



## Impact of Technology in Organizations

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### ABSTRACT

In this article, we examined the impact of technology in organizations. Firstly, we discussed how technical advances transform workers and organizational relationships and how they affect job, life, and wellbeing of the person. Later, we addressed how these changes can be positive or detrimental for workers and whether employees are afraid to hurt their health and organizational efficiency. This study, moreover, introduces vital skills companies and their workers need to have in order to prepare themselves, without disruption or damage, to this revolution. Finally, to better serve and work with organizations, we proposed an agenda for possible future studies and initiatives in organizational psychology during this transition.

**Keywords:** Technology, Organization, Automation, Robots, the Fourth Industrial Revolution

## 1. INTRODUCTION

Today, we are experiencing significant transformations in organizations, especially due to important developments in technology. These developments necessitate changes in many areas for organizations tapping critical issues such as ways companies would generate value as well as where, where, and how employees would perform their work, and how they would connect and communicate (Schwab, 2016). Therefore, the means by which these transformations would change the dynamics of jobs, employees and organizations are among the issues that need to be thoroughly considered and sought.

Cloud and mobile computing, big data and machine learning, sensors and smart manufacturing as well as advanced robotic systems are among the main technological innovations leading this transformation (Ghislieri *et al.*, 2018). The emergence and widespread use of these innovations paves the way towards the Fourth Industrial Revolution (Schwab, 2016). This primarily features the advent of Cyber-Physical Devices, Artificial Intelligence and Machine Learning (Baldassari & Roux 2017), integrating hardware and software and geared towards communicating with people while accomplishing their work. Schwab (2016) identified three characteristics that distinguish this Revolution from previous revolutions (for example, the Industrial Revolution): (1) velocity because this Revolution is developing at an exponential rate, not linear; (2) the scope, it covers almost all industries, and (3) the existence of system impact, as it includes changes that can transform production, management, and governance.

Unparalleled processing abilities, excessive storage space, and wide-open access to knowledge created endless possibilities for billions of people connecting to mobile devices. Moreover, scientific breakthroughs in fields such as artificial intelligence, robotics, the Internet of Things, automated tools, 3-D printing, nanotechnology, biotechnology, materials science, energy

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conservation, and quantum computing are even expanding these possibilities. Artificial intelligence, from self-driving vehicles and drones to robotic agents and apps interpreting or saving, is nowadays far and wide thanks to the rapid growth in computational capacity and the availability of vast volumes of data, from machines used to discover new goods and services to algorithms used to forecast our cultural interests (Schwab, 2016).

Research on the impact of this revolution and its consequences on work systems, organizations, and workers' preparedness as well as on well-being in the context of organizational psychology is still modest (Barley, 2015). Contributions in this area aimed at identifying, in most cases, the optimistic or worrying scenarios for the future of workers and organizations vis-à-vis this very technological revolution. That's why; this article is intended to contribute to the literature, from an organizational psychology context, to address potential organizational problems and support employees and organizations in these dizzy technology revolutionary days. In the article, we first explain how technological innovations are changing employees and organizational interactions, and how they affect people's work, life, and health. Moreover, we discuss how these transformations can be beneficial or harmful to workers and whether such transformations will cause any fear among employees causing harm to their well-being and organizational productivity. Furthermore, we introduce skills development that emphasizes how organizations and their employees can prepare to confront this revolution without interruption or harm. Finally, we propose an agenda for potential studies and approaches in organizational psychology, which would help to serve and partner with organizations.

### **1.1. The spread of Automation: New Ways of Work and New Types of Employees**

The usage of robotics in the workplace presents many advantages, such as cost savings, greater efficiency, better safety, and environmental security. Moreover, reducing high-risk workers is deemed important at a period of highly important tragic injuries at work. Besides, people can help identify, build, and manage automatic processes (Roblek *et al.*, 2016).

Robots and automatic computers have also become social players in the system because of their convergence (Redden *et al.*, 2014). To render robots team members, people (employees) must embrace, efficiently interact with and, most importantly, trust robots (Lewis *et al.*, 2018). Therefore, the allocation of some areas in the organization to both humans and robots is an issue that requires great attention. Among human-robot interaction area problems, Cascio and Montealegre (2016:358) spelled out decreased situational awareness, insecurity, abuse, abuse and non-use of automation, indifference, reduced attention and negative effects on other aspects of human performance. On the other hand, the increasing use of different types of technologies to complement business activities and share information can lead to a reduction in human relations in the workplace, with potentially negative consequences on informal learning, organizational commitment, motivation, and health. Hence, emerging possibilities for human experiences in changing working environments tend to be recognized and promoted.

Geared towards the well-being of humans, affiliation between individuals and technology is evolving in multiple areas besides human-robot contact. Advances in telecommunications have transformed the way citizens view and organize their personal and work lives in recent years. This has been experienced mainly during 2020 and due to the global Covid-19 outbreak. Employees were not able to go to their organizations due to the intermittent Covid-19 epidemic and, instead, continued to provide services from where they were (especially from their homes). Certainly, this was not true in every business sector, but was the rule mainly in the service sector. Organizations producing a concrete product experienced great difficulties as their employees were not able to come to their workplaces, hence, couldn't minimize the face-to-face contact.

