

# Challenges of digitalization process in different industries. Before and after

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**Abstract.** Since the appearance of the internet and new technologies, the business and socioeconomic sphere has taken a 360° turn. This gives us the opportunity to generate new business models, improve the analytical and predictive capacity both internally or externally and improve the company's processes in terms of efficiency and effectiveness. The digitalization of processes implies adapting to the new technological environment and represents an added advantage for all companies regardless of the sector they are engaged in or the projects they carry out. In this way, we investigate the challenges and needs of companies from different industries before and after the implementation of the digitalization process, which is defined as being a part of the Industry 4.0, also referred to as the Internet of Things (IoT). Also, this paper describes the benefits of a digitalized company and the impact of cybersecurity in the results along with the definitions of threats which can occur and the type of strategy which shall be adopted in order to avoid security risks.

## 1. Introduction

The last 10-15 years have seen a phenomenal development: the internet and later smart phone apps have changed almost every facet of our daily life. They have altered the way how we book travel, do our banking, watch TV, keep in contact with our friends, etc. [1] Nowadays, all these state of the art trends are possible due to the process of digitalization, which significantly replaced the way we spend our time, we live, we work and add value, and finally will update to a next level version the economy and the business environment.

The digitalization will influence or change every company in the world, regardless of the industry it belongs to. Adopting an appropriate strategy, along with the development of skills and competences that will meet adaptation to a new environment will be necessary to follow the use of the digitized context. For example, in the automotive industry, digitalization of approaches such as production, sales, distribution and, last but not least, suppliers, will significantly improve the quality of planning and management, along with streamlining processes by making more accurate decisions in a shorter time. Also, as a result of digitalization the companies will replace in a significant way their interaction with the clients, the management side will be improved and its efficiency will be increased, along with the quality, the speed and the relevance of procurement of the information. The changes that will occur due to these actions will also create new processes, which will be perceived at a different and increased level of understanding, due to the disappearance of technological barriers.

At this point, the financial organization will also have in its compenence new roles, responsibilities and new methods of work, but it has to be prepared since the beginning of the digitalization process about the risks which can occur and the own future positioning.

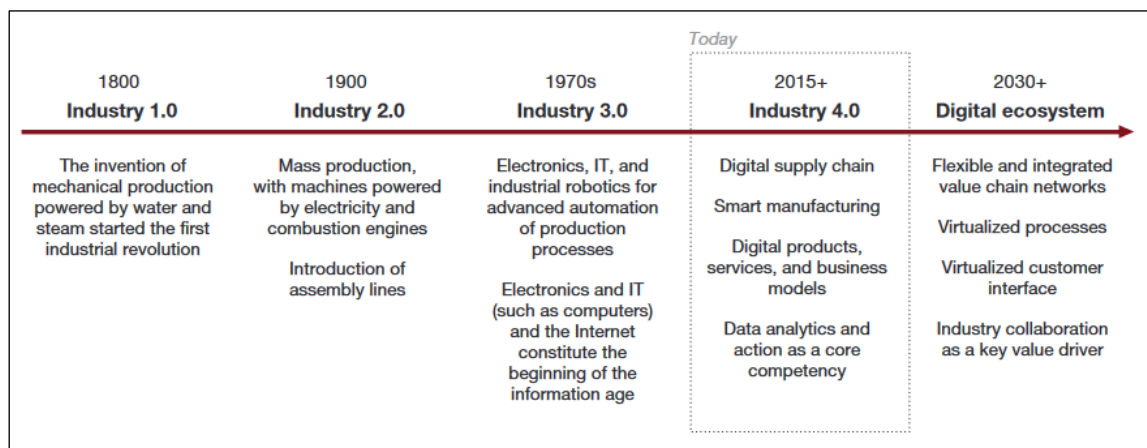
## 2. Industry 4.0

Digitalization is a part of the Industry 4.0, which implies the promise of a new revolution that combines advanced production techniques and intelligent technology operations that will be integrated into organizations, people, and goods.

