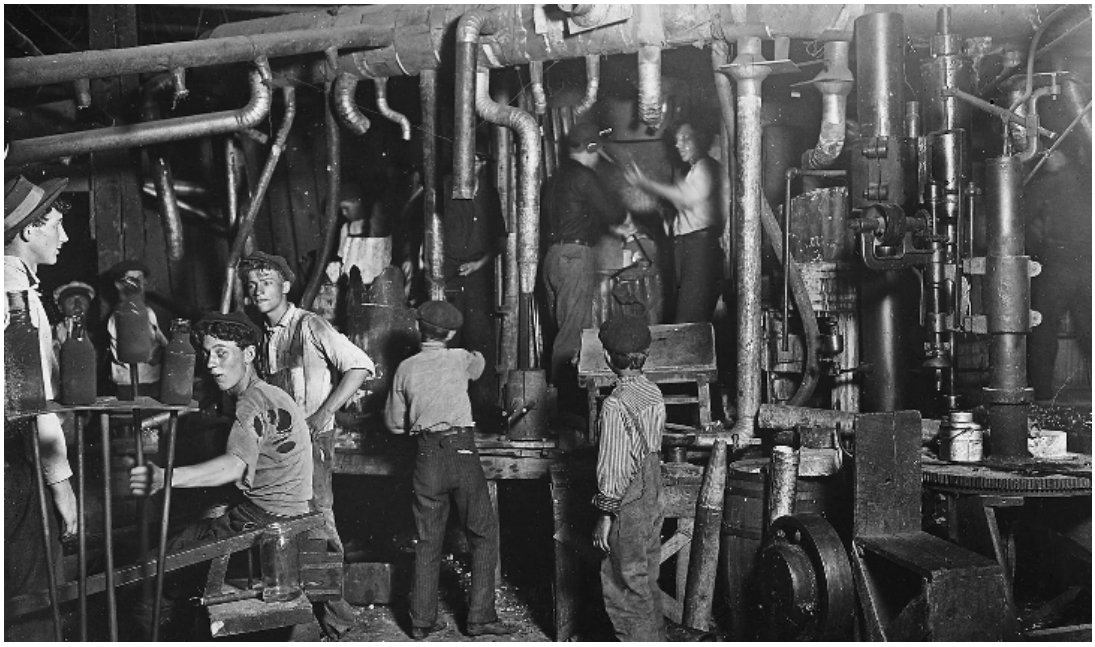

Image 4. Indiana Glass company workers. Source: USA national archive

The third industrial revolution was born in the 20th century and has its origin in the added information and communication technologies, as well as the innovation that allows the development of renewable energies. In this revolution, innovations that are present in people's daily lives were generated, among them are: The Internet, fiber optics, fiberglass, and the great advances in nanotechnology.

According to Jeremy Rifkin, an American economist, the pillars of the third industrial revolution come from:

> ...the great economic transformations of history occur when new technology in the field of communication converges with energy systems also new. (...) The infrastructure that emerged from this process shrinks time and space, and interconnects people and markets through more diverse economic relationships than before. When these systems are implemented, economic activity advances and drives with it a classic bell curve, which rises, reaches a maximum, is maintained over time, and then falls in accordance with the intensity of the multiplier effect established by the communicative-energy matrix." (Rifkin J.,2011).

The first technology and software companies were also created, which promoted a renewal in the production processes of companies and in their way of conceiving information and productivity.

The fourth industrial revolution, according to the founder of the World Economic Forum, Klaus Schwab in his book "The Fourth Industrial Revolution" ensures that this revolution is characterized by the convergence of digital, physical, and biological technologies; that have brought great advances in robotics, artificial intelligence, cloud computing, the internet of things, biotechnology, and the behavioral internet. (Schwab, 2016).

The pillars of this revolution are centered on data and automation, in order to allow companies to innovate in their processes (internal/external), teaching must go beyond the conventional and move towards the use of digital tools in order to generate culture changes that allow them to be more competitive in an increasingly digital market, relying on disruptive technologies such as artificial intelligence, augmented reality, Blockchain, Bigdata, data analytics, Machine Learning and Robotics. (Lopez, 2019).

