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**The Impact of Digitalization and Industry 4.0 on Business.
ERP Systems can be a Solution for Business?**

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Abstract

The progress of the digitalization of the industry has motivated companies to increase investments in solutions and tools that allow the automation of processes so that they can develop and improve their performance. The impact of the digitalization concept on the business has become a very special topic for most companies that want to automate their processes and to have a sustainable business. The progress of the economic and IT environment has led to the emergence of digital transformation, which has an impact on the expectations and behaviour of companies.

The aim of this paper is to observe the impact of digitalization and industry 4.0 on business, and particularly whether ERP systems are a solution for business.

The research method used was the systematic review of the literature. The selected articles aim at defining the concepts of digitization and industry 4.0, the advantages and disadvantages of industry 4.0, but also at demonstrating that ERP systems are the best solution for process automation for companies.

The results showed that digitalization and industry 4.0 have a positive impact on the performance and sustainability of companies if they implement an ERP system within the company. In conclusion, ERP systems have a beneficial role for a company.

Keywords: ERP systems, digitalization, industry 4.0, flexibility, creativity.

JEL Classification: M10, M15, M40.

1. Introduction

The evolution of information systems and technology in general has favoured the progress of the digitalization of the industry, thus causing companies to increase investments in solutions and tools that allow the automation of processes within the company, which significantly improve their performance. Organizations around the world pay special attention to the company's development process, investing in new technologies adapted to their requirements.

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Neamțu et al. (2019) noted that "the evolution of human society is divided into 6 stages": the stone period, the iron period, the agricultural period, the industry period, the technology period and the knowledge period.

Coskun-Setirek and Tanrikulu (2021) believe that the digitization of technology has the role of "improving productivity, reducing costs and increasing innovation". The main implications and opportunities offered by the digitalization of technology are: "a new business model, new products, new forms of innovation and transformation" (Reuschke et al., 2021).

The concept of Industry 4.0 emerged after the digital revolution, this concept being based on a strong relationship of interconnectivity, automation and machine learning. The Industry 4.0 concept was first launched in 2011 due to the "strategic initiative of the German government" (Greensoft, 2019). The purpose of this industry is to digitize most of the activities performed by companies, exploiting the potential of new technologies.

According to Kandananond (2014), integrated ERP systems have the role of "automating and integrating all business processes and operations", because the processed information is stored in a database that is common to several categories of users in different departments so that access information is much easier.

The article is structured as follows: a section where I presented the problem to be researched, the questions and the research method, the main results identified based on the review of the literature specific to the researched problem and the conclusion of the article.

2. Problem Statement

The problem to be researched was to observe the impact of business digitalization and the emergence of the industry 4.0 concept. I also looked at whether cybersecurity can be ensured in the context of Industry 4.0, as well as the advantages and disadvantages of Industry 4.0.

3. Research Questions/Aims of the Research

The aim of this paper is to observe the impact of digitalization and industry 4.0 on business, thus observing whether ERP systems are a solution for business. I have established some research questions that I will analyse in the Findings section.

Q1: What does the concept of Industry 4.0 on business mean?

Q2: What are the advantages and disadvantages of the Industry 4.0 concept?

Q3: Can cybersecurity be ensured in the context of Industry 4.0?

Q4: What does the concept of business digitization mean?

Q5: Can ERP systems be a business solution?

4. Research Methodology

The research method used in the paper is the systematic review of the literature. I selected a sample of 25 papers by searching for the keywords "industry 4.0", "ERP systems", "solution" and "digitalization". Reading the selected articles, I noticed that

some did not essentially address the main concepts of "industry 4.0" and "ERP systems", so I removed those articles from the sample. The role of this literature review is to define the concepts of digitization and industry 4.0 and to demonstrate that ERP systems are a reliable solution for process automation. Technological evolution has a major impact in the development and study of the concepts of digitization and industry 4.0.

Thus, I followed the main effects of ERP systems on the digitization of business processes to observe the advantages and disadvantages of using these systems.

5. Findings

Q1: What does the concept of Industry 4.0 on business mean?

Due to the rapid development of information technology, most activities have been automated to increase the efficiency of companies. Organizations need to ensure "increased shareholder confidence" and cope with "industry pressure" (Fonseca, 2018).

