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SOFT SKILLS AND PATTERNS CREATED BY ROBOTIZATION IN THE LABOR MARKET

As soft skills e padrões criados pela robotização no mercado de trabalho

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ABSTRACT

This article aims to analyze the changes in the qualification requirements of workers and the need to develop behavioral skills, soft skills, through the acquisition of new knowledge for entering and remaining in a competitive job market. With the pandemic, companies demand more empathy and resilience from workers to face current and future adversities. In a scenario of uncertainties, human potential and adaptability in the gradual process of replacing labor by machines in labor activities in all areas of society are considered.
Keywords: Labor Market, Digital Transformation, New Skills, Soft Skills, Future of Work.

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AS SOFT SKILLS E PADRÕES CRIADOS PELA ROBOTIZAÇÃO NO MERCADO DE TRABALHO

Soft skills and patterns created by robotization in the labor market

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RESUMO

O presente artigo tem como objetivo analisar as mudanças nas exigências de qualificação dos trabalhadores e a necessidade de desenvolver competências comportamentais, as *soft skills*, por meio da aquisição de novos conhecimentos para o ingresso e a permanência em um mercado de trabalho competitivo. Com a pandemia, as empresas demandam mais empatia e resiliência dos trabalhadores para enfrentar as adversidades atuais e futuras. Em um cenário de incertezas, considera-se as potencialidades humanas e a capacidade de adaptação no processo gradual da substituição de mão de obra por máquinas nas atividades laborais em todas as áreas da sociedade.
Palavras-chave: Mercado de trabalho, Transformação digital, Novas competências, Competências Comportamentais, Futuro do trabalho.

INTRODUCTION

The topic of labor relations involves many historical discussions. One of them refers to the constant technological development driven by large organizations to survive and expand their market share. Castells (2016, p. 268) states that in the processes of historical transition "one of the expressions of systemic change is the transformation of the occupational structure, that is, changes in the composition of professional categories and employment". This demonstrates that the technological development driven by large organizations is linked to several arguments focused on the relationship between capital and work.

This article addresses the importance of behavioral skills, the so-called soft skills, for workers in order to adapt to the current job market, considering the improvement of strategic and operational processes through the digital transformation carried out in organizations.

The results of this research point to the importance of workers maintaining a constant learning process in terms of both technical knowledge and behavioral skills. It is considered that workers must adapt to the changes that happen in society and, consequently, in the world of work in relation to the replacement of people by automated machines in various professional activities.

1 METHODOLOGY

The methodology used for the development of this article included an extensive literature review, analysis of technical reports from consultancies and agencies, research in databases and analysis of statistical indicators. The article follows a qualitative line of research, with the aim of broadening the understanding of the relationship between technological trends and social inequality. As for the objectives, the article is exploratory, as it intends to broaden the discussion about changes in terms of behavioral skills necessary for workers in the 21st century. As specific objectives, the article sought to understand the historical process of transformation in the world of work as a result of new technologies.

2 THEORETICAL BACKGROUND

According to Zuffo (2003), new technologies have impacted the labor market since the first industrial revolution. Between the second industrial revolution, which began in the mid-nineteenth century and the end of the Second World War in 1945, for example, the growth of urbanization and the increase in industrial employment prevailed to the detriment of the reduction of jobs in agriculture. From the end of World War II, however, there was a drop in jobs in the industrial area, impacted by the management and automation revolution. Consequently, many workers were absorbed into new jobs in the service sector (Graglia, Huelsen, 2020; Zuffo, 2003). Lazzareschi (2008), in his book Sociologia do Trabalho, demonstrates that productive productivity is the result of the implementation of new information technologies together with new management tools in the work process. Among them is Toyotism, based on teamwork and a more qualified worker profile, the result of greater rationalization in the productive process of the productive ones, since the volume of production follows the demands of the consumer market. The changes brought about in the labor market were caused by new technologies and resulted in the replacement of jobs, mainly because they involved repetitive tasks. In 2013, according to Martin Ford (2019), in the United States, a worker in the production area earned 13% less compared to 1973 (with values corrected for inheritance). Their productivity, in turn, had increased by 107%. In this productive production process, as shown by Pochmann (2007), companies were forced to modify their behavior in relation to management strategies, mainly through the replacement of the Fordist model of work and production by the Toyotism way to reduce costs and increase productivity. With regard to replacing human labor with automated equipment, research carried out by the International Federation of Robotics (IFR, 2020) showed that the stock of industrial robots operating in factories around the world increased by 85% from 2014 to 2019. Mattoso (2000) highlighted the constant replacement of human work by integrated work in capitalist society over time. According to the author, companies start to operate in a highly competitive environment when they invest in management models and innovative products. As a result, they are more likely to conquer national and international markets. In a model of production of goods and services, increasingly made up of programmed robots, professionals eager to remain in the job market will be forced to

constantly qualify, which includes developing skills and behavioral skills to solve complex everyday problems (Graglia, Lazzareschi, 2018).