Several studies on new technology and employee well-being have highlighted the negative effects of using technology in employees' leisure time on the individual health and work-life balance (for example, Derks *et al.*, 2014; Ghislieri *et al.*, 2017). Moreover, excessive dependence on work-related technology in organizations has been found to negatively affect the well-being of employees and their families (for example, Turel *et al.*, 2011; Quinones *et al.*, 2016). Therefore, a critical issue emerges on how employers and organizations would contribute to this phenomenon by promoting an "always-on" approach requiring employees to be online and accessible at all times. For example, employing various social networks such as WhatsApp to assign employees outside of working hours or on holidays can put employees in stress and burnout, which in turn, can worsen the relationship between the employee and his/her family. Furthermore, it has been suggested that the implementation of innovative systems in organizations may lead to a lack of autonomy and skills, with stress, loss of motivation, and unproductive work behavior (Cascio & Montealegre, 2016). In addition, employees may have an increased sense of control and a greater sense of pressure, which in the long run, promotes dissatisfaction, lowers motivation, and leads to sickness (Bonekamp & Sure, 2015; Ghislieri *et al.*, 2018).

In general, the uncertainty implied by developments and changes in how people do their jobs can also turn the business around. As we know, employment is vital to contemporary society as it provides people not just with economic protection but also with personal identification and psychological wellbeing (Harpaz, 2002; Blustein, 2008). Moreover, employment meets the inner needs by maintaining not only the self-esteem and sense of achievement of people through work, income, but also security through instrumental needs, interpersonal relationships, and development opportunities. In future organizational psychology research on this topic, scholars can examine whether technological changes and the organizational transformations brought any change to the meaning of the job for employees as well as the impact these changes have on individuals' career orientation and psychological health.

### **1.2. Do Automated Systems Support People or Take Over Their Business?**

Many of the occupations are vulnerable to computerization and will soon be at risk (Frey & Osborne, 2017). Several forecasts seem harsh in terms of potential systemic unemployment and increasing inequalities. Moreover, advanced technologies can have implications for both low and high-skilled employees. The first group in which developing technology will have detrimental effects on organizations will be uneducated and unskilled employees. In fact, since these employees will not be able to cope with the automation systems and its complexities in terms of the software and hardware embedded, they will lose their jobs. Furthermore, university graduates may find themselves threatened by software that can perform complex decision-making processes (Ford, 2009; Brynjofsson & McAfee, 2014; Bonekamp & Sure, 2015; Ghislieri *et al.*, 2018). On the other hand, some conflicting approaches claim, however, that technological advancement would eventually destroy employment in the short term but provide an ability for all to gain in the long run (Kaplan, 2015; Weldon, 2016).

Fear of work insecurity is an important concern for employers today, as robotics and automation can be considered by workers as rivals. There are very few studies on this subject, and the findings show that employees may react negatively through exhibiting reluctance to automation. For instance, in a usability and acceptability study for industrial robotic prototypes, Weiss *et al.* (2016) found that although the robot was introduced as a collaboration tool, the participants expressed fear that it will replace them in the future.

### **1.3. Transformation of Jobs and Skills**

According to Pfeiffer (2015), employees play a strategic role in technology development since they will “determine the general product strategy, monitor the implementation of this strategy and intervene in the cyber-physical production system if necessary”. However, this requires certain knowledge and qualifications as well as a new skill paradigm. Conditions that drive the demand for new skills include “knowledge management, increasing automation of production systems, digital communication, and interactive management functions in addition to the flexibility of staff use” (Cevik *et al.*, 2018: 138). On the other hand, there are very limited studies in literature on what skills will be needed and how to provide them for new technology applications to become common and to be used effectively in organizations. Studies show that there will be more demand for a higher standard of information technology competence in the future (Bonekamp & Sure, 2015). This demand emphasizes the importance of developing knowledge on digital devices and topics such as augmented and mixed reality, 3D printing, and smart factories, especially among employees.

## 2. CONCLUSION

Organizational psychologists should do more studies on how the increasing diffusion and use of technology in organizations affects employees and organizations. There is a consensus on the purpose of the use of technology in organizations at the maximum level and the possible effects of its use on the micro and macro levels to carry out adequate and different studies and to determine the necessary measures. The goal of this research is to deepen the awareness of the relations between employees, organizations, and technology since the literature is scarce. Longitudinal studies are particularly useful in evaluating the influence of technology on the success, well-being, and morale of people as well as to consider whether this very influence is positive or negative. At this point, however, preliminary information is needed to inform future studies and decisions, which may equally come from cross-sectional studies. Focusing on certain contexts and groups of employees can also help draw appropriate assumptions, using both qualitative and quantitative approaches to build up knowledge in this area.

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### **Research and Publication Ethics Statement**

As the authors of this paper, we declare that we conform to the publication and research ethics.

### **Statement of Interest**

As the authors of this paper, we declare that there is no conflict of interest.