The industry has undergone many changes over the period, or rather numerous "industrial revolutions" that aimed to increase complexity and productivity. There were 4 "industrial revolutions":

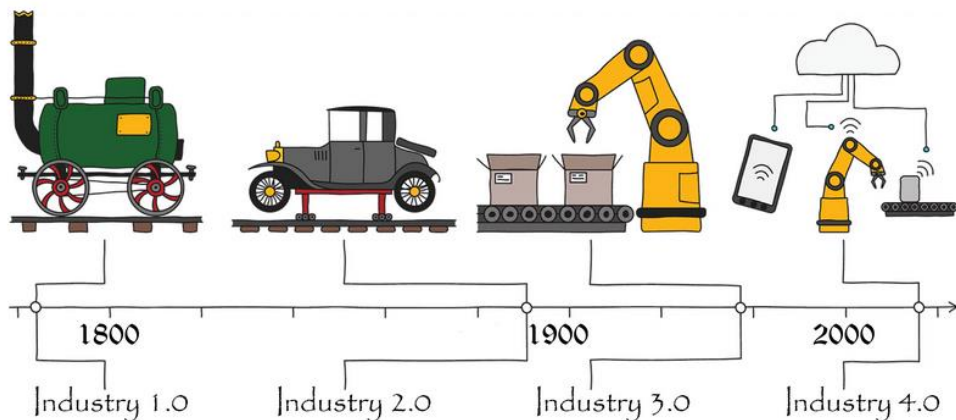


Figure 1. The four "industrial revolutions"

Source: Greensoft.ro, 2019.

Industry 1.0 has been between the years 1760 and 1840 and was called the industrial revolution that involved the transition from manual labour by humans with the help of working animals to a more optimized form of human labour (using water engines, steam engines and other machine tools)

Industry 2.0 was between the years 1870 and 1914 and was called the technological revolution. During this period, the extensive railway and telegraph networks appeared, which allowed the faster transmission of information and ideas.

Industry 3.0 appeared at the end of the 20th century and was called the digital revolution, because computers and process automation within companies appeared.

Industry 4.0 appeared between 2011 and 2015 and determined the emergence of the fusion of technologies in the physical, digital and biological spheres. The main role of Industry 4.0 was to improve technology.

Q2: What are the advantages and disadvantages of the Industry 4.0 concept?

In Table 1, I presented the main advantages and disadvantages of Industry 4.0 as follows:

Table 1. Advantages and disadvantages of Industry 4.0

Advantages	Disadvantages
<ul style="list-style-type: none"> + improved efficiency + increased productivity + flexibility and agility due to the use of intelligent technologies + reduces costs (automation, systems integration, data management) + a better customer experience 	<ul style="list-style-type: none"> - limited creativity - increase unemployment because most activities are automated and there is no need for employees to perform daily tasks - contribution to environmental issues (the use of modern technologies that automate activities can be polluting due to emissions of toxic gases and substances) - IoT security - long-term implementation of new technologies - high initial costs - requires maintenance and training

Source: Greensoft.ro, 2019.

Industry 4.0 has influenced the following aspects, as shown in Table 2:

Table 2. Application influenced by industry 4.0

3D Printing	Drudge
IoT	SaaS / Cloud Computing

Source: Own creation.

Q3: Can cybersecurity be ensured in the context of Industry 4.0?

Cybersecurity is one of the biggest challenges a company in Industry 4.0 faces. These companies in Industry 4.0 use intelligent and interconnected technologies that aim to "automate all phases / activities" of a company (Corallo et al., 2020).

According to Corallo et al. (2020), industry 4.0 transformations aim to "create value for companies using modern technologies."

In the past, the technologies used in companies were not connected to the Internet so all information was distributed between departments only in written format using many resources. Currently, approximately 90% of the technologies are connected to the Internet, so the company has a low consumption of resources but must ensure a high security of the data processed with the new technologies.

Cybersecurity standards and documentation are essential in building useful procedures and controls to ensure data security (European Network and Information Security Agency - ENISA, 2011).

Q4: What does the concept of business digitization mean?

