

Industry 4.0 in an International Context: Key Case Studies

La Industria 4.0 en el contexto internacional: Principales estudios de caso

Indústria 4.0 num Contexto Internacional: Estudos de casos chave

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At the dawn of the 21st century, the underlying aspects of the change in the prevailing techno-economic paradigm were already a palpable reality. This circumstance was embedded in a context of constant change harmonised by a greater integration of international markets. In fact, the concept to which we refer is globalisation.

Thus, this phenomenon of global interconnectedness is not a new concept, but it has become more important in recent decades. Although globalisation has positive effects associated with increased market efficiency, increased international trade, access to resources, increased investment and increased market potential (Johnson, 2002), it has also led to a number of negative consequences that have overshadowed the high degree of trust placed in globalisation (Bretos & Marcuello, 2017).

In the last decade alone there have been major financial crises (US subprime crisis, Covid-19, Ukraine-Russia war) that have led to the erosion

of international relations and destabilisation in both industrialised and industrialising countries, as well as negatively affecting the process of globalisation.

However, these facts together with recent developments in the world economy raise questions that have concerned economists associated with increasing competition in a situation of economic instability, as well as analysing how and what is the positioning of companies, whether large or small and medium-sized enterprises (SMEs), in a dynamic and volatile market (Crescenzi & Gagliardi, 2018).

It is precisely in these aspects that the debate on the transformations linked to the concept of Industry 4.0 (I4.0) arises. In this case, the specialised literature shows that in order to take a picture of the foundation on which I4.0 is based, four basic pillars need to be taken into consideration (Torrent-Sellens, 2019).

Firstly, the widespread application of new technologies has increased the potential for eco-

conomic growth. This wave of technological and digital change has led to changes in the behaviour of the structure of economic agents and business models (Trajtenberg, 2018). This is why technological and digital transformation (Artificial Intelligence (AI), the Internet of Things (IoT), 3D printing, robotics, among others) will lead to greater economic growth. (Torrent-Sellens & Díaz-Chao, 2018).

Secondly, the difficulty associated with the dynamism and speed of change in consumption and purchasing habits in FMCG markets has led to greater business interest in innovation in recent decades (Bartels & Rendels, 2011). This interest is reflected in a greater effort on the part of companies to generate, through innovation, long-term sustainable competitive advantages (Alegre & Lapiedra, 2005) that allow them to remain in the market and to achieve economic and social development (European Commission, 2010).

Thirdly, there is a broad debate on work (labour market) and I4.0 where the literature is divided into optimists and pessimists. In this sense, in the short term it is shown that digitally based automation would replace the routine worker, leading to a decrease in employment and wages. However, there is talk of compensatory effects in the long term that would begin with the development of new non-routine jobs, which would allow workers to re-enter the labour force (Acemoglu & Restrepo, 2019). Under this

concept, it is estimated that the demand for digital technology jobs will increase by approximately 16% between 2016 and 2030, with these jobs requiring a high level of training (UE, 2019).

Without forgetting other aspects such as how migrations affect the reality of the global labour market, causing a schism between those who advocate an opening of the market at an international level and those who seek to close national borders. Or whether digitalisation can aggravate the existing gender gap, with the aim of making women more visible in positions of responsibility.

Fourth, I4.0 has the ability to create smart factories and products. This means that both factories and products have the ability to communicate with each other and with their environment, making them more efficient and flexible (Fatorachian & Kazemi, 2018).

This is why we can see how technological advances and innovations in recent years have transformed the society in which we live. Each episode of change generates new socio-economic opportunities, but at the same time represents risks and entails social, environmental and economic costs. For that reason, when technological change impacts on the bulk of human activities it can be disruptive in nature and, in these cases, it becomes a challenge for the socio-economic status of countries that are involved in a technology-based transformation.

In sum, this issue of the journal aims to show some of these realities discussed above towards the characteristics and consequences of I4.0 from various perspectives of Latin American economies. I hope that the reader will find interesting the proposal of this issue that embarks on a prevailing reality that directly affects the international economy.

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