

HOW TECHNOLOGY IS CHANGING WORK AND ORGANIZATIONS

Qiyomova Nilufar

a student of Navoi State Pedagogical Institute

Scientific advisor: **Iskanova Nasiba Parmonovna**

Email address: nilufarqiyomova75@gmail.com

ABSTRACT: Given the rapid advancements and increased reliance on technology, the impact of technology on work and employment is a crucial topic for scholars in the field of organizational psychology and organizational behavior (OP/OB). This article aims to analyze the current research on the effects of technology on work and organizations, including its progress, direction, and purpose. After reviewing significant technological breakthroughs, we explore the disruptive effects of emerging information and communication technologies. Additionally, we examine the extent and types of jobs affected by technological developments, which will inevitably result in significant worker displacement. To illustrate the influence of technology on work, work systems, and organizations, we present four widely used technologies: electronic monitoring systems, robots, teleconferencing, and wearable computing devices. In order to provide insights for OP/OB scholars regarding the effects of technology, we consider research conducted from four different perspectives on the role of technology in management. Furthermore, we analyze how this role is evolving in the emerging world of technology. Finally, we conclude by discussing approaches to six human resources (HR) areas that are supported by both traditional and emerging technologies. We identify research questions related to these areas that will have profound implications for both research and practice, and offer guidance for future research endeavors.

KEY WORDS : technology, work, organizational change, ubiquitous computing, disruptive technology.

INTRODUCTION

We reside in a globalized world where technology, particularly information and communication technology, is revolutionizing how businesses generate and capture value, where and how we work, and how we communicate and interact. Five technologies are reshaping the fundamental aspects of global business and the organizations that propel it: cloud and mobile computing, big data and machine learning, sensors and intelligent manufacturing, advanced robotics and drones, and clean-energy technologies. These technologies are not only enhancing productivity and efficiency but also facilitating significant changes in organizational work processes. According to Murray (2015, p. 6), "Collectively, these innovations are propelling us towards a new industrial revolution. Astute corporate leaders understand the necessity of adapting to these technologies to revolutionize their businesses, or risk being overtaken by competitors who do so first." Scholarly literature, spanning across various disciplines such as business (Turban et al. 2009, VanHoose 2011), medicine (Demaerschalk et al. 2012, Ross et al. 2010), engineering (Kuhnle 2010, Smite et al. 2010), sciences (National Research Council 1999), and social sciences (Castells 1996, Wellman & Haythornthwaite 2002), echoes this sentiment. Barley (2015) notes that despite digital technology rapidly becoming as essential as electricity, there is a surprising lack of research on its impact on work systems and the nature of work itself. The previous wave of technological innovation primarily focused on social interaction, while the upcoming wave may center around the emerging ubiquitous computing paradigm. This concept does not revolve around a single technology but rather encompasses information and communication environments where computer sensors (e.g., radio frequency identification tags, wearable technology, smartwatches) and other devices (tablets, mobile devices) are seamlessly integrated with various objects, individuals, information, and computers.

KEY DEVELOPMENTS IN TECHNOLOGY AND THEIR EFFECTS ON WORK AND ORGANIZATIONS

The impact of technology throughout human history has been extensively documented by various scholars (Beniger 1986, Bradley & Nolan 1998, Bradley et al. 2016). The progression and development of society can be categorized into three distinct eras based on their fundamental technological foundations: the agricultural era, the industrial era, and the digital era. Each of these periods has been significantly influenced by the ability to access new information and knowledge. Moreover, they have all necessitated and facilitated the emergence of new economic systems, social upheavals, cultural shifts, and modes of work. In the agricultural era, the primary focus was on harnessing the power of natural elements like wind and water. Key resources included land, livestock, and agricultural tools. Economic power was predominantly held by resource owners, particularly farmers with extensive and fertile lands. Additionally, during this era, access to proprietary information was controlled by the owners of resources. In the industrial era, the emphasis shifted towards utilizing industrial power, acquiring traditional physical resources, and engaging in mass production based on the law of diminishing returns. This meant that once all production factors (land, labor, capital) were operating at maximum capacity and efficiency, producing an additional unit would incur higher costs. Core infrastructures included vapor and steam engines, as well as fuel. The material prosperity of civilization was enhanced by boosting the productivity of physical spaces through the construction of factories and industrial complexes. The relationships between manufacturers, distributors, and consumers, along with increased productivity, process efficiency, and attention to transaction costs, were crucial for the success of industrial societies.

In today's digital age, individuals are increasingly focused on the creation and exchange of goods and services through digitalized data, information, and knowledge. This era is built upon an infrastructure that includes information and communication technologies. This modern infrastructure not only enhances efficiency and speed compared to previous eras but also facilitates new methods of control, coordination, and collaboration in activities more efficiently and cost-effectively, following the law of diminishing costs. Due to the nature of digital goods, the cost per unit of additional output decreases incrementally, while the other factors of production remain constant. With digital resources being easily accessible, processed, transferred, and stored regardless of location or time, traditional borders and geographical distances are becoming less significant, opening up entirely new electronic spaces.