Digital technology can be defined as a "combination of information, communication and connectivity technologies" (Bharadwaj et al., 2013, cited by Coskun-Setirek and Tanrikulu, 2021). It was found that digitalization has a significant impact on improving business performance and identifying new opportunities for company development.

The digital transformations of a business presuppose that a company will go through "different strategic transformations" (Caputo et al., 2021). More and more companies feel the need to achieve a digital transformation due to 3 reasons:

1. World Wide Web (the emergence of broadband internet, smartphones, web 2.0, cloud computing, speech recognition) that led to the emergence of e-commerce
2. New digital technologies that determine that approximately the entire activity to be performed in digital format.
3. The behaviour of the consumer who orders more online, causing the increase of online sales to the detriment of physical trade.

According to the study conducted by Ion (2021), Romania is on the last place in the European Union in terms of business digitalization. The ranking according to the level of digitization is: Denmark, France, Germany, Italy, the Netherlands, Poland, Spain, Great Britain, Romania.

Q5: Can ERP systems be a business solution?

Given that digitalization has evolved greatly in recent years, most companies have sought solutions to optimize their business using a single application that includes information from all departments. The best solution to meet the requirements of companies was the implementation of integrated ERP systems.

The main modules found in integrated ERP systems are: supply chain, finance, accounting, production, human resources, sales and specific activities for different customers (Weinrich and Ahmad (2009, cited by Rajan and Baral, 2015).

ERP systems have the ability to easily integrate business processes ensuring a fast processing of a large volume of information with the help of the functions contained in these ERP systems.

The role of ERP systems is to define the best and most detailed image of the company's situation, so that the company offers the most credible results to shareholders and managers.

In addition to integrating all processes, ERP systems allow the company to grow sustainably, as they reduce the consumption of electricity, paper and other resources. Companies must become as "socially responsible" as possible (Mirghafoori et al., 2017).

If a company wants to grow sustainably, before implementing an ERP system it must ensure that the system offers:

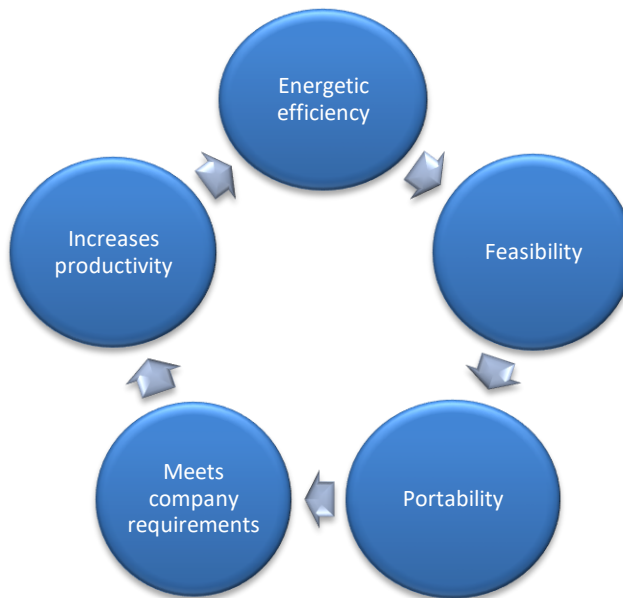


Figure 2. Elements of an ERP system to ensure sustainable growth

Source: Own creation.

ERP systems can provide a “multifunctional view of the entire organization” by providing support for sustainable good practices (Watson et al., 2010, in Bradford et al., 2012).

6. Conclusion

Considering the evolution of technological systems due to the digitalization and the appearance of the industry 4.0 phenomenon, the companies had to find solutions for optimizing the activity. The best solution that incorporates all the requirements and activities of the companies were the integrated ERP systems, because it incorporates all the modules specific to a company's activity, as well as adding specific modules depending on the specifics and requirements of the company, and information is available at all departments by simply querying the database.

In addition to the modules and functions of ERP systems, it offers the company the opportunity to grow sustainably, reducing inefficient resource consumption.

In conclusion, ERP systems can be a solution for businesses in the age of digitalization and the context of Industry 4.0.

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The whole paper belongs to me and has not been published in another journal.

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