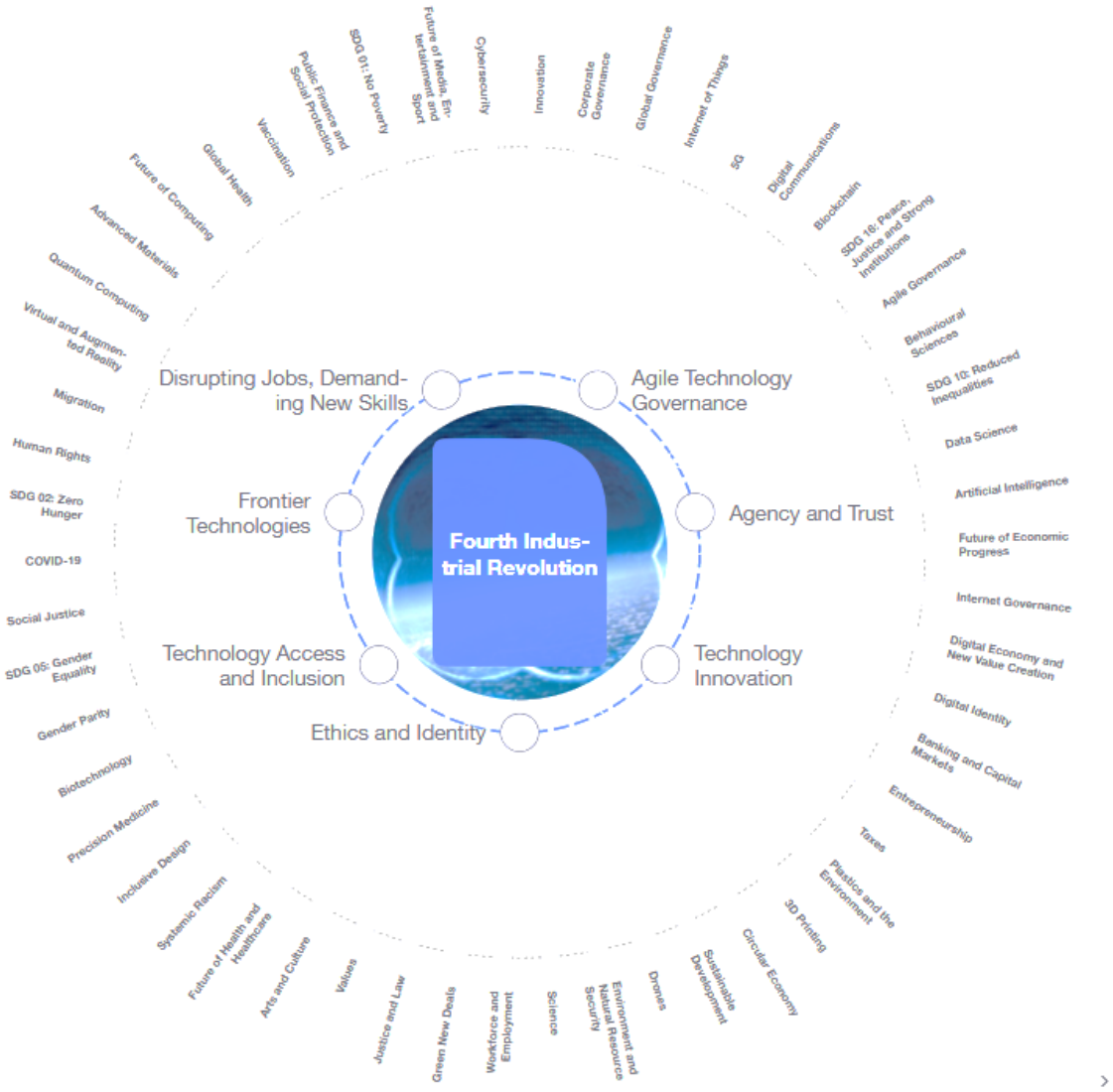

Image 5 Fourth industrial revolution. Source: World Economic Forum

Industry 4.0 is defined as a new industrial model for the self-organization and self-management of fully automated, self-learning and interactive production systems in which new digital and Internet technologies are at the core, and the role of humans is limited to its initiation, control, and technical maintenance, which requires new skills of modern industrial specialists and is accompanied by social changes. (MinTIC, 2019).

The term emerged in the manufacturing field, Industry 4.0 directly influences each sector and industry, in such a way that the interaction between digital and physical technologies and, in general, the capabilities offered by Industry 4.0 are not limited to improving the start, development and end of the supply chain, but rather contribute to profit growth, product development and transformation, and the customer experience itself (Deloitte, 2017).