Industry 4.0 is a concept which has been developed in 2010 by the German government in order to describe a vision of the future of Internet of Things (IoT), having in its compenence all the interconnected processes. It is also the current revolutionary industry that secures the digitization of industrial actions and processes through the implementation of the concept of artificial intelligence in production machines along with the optimization of existing resources used in the development of new, high-efficiency commercial methodologies. This industry interconnects in the digital environment different departments that aim at customer satisfaction and personalization of the services offered. One of the main objectives of this digitization concept is the combination of digital technologies that ensure the development of new industrial markets and the interaction between economic factors.

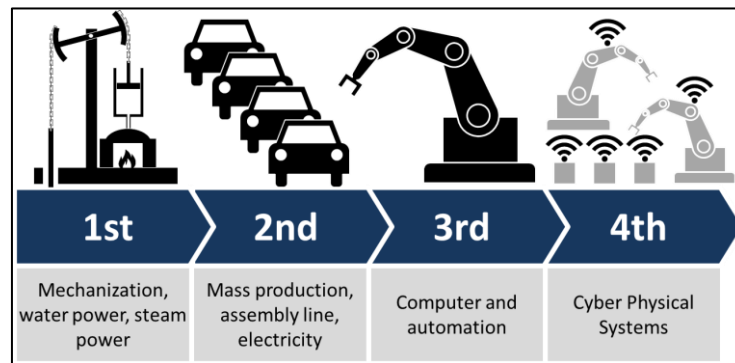
The results provided by Industry 4.0 along with the use of connected disciplines are:

- Permanent adaptability on demand;
- Offering products or services to the client in a more personalized and futuristic way;
- Providing a post-sales service to the customer in a more efficient way;
- Design, develop and sell your product or service in a shorter time;
- Developing shorter and more profitable production series;
- Use analysis information from various areas such as help desk, social networks, IoT for analysing and exploiting them in real time.



**Figure 1.** The long road to Industry 4.0 [2]

At the heart of all this activity sits the digital supply chain, and it is key to the operations of every company that manufactures or distributes anything. Indeed, for many companies the supply chain is the business. It extends the vertical integration of all corporate functions to the horizontal dimension, knitting together relevant players — the suppliers of raw materials and parts, the production process itself, warehouses and distributors of finished products, and finally the customer — through a network of sensors and social technologies, overseen via a central control hub, and managed through an overarching data analytics engine. [2]



**Figure 2.** Industrial revolutions and future view [3]

The impact of the development and implementation of industry 4.0 can be felt at several levels, such as large ecosystems at the organizational and individual level (employees and customers). As far as ecosystems are concerned, the new industry affects all their agents, such as customers, suppliers, investors and regulatory considerations, facilitating interaction, communication and information sharing among them. Organizations can become more responsive, dynamic, and predictive to the extent that they have the capacity to implement, adapt and learn real-time new technologies. Also, for individuals, this industry can be perceived in a completely different way, such as updating the enterprise's way of doing business within the organization, while for customers it can mean a new way of personalizing and adapting the products and services purchased in meeting needs.

### 3. Challenges before digitalization

Information is created in various formats at an accelerating rate through various media and it is become increasingly complicated to remain abreast in this overflow of literature without the help of information technology. [4] For example, the challenges faced by a company which did not digitalized its workflow are the following [5]:

- Time and data intense business processes;
- Overwhelmed by information/data pools;
- Quality and integrity of the data is underwhelmed;
- Content or the documents are unmanageable;
- Missing out on relevant information or news;
- Important information about the company are missing;
- Product perception by the customers;
- Missing out business opportunities due to a lack of insight and connections;

These challenges and delays in advancing to digitization will lead to a low efficiency of the company, because of:

- Decreased productivity by spending valuable time to find a paper document; [6]
- Less space and uncomfortable workspace because of the paper documents which imply the need for physical storage;
- Data protection does not exist in a highly and valuable manner, because the paper support is vulnerable to various external factors that can damage the material. For example, the risk of moisture, or even its own footprint;
- Time management in data query due to the fact that a physical file may pose a risk of disorder or loss of documents;
- Missing of simplified searches for different products, values, papers, processes, etc., inside the company;
- Missing Corporate Social Responsibility. A company can demonstrate its social commitment by engaging in important causes such as environmental sustainability. Digitizing documents

promotes this economy in paper consumption. Also, if a copy of a document is required, it can always be printed.