EFFECTS OF TECHNOLOGY ON HOW AND WHERE WE WORK

Technology has the potential to either empower individuals or exert control over them in the workplace (Coovert & Thompson 2014b). The impact of modern technology can be seen in both of these outcomes. To address this issue, psychological research and theory can provide valuable insights. One such theory is self-determination theory (Deci & Ryan 2012, Ryan & Deci 2000), which offers a helpful framework. According to this theory, individuals' self-motivation and well-being are enhanced when their innate needs for autonomy, competence, and relatedness are fulfilled. Conversely, when these needs are hindered, their motivation and well-being suffer. Autonomy refers to the desire to have control over one's actions and be an active participant in one's life. Competence involves the need to experience mastery and have an impact on one's outcomes and environment. Relatedness pertains to the need for interpersonal connections with others (Greguras & Diefendorff 2009).

In practical terms, the adoption and implementation of workplace technologies are influenced by at least four factors (Coovert & Thompson 2014b). The first factor is the ease of use and naturalness of the technology. Usability is crucial as it determines how well humans interact with the technology (Hancock 2014), and can be assessed based on efficiency, effectiveness, and user satisfaction (Gillan & Bias 2014). Another factor to consider is self-efficacy (Bandura 1997). Individuals who feel confident in using or learning new technology are less likely to feel anxious when introduced to it. The third factor is economic viability. Will the new technology provide a competitive edge to an organization or an

individual? If so, the likelihood of implementation increases. Lastly, social influences play a significant role in technology acceptance. If peers, colleagues, or family members are using a specific technology, such as a smartphone payment system, the pressure to adopt it oneself also rises.

CONCUSSION

This review provides three primary contributions. Firstly, it presents an updated analysis of the role that technology, specifically information and communication technology, plays in transforming work and organizations. Secondly, it summarizes and interprets the advancements, direction, and purpose of current research concerning technology and work in organizations. Lastly, it demonstrates the implications for future research and for the field of organizational psychology and behavior that extend beyond the basic objective of aligning technology with organizational work. As highlighted by Coovert & Thompson (2014b), the crucial consideration lies not solely in technology itself, but in utilizing psychological theory and research to enhance our understanding of managing the impact and implementation of emerging developments. The objective is clear: to maximize the positive outcomes for individuals and organizations while minimizing any negative effects.

REFERENCE:

- Aeppel T. 2014. Robots work their way into small factories. *The Wall Street Journal*, Sept. 18. pp. B1–2
- Aeppel T. 2015. What clever robots mean for jobs: Experts rethink belief that tech always lifts employment as machines take on skills once thought uniquely human. *The Wall Street Journal*, Feb. 24. <http://www.wsj.com/articles/what-clever-robots-mean-for-jobs-1424835002>
3. Alge BJ. 2001. Effects of computer surveillance on perceptions of privacy and procedural justice. *J. Appl. Psychol.* 86:797–804
4. Alge BJ, Anthony EA, Rees J, Kannan K. 2010. Controlling A while hoping for B: deviance deterrence and public versus private deviance. In *The Dark Side of Management*, ed. L Neider, C Schriesheim, pp. 115–41. Charlotte, NC: Inf. Age Publ.
5. Alge BJ, Hansen SD. 2014. Workplace monitoring and surveillance research since “1984”: a review and agenda. See Coovert & Thompson 2014a, pp. 209–37
6. Alter S. 2013. Work system theory: overview of core concepts, extensions, and challenges for the future. *J. Assoc. Inf. Syst.* 14(12):72–121
7. Ball K. 2010. Workplace surveillance: an overview. *Labor Hist.* 51:87–106
8. Bandura A. 1997. *Self-Efficacy: The Exercise of Control*. New York: Freeman
9. Barley SR. 1986. Technology as an occasion for structuring: evidence from observation of CT scanners and the social order of radiology departments. *Adm. Sci. Q.* 31:78–108
10. Barley SR. 1990. The alignment of technology and structure through roles and networks. *Adm. Sci. Q.* 35:61–103
11. Barley SR. 2015. Why the Internet makes buying a car less loathsome: how technologies change role relations. *Acad. Manag. Discov.* 1:31–60
12. Barley SR, Meyerson DE, Grodal S. 2011. E-mail as a source and symbol of stress. *Organ. Sci.* 22(4):887–906
13. Barrett M, Walsham G. 1999. Electronic trading and work transformation in the London insurance market. *Inf. Syst. Res.* 10(1):1–22
14. Beal DJ. 2015. ESM 2.0: State of the art and future potential of experience sampling methods in organizational research. *Annu. Rev. Organ. Psychol. Organ. Behav.* 2:383–407
15. Bechky BA. 2003. Object lessons: workplace artifacts as representations of occupation jurisdiction. *Am. J. Sociol.* 109(3):720–52
16. Beniger JR. 1986. *The Control Revolution: Technological and Economic Origins of the Information*



Society. Cambridge, MA: Harvard Univ. Press

17. Bessen J. 2015. Learning by Doing: The Real Connection Between Innovation, Wages, and Wealth. New Haven, CT: Yale Univ. Press

18. Blau PM, Falbe CM, McKinley W, Tracy PK. 1976. Technology and organization in manufacturing. Adm. Sci. Q. 21:20–40.