For this revolution, MinTIC focuses on these four characteristics:

- The vertical integration of smart production systems, which means that smart factories, which are essential at the core of Industry 4.0, cannot function independently. Networks of smart factories, smart products, and other production systems must be established, allowing them to manage demand levels, stock levels, machine defects, and/or unforeseen delays. (MinTIC, 2019).

- Horizontal integration through global value chain networks will facilitate the establishment and maintenance of networks that create and add value. (MinTIC, 2019).

- Full value chain engineering means that the entire value chain in the industry is subject to what is called forward engineering, where the entire life cycle of the product is traced from production to delivery to the end consumer. (MinTIC, 2019).

- The acceleration of manufacturing indicates that business operations, particularly those involved in manufacturing, make use of many technologies, much of it is not innovative or expensive, and most of it already exists. (MinTIC, 2019).

Industry 4.0 is triggered by digital technologies that have a disruptive impact on companies' business models, and the way they operate and create customer value. (MinTIC, 2019).

The technologies that constitute the basic components of this revolution are:

- Industrial Internet of Things (IIoT). The Industrial Internet of Things (IIoT) enables communication between all devices inside and outside the factory. (MinTIC, 2019).

- Big Data Analysis. Big data is characterized by volume, variety, and speed (the 3Vs), and requires new data processing and analysis techniques. Data visualization, analysis and sharing are the foundation for analytics that support decision-making and improve self-awareness and machine maintenance. (MinTIC, 2019).

- Cloud computing is related to the ICT infrastructure that allows ubiquitous access to data from different devices. The cloud can be treated as a service and support of collaborative design, distributed manufacturing, innovation harvesting, data mining, semantic web technology, and virtualization. (MinTIC, 2019).

- Simulation, simulation tools can be widely used throughout the value chain, from product design to operations management. (MinTIC, 2019).

- Augmented reality allows the creation of a virtual environment in which humans can interact with machines using devices capable of recreating the workspace.

- Autonomous robots, the evolution of traditional robots paved the way for new collaborative robot solutions (i.e., CoBots) that can collaborate with humans in a safe and efficient way. (MinTIC, 2019)

- Cyber security or cybersecurity, to ensure the security of the vast amount of data collected, stored, and communicated through IIoT, cybersecurity strategies are one of the main challenges for the future. (MinTIC, 2019).

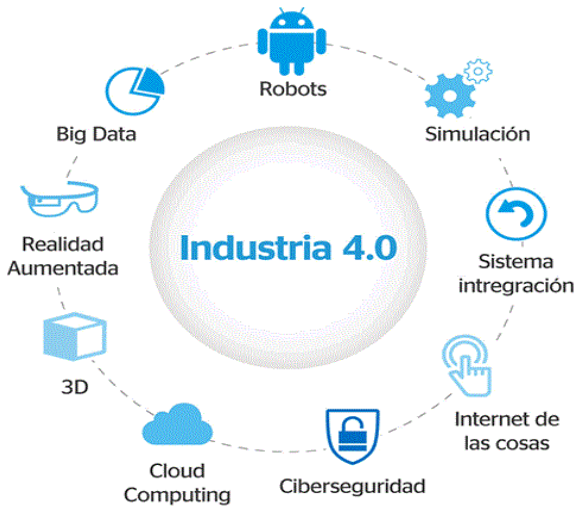

Image 6 4.0 industry. Source: Drew Global 2019

Results

The expected results after implementing the digital transformation are:

- Operational, structural, and cultural changes within organizations.
- To lead under digital transformation strategies, based on commitment.
- To manage change to mitigate the risks of not adopting technologies.
- To promote ICT skills.
- To improve employee satisfaction and in turn productivity.
- To improve the customer experience.
- To improve profitability.
- To generate new business opportunities.

Discussion

Digital transformation is the creation of new strategies and business models that generate value for our clients and the entire organization, leveraged on the use of technologies that lead to the achievement of the company's strategic objectives. (CCB, 2020).