Old systems and processes have to be rethought, and new technologies have to be put in place in order for business to stay competitive within their industry. Companies are faced with many challenges as they navigate their way through this digital transformation. These hurdles can range from limited budgets for new technology to lack of the expertise or know-how required to roll out new digital initiatives. But the one challenge that is crucial to overcome is creating an effective digital strategy. [7]

#### **4. Benefits of digitalization**

In order to develop an effective digital strategy, it is necessary for a company to be fully aware about the advantages which will overcome, in this way will be easy to exploit and develop the processes which will create value for the product or service that will be delivered to the client.

Some of the most important benefits due to digitalization are as the following:

- Reducing the use of paper and printed elements;
- Savings due to transportation costs;
- Reducing the space and costs of storing the documentation;
- Centralizing information by storing documents in digital formats that can later be accessed simultaneously by more users;
- Fighting the deterioration of documents with the passing of time through their storage in the virtual environment;
- Agility in searching for documents and their content;
- Safe and fast access and information structure allows for better decision making;
- Accurate copies of documents can be printed at any time, these copies serving as a backup copy of the documents;
- Digitized information may be modified and used for different purposes;
- The distribution of online documents is facilitated, they can be sent without waiting for confirmation of receipt;
- Contribute to maintaining and improving the environment by reducing the pollution generated by paper;
- Savings up to 30% on printing processes;
- Complexity, costs and risks are reduced due to work process analysis services, giving priority to the most efficient, safer and more optimized;
- Some tasks involving the intervention of the staff are simplified by means of automation;
- Permanent monitoring and control of document transfers between different systems;

Developing a digital substitute of rare, brittle or fragile, original documents can provide access to users while preventing the original from damage by handling or display. This is the motivation behind the digitization of many artefacts. [...] Apart from the general benefits that are discussed above, there are certain specific benefits of digitization that may help in making the society economically and ecologically sustained. [4]

#### **5. The impact of cyber security in a digitalized company**

The transformation from print to digital media for communication of information to the larger community is resulted from the growth of the Internet and now enables the tremendous amount of information accessible to everyone. [4] Along with this, as is described in [8] the cyber risk is on the rise in a hyper-connected world. The Internet of Things means that physical targets such as connected machinery will become of interest to hackers. For example, systems installed for remote access will become highly susceptible to attacks with the goal of, e.g., sabotaging infrastructure or industrial facilities. Companies need to protect themselves against attacks from state-or business-sponsored entities, politically motivated hackers, and organized crime. Cybersecurity possess significant risks and needs to be a top management issue.

What is the reason that cyber is so important nowadays? The hacker's motivations are generally financial, selling real opportunities that are hard to detect in the theft of information and financial resources through digitalization, either directly or indirectly, but there are other types of attacks, such as:

- **Threats to data** – The company must protect itself against any attempt to theft, loss or dissemination of its information (financial, technical, commercial) following the implementation of technological systems; Private data of the company can also be affected and at the same time have an impact on market reputation, jeopardizing the responsibility of current customers and bringing susceptibility to future customers;
- **Threats to information systems** – Information systems risks are considered important to the company as far as they relate to the viability of their business. The challenge lies in the company's ability to recover rapidly from a cyber-attack while operating in a degrading way.

Establishing a strategy that includes all aspects of IT security needs to be addressed from the identification phase of the technologies to be implemented as a result of the digitization process. Developing such a strategy has the role of generating trust both in a digital future and not only in the technology field, such as collaborators, information in company databases, processes used to perform activities, culture, and the physical environment.

Digitalized companies need to develop a strategy that covers the cyber security area, which involves a radical change in business models, the main idea being to determine the information security management in the company as a key factor for survival.

## 6. Conclusions

Technologies accelerate the digital transformation of all sectors, and digitalization affects all types of companies, without exception, although with different intensity.

During this work, we approached the digitization process which belongs to the Industry 4.0 concept, along with the benefits that come with it, and concluded that digitalization is necessary to increase the productivity, efficiency and competitiveness of all companies. Also, for many, it will be an opportunity to introduce new businesses or markets, to evolve products to services, or to cause disturbances in adjacent markets as it promotes dematerialisation and disintermediation.

Finally, we introduced the concept of cybersecurity, which is a result of digitalization, given the risks that companies expose when transferring from paper to computer, theft or loss of data, affecting the company's image on the market and in dealing with customers or partners.

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