3 PROFESSIONAL EDUCATION IN BRAZIL

Professional education in Brazil began in 1906 during the country's industrialization period, when four technical schools, called Escolas de Ofícios, were created in Rio de Janeiro. In 1937, they started to be called Liceus and were destined to teach all branches and degrees (Brasil, 2008). The Brazilian Constitution of 1937 was the first to deal specifically with technical, professional and industrial education, establishing in Article 129:

> Pre-vocational and professional education aimed at the less favored classes is, in terms of education, the first duty of the State. It is incumbent upon him to carry out this duty, founding institutes of professional education and subsidizing those initiated by States, Municipalities and individuals or private and professional associations. It is the duty of industries and economic unions to create, in the sphere of their specialty, schools for apprentices, destined for the children of their workers or their associates. The law will regulate the fulfillment of this duty and the powers that the State will have over these schools, as well as the aid, facilities and subsidies to be granted to them by the public authorities (Brasil, 2008, p. 4).

During the government of Juscelino Kubitschek (1956-1961), the automobile industry emerged as the great icon of the consolidation of the national industry. In the Federal Government's Target Plan, the education sector received 3.4% of the total investment planned for training professionals. In 1959, the Industrial and Technical Schools were transformed into autarchies and called Federal Technical Schools, organized in agreements with the industries, through the National Confederation of Industries (CNI). As a result, the training of technicians, an indispensable workforce in view of the acceleration of the industrialization process, was intensified. Thus, in 1946, the "S" System (Senai, Senac, Sebrae, Sesc, etc.) was born, with the aim of training qualified labor in Brazil, a commitment justified by the increase in industries in the country after the war. In 1968, through Federal Law No. 5540 (Brazil, 1968), educational institutions were allowed to offer courses at the undergraduate level aimed at training technologists, lasting two or three years. After a few years, Technological Education Centers were consolidated in all Brazilian states. In the same year, 1968, a working group was set up in São Paulo to "study the feasibility of gradually implementing a network of higher technology courses lasting two to three years" (FATECSP, 2021). In 1970, the State Council of Education of the State approved the installation and operation of the State Center for Technological Education of São Paulo, an institution that three years later gave rise to the Faculty of Technology of São Paulo (FATEC-SP). According to Assunção and Goulart (2016), the qualification, until then represented as synonymous with the preparation of "human capital", began to lose meaning, since the Taylorist/Fordist models of production organization entered into crisis with the adoption of flexible production systems and the creation of new forms of work organization (Manfredi, 1998).

For this second decade of the 21st century, it is considered that professional education in Brazil should follow the trends in forms of work organization originating from some countries that have developed new forms of industrial production, such as Germany, the United States and China. These trends, arising from the digital transformation processes that have been undertaken especially by productive organizations, already affect the service sectors in the economy, which involves a process of training workers to adapt to this new world of work.

4 KNOWLEDGE FOR THE LABOR MARKET: NEW TIMES WITH DIGITAL TRANSFORMATION

As the world shifts from analogue to digital, emotional intelligence has become one of the most important skills professionals have. In this context, studies by Martha Gabriel (2018) point out that the pole of value in the world shifts in a complementary way from the production of physical objects to obtaining experiences, from hardware to software, products towards services (experiences), from tangible for intangible.

According to Brynjolfsson and Mcafee (2011), the use of new equipment and computerized systems has intensified in organizations in recent years, impacting professional activities and, consequently, career remuneration. In addition, the business environment is considered to be highly competitive both locally and in the international market for goods and services. Digital transformation is guided by this path in which creative destruction occurs and the emergence of new business models, products, processes and jobs. Ford (2019) states that, over time, with the improvement of information technology, several companies have replaced operational and administrative jobs with automated processing systems that provide significant cost reductions. According to Harvey (2014), since the development of the Toyotist way of organizing work in developed countries, from the 1970s onwards, organizations have invested in the development and implementation of new technologies and more qualified workers. In this context, only a portion of employees achieve stability in companies to achieve medium and long-term goals, as demonstrated by Harvey (2014, p. 144), as it must "meet the expectation of being adaptable, flexible and, if necessary, geographically mobile". Consequently, these professionals perceive an increase in assignments and new skills as requirements for employability. According to Assunção and Goulart (2016), the concept of competences and the need for continued professional qualification is applied in several organizations. Many technology companies, from startups to big techs like Google and Apple, hire skilled workers with the necessary skills to drive their growth.