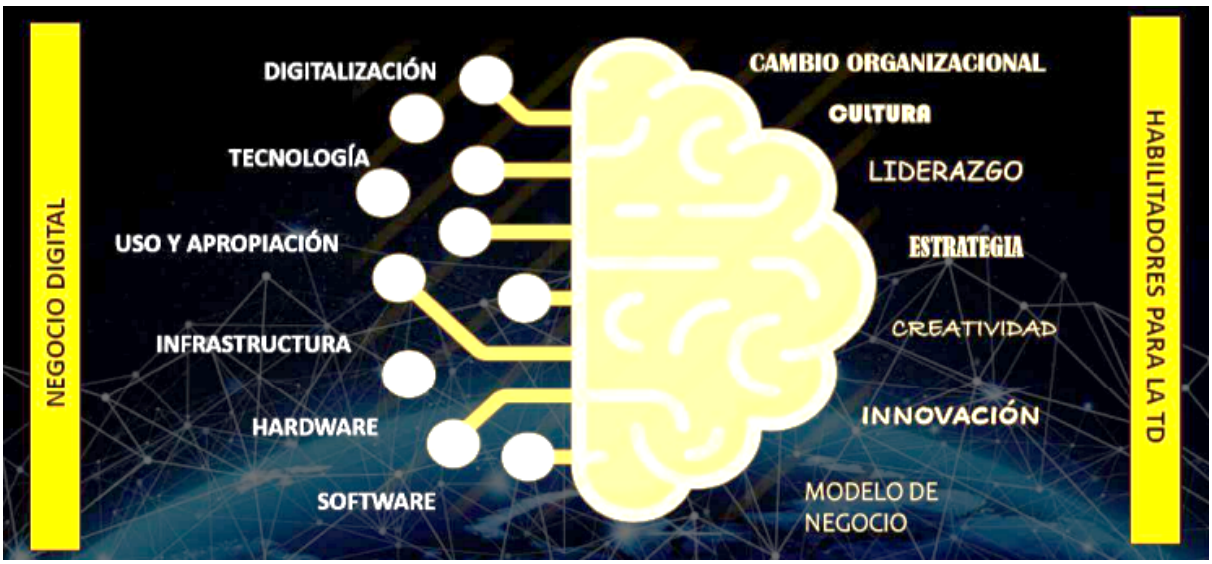

Image 7 Maturity level for digital transformation. Source: CCB20 \/

Image 8 Digitalization maturity level. Source: CITATION CCB20 \l 2058

For the Ministry of Information Technology and Communications (MinTIC) it does not only consist of the purchase of technological equipment, but also requires having a clear strategy, empowering employees, understanding the consumer, and achieving differentiation from the competition, for this reason emphasizes five keys to achieve it successfully. (MinTIC, 2020).

These keys are:

● More than equipment: digital transformation is based on a disruptive strategy that changes the way companies conduct processes, to address the market more effectively and be more efficient. One of the main mistakes that is made is to consider that digital transformation is equal to the purchase of state-of-the-art equipment and tools and use them indiscriminately in processes, without an analysis of its true impact on productivity and the relationship with employees. customers. The acquisition of

equipment should be conducted only as an integral part of the proposed strategy. (MinTIC, 2020).

● Human talent and new generations: one of the great challenges for companies in digital transformation processes is to retain human talent and align all their employees, regardless of which generation they belong to, to work for the same goal. Organizations must devise strategies so that their staff is motivated and empowered to work for business transformation. (MinTIC, 2020).

● Understand the new consumer: today's customers demand a much more personalized relationship with companies, they want to be served in a special and differentiated way. (MinTIC, 2020).

● Differentiation from the competition: companies need to reassess their business model to find the differentials that can give them advantages over the competition. It is key to find an added value so that customers prefer the service or product that is offered and that can be easily found elsewhere and at affordable prices. (MinTIC, 2020).

● Strategic use of digital channels: the implementation of communication channels with customers is another important aspect. Not all social networks and applications are equally effective for all businesses and having them is not synonymous with digital transformation. (MinTIC, 2020).

Conclusions

Digital transformation is a continuous and evolutionary process since companies and society are constantly changing. This allows companies to undertake the inclusion of emerging technologies that allow them to give continuity and sustainability to their products and/or services. During and after the pandemic, all organizations must start their digital transformation process, providing their collaborators, customers, and suppliers with tools that allow them to work from anywhere, without affecting their productivity and/or efficiency. For this reason, companies must start a change in organizational culture that allows them to rethink a new business model that provides them with a differentiating factor in such a competitive market and above all that, due to current circumstances, where people were forced to work, live, and study in diverse ways.

However, it is important to emphasize that customers, collaborators, and other interested parties are the center of any service and therefore work must always be done on continuous improvement of the service, which guarantees that any change made within the organizations has the desired effect and, above all, that it satisfies the needs of the market, since it is proven that society is immersed in a completely digital world.

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