For the founder and executive president of the World Economic Forum, Klaus Schwab, (2016), the Fourth Industrial Revolution is different from anything that has ever been experienced by humanity. It portrays the harbinger of a social revolution that profoundly changes the way we live in society, the way we work and relate to each other and everything that encompasses its scale, scope and complexity. In the context of these organizational changes, robotics is inserted in the context of digital transformation because it is developed to follow new market trends and provide competitive advantages. This occurs in different sectors of the economy, such as companies that implement self-service and replace jobs. According to Martin Ford (2019), lower-paying jobs require average levels of education and training. In this sense, there is a need for companies and workers to think of learning as a continuous process. Amidst the growth in the number of programmable robots, individuals who want to remain active in the job market, in the medium and long term, will have to differentiate themselves from the machines with what only they have of distinction: their socio-emotional skills, better known as soft skills.

5 IMPROVING SOFT SKILLS: A DIFFERENTIAL FOR EMPLOYABILITY IN THE JOB MARKET

According to Castells (2016), the process of developing and implementing new technologies in organizations depends on three elements: energy to feed the means of production, necessary knowledge for the benefit of the functioning of the organization and information, in the sense of seeking a constant development of products and new technologies, together with the qualification of workers in organizations. According to Drucker (1986, p. 5), it is imperative that organizations encourage the development of new technologies for the innovation process. Meira (2020, p. 15) points out that knowledge, skills and competencies are succinctly distinguished into hard skills and soft skills. Hard skills "are knowledge that generate mastery, control of the environment and things: motor, technical and technological skills, defensive, competitive and creative skills, in the utilitarian sense". Soft skills are "knowledge that generate self-mastery, self-control and improvement in relationships: behavioral, cultural and socio-emotional skills, collaborative, integrative and creative skills, in the sense of human development". For Castells (2016), the digital transformation in companies stems from investments in knowledge management, with the intention of enhancing their technological capacity to achieve high levels of competitiveness and productivity in national and/or international markets. Dutra (2013) mentions some personal characteristics that are part of the necessary skills to participate favorably in the current labor market in the face of the gradual organizational model of productive restructuring through toyotism. This form of work organization has evolved thanks to the intensification of the digital transformation, which requires workers with different skills, such as autonomy, initiative and teamwork. Currently, the behavioral skills expected of workers in organizations differ from the worker profile of decades ago. For example, in the operational sphere in the Fordist/Taylorist model of production and management, obedience and submission to bosses' orders by low-skilled employees predominated. According to Zarifian (2003), the concept of competence covers a set of attitudes and skills that characterize the individual in personal and professional life. They are: taking initiative and being responsible in professional

situations in which the individual is confronted on a daily basis, using and developing intelligence to apply in a practical way in situations that can be solved based on acquired knowledge, mobilizing networks of actors around the same situations share challenges, assume areas of responsibility. Fleury and Fleury (2004, p. 31) add that the concept of competencies is manifested through "a responsible and recognized know-how to act, which implies mobilizing, integrating, transferring knowledge, resources, skills, which add economic value to the organization and value social to the individual". The development of competences, in the evaluation of Perrenoud (1999), becomes relevant as one of the objectives of the educational process, both in the personal and professional aspects. Its improvement facilitates adaptation to social and professional demands. According to the World Economic Forum (Whiting, 2020), 50% of all professionals will need to re-skill by 2025 as new technologies are expected to be adopted by organizations. This implies developing critical thinking, continuous learning and the ability to solve complex problems. These skills are considered to be the top skills that employers believe will be most in demand in the coming years.

6 COVID-19 AND SOFT SKILLS: EMPATHY AND RESILIENCE IN THE CONTEXT OF CRISIS AND COLLECTIVE SADNESS

In the context of the COVID-19 pandemic and the intensification of digital transformation by organizations, new skills began to be demanded by the labor market, such as self-management, active learning, resilience, stress tolerance and flexibility (Whiting, 2020). Covid-19 and its terrible global effects have left at least three consequences (Arbix, 2020). The first refers to the high number of deaths and contaminated people, and a large part had sequelae and recovery difficulties. The pandemic also generated negative impacts on the economy in large proportions: the closure of many businesses, increased unemployment, reduced wages and income. With the disorganization of the economy, there were harmful effects from the social perspective, such as the increase in inequalities and poverty. The third and final result of the pandemic relates to political aspects: institutional corrosion, the spread of fear and a feeling of perplexity in society. Faced with a highly complex global event, Covid-19 has impacted the daily lives of the entire population. From the perspective of the dynamic behavior of capital, digital transformation processes and profile changes for workers, related to soft skills, have intensified.

When facing the pandemic, organizations were forced to adapt in a short period of time. Workers also needed to hone their skills, such as empathy and resilience, to face the fallout from the virus and then deal with the country's economic and social recovery. According to the words of Lima (2020), empathy is the ability of an individual to observe the other, not only with the eyes, but considering subjective issues. This capacity may vary, depending on the individual characteristics and perceptions of each person. Those people who have or develop a feeling of empathy with their neighbor, still according to Lima (2020), will find it easier to establish social bonds, in relation to communication, resulting in consistent relationships, and have greater chances of success, both in personal and professional life. The capacity for flexibility that workers must develop in relation to the present work context, especially in times of a pandemic, is relevant in behavior and decision-making within organizations and in society. The concept of flexibility refers to the term resilience. According to Sennet (2005), its meaning derived from research carried out to verify trees that "bent" in moments of increased wind speed and, after the wind, their branches returned to the normal position. In this way, the human being must be able, at first, to deal with pressures and, later, to recover. Regarding the Covid-19 virus, Harari (2020, p. 8) recalls that viruses do not shape history, but humans themselves: "We are much more powerful than viruses and it is up to us to decide how we respond to the challenge. What the world looks like after Covid-19 depends on the decisions we make today."

7 HUMAN CREATIVITY FACING THE REPLACEMENT OF LABOR BY ROBOTS

According to the Ministry of Labor and Employment (Brasil, 2018), the new technologies adopted in everyday professional and personal life demand the development of new skills, including soft skills. The digital transformation in organizations will occur gradually, with different speeds, different volumes of financial resources allocated to research and development by organizations. This can also vary according to the degree of development and interest of each country in relation to their public policies favorable to this process. The studies carried out by Brynjolfsson and Mcafee (2011) indicate that the machines developed for digital transformation do not have high

complexity creative abilities. For Martins Filho (2020 apud Afonso, 2020), the human will always be essential in relation to work activities due to its high capacity to adapt to changes in the face of machines — even if they replace it in various activities. For the author, the elements that characterize people as human, free individuals, will never be replaced by machines. Despite the digital transformation process, according to Brynjolfsson and Mcafee (2011), many organizations still determine that, in tasks that require a greater degree of complexity, such as, for example, programming and administration, decisions are made by human beings.

CONCLUSION

Since the beginning of the first industrial revolution (Graglia, Huelsen, 2020) machines have been used to boost production and reduce the amount of labor to manufacture products. They required little human attention and produced a large number of products. Workers in the operational part of the factories only had to supply the equipment with materials and pack the products. The ability to perform few tasks, together with low education, were the requirements for hiring these individuals by organizations. According to Afonso (2020), the labor market at the beginning of the 21st century accelerated its process of change with the use of new technologies and new labor relations in organizations. Diogo, Kolbe Junior and Santos (2019, p. 169) state that the jobs available require some generic behavioral skills, such as teamwork or independent work and, in this context, workers should develop several behavioral skills, such as: flexibility, capacity adaptation, innovation, creativity, critical thinking and ability to deal with change, all gaining relevance in a dynamic job market. It is imperative that workers know and become aware of their situation in the context of the current labor market, stated Brynjolfsson and Mcafee (2011). According to Antunes (2009), it is essential that professionals learn constantly to keep up with the changes brought about by the use of new technologies. The adoption of new technologies in organizations without the proper qualification of the workforce can generate problems, including the phenomenon that combines high unemployment rates and a lack of qualified labor to fill job vacancies opened by organizations. Human and organizational transformations should, in theory, go hand in hand with technological changes. For Schumpeter (1939), this dynamism in society is processed with the movement of destruction and creation of goods, services, organizations and jobs. From another perspective, it is possible to create products, organizations, sectors and economic activities and, consequently, new jobs. Technological innovation, according to Mattoso (2000), provides changes in jobs, but does not determine its result considering the national economy. The author points out that the number of new job opportunities, consumption and unemployment levels may increase because this is a social choice, which is historically marked by the forms of regulation of the productive system and the distribution of positive effects on productivity levels. According to Drucker (1986), in the current social, political and economic context, we live in an entrepreneurial society in an environment of constant changes. In organizations and at school benches, it is recommended to encourage habits of flexibility and continuous learning, throughout life, as well as the acceptance of change as a normal fact and an opportunity in organizational, professional and personal perspectives. The future of work activities is still full of uncertainties, especially in a scenario still affected by the Covid-19 pandemic and digital transformation. At present, in the middle of the 2020s, there is a labor market in constant transformation, which requires workers to develop new skills so that they can adapt to the new dynamics of the digital economy. In the words of Bauman (1998, p. 30), related to changes in our society: “the postmodern world is preparing for life under a condition of uncertainty that is permanent and irreducible”. That is, the future will not be like the present.

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