

THE IMPACT OF TECHNOLOGY ON JOBS: FEARS AND HOPES

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ABSTRACT

The world witnesses a paradox: More cities, more daily needs, more innovations but fewer job opportunities. Having a job has always been a fundamental pillar of human societies, playing a central role in people's life, progress and prosperity. However, the emergence and development of new technologies has brought about profound transformations in this arena. This paper aimed at investigating the various dimensions of the impact of technology on jobs. The researchers, using a library method, investigated printed data as well as online sources to unveil these dimensions. The findings of the research indicate that it is essential to optimally utilize the positive effects of technology for the development and progress of the society, while it is also necessary to plan to tackle the challenges and to find solutions for the shortcomings or problems arising from including new technologies into human life, having a job being an important issue affecting it directly. Findings also indicated that both governments and people themselves have responsibilities to carry out.

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ARTICLE HISTORY

Received: 29/01/2026

Accepted: 17/05/2026

Published online: 25/10/2026

KEYWORDS

Technology, impacts of technology, jobs, fears, hopes

1.Introduction

Technology can be considered a phenomenon accompanying and coexisting with human social life. Historical evidence shows that early humans used basic tools like stone and wood to meet their vital and defensive needs, gradually inventing more complex devices such as agricultural tools and early weaponry. However, technology has not been limited merely to material tools and has always played a fundamental role in the economic, social, and defensive transformations of societies as a social and cultural phenomenon (Fardanesh and Jamshidi-Tavana, 2014).

Information technology has now been able to cause the development of humans in organizations and societies. This type of technology, which is thoughts generated by hardware mechanisms and controlled by individuals and organizations, plays a major role in the development of human resources. Recently, people's use of computers and this type of technology has brought about changes in organizations, changes in diverse fields such as structure, authority, power, job content, supervision, and managers' jobs. This information clearly shows that what differentiates our era from others is technology (Shaidi, 2011).

Some thinkers like Herbert Marcuse believe that industrial societies, due to their belief in science and technology, have adapted themselves to instrumental rationality, which forces all cultural, political, social, and economic sectors to adhere to the principle of material productivity (Vafamehr and MohebbiFar, 2007).

In the past, a job was seen as a means to provide for material needs and income, and individuals would repeat their job duties until the end of their lives. With the growth of societies and the diversity of jobs, the concept of success and progress has changed, and job was seen as a ladder for advancement and success. Individuals striving for success would reach the top of this ladder and look back at the path they had traveled. This new attitude raised questions about the meaning of job and its mission, leading to the introduction of the concept of “seeking meaning” in work (Matouri, 2018).

Hence, skill training is proposed as a way to reduce unemployment in a country, and for the future careers of children, attention must be paid to skill-based education. The entry of new technologies into a country creates many job opportunities; therefore, strengthening skill-based education with an approach focused on technology and new occupations is essential. One of the policies used for enhancing economy is activating financial and human resources for the development of entrepreneurship and community participation in economic activities (Farrokhpour, Farrokhpour and Khanpour, 2014). This paper is an attempt to investigate the various positive and negative aspects of technology on jobs and to determine the fears and hopes of jobholders and their future.

2. Literature Review

Sabouhi-Laki (2016) conducted a research on technology management, research, and development; this research was done using a library method. The result of the research shows that providing a framework for technology management helps organizations utilize it effectively and respond to future changes. With globalization and increasing competition, technology is recognized as a key factor for gaining competitive advantage. Organizations must focus on core products and capabilities for survival and success, which requires investment in research and technological innovations.

Moghaddam and Jamalipour (2008) conducted a research on the sociological aspects of the effects of technology on the labor force. This research was done using a scientific-research method. The results of the research show that the employment situation in our country is highly traditional and production is done using old methods; this leads to low productivity, and in such conditions, discussing the role of technology in unemployment and job creation is not logical.

Radfar, Khamseh, and Madani (2009) conducted research on technology commercialization as an effective factor in technology and economic development. This research was done using a library method. The result of the research shows that technology alone does not create wealth, but its effective use in increasing the value of resources and delivering products and services to the market leads to wealth creation. In today's world, research has received more attention due to aspects like innovation and

economic profit losing its cultural aspect. Commercialization, as a key part of the innovation process, is essential for the successful entry of technology and products into the market.

Abbasnejad (2001) studied the role of information technology and e-commerce in employment. This research was done using a descriptive-analytical method. The result of the research showed that in the present era, the rapid increase in society's knowledge and the optimal use of information in e-commerce are emphasized. The success of statesmen in utilizing technology for the development and improvement of the society's conditions depends on adopting appropriate strategies. Also, with the expansion of information technology and the Internet, e-commerce in Iran has also emerged as an important opportunity that can help improve production quality, increase sales, and reduce employment.

Mazlounian and Mahigir (2017) investigated the positive and negative effects of technology and mass media. This research was done using a descriptive-analytical method. The result of the research showed that technology and media create challenges in education such as changing attitudes and reducing social interactions. To deal with these challenges, media literacy and a rational attitude are essential, which help increase public knowledge and facilitate job selection.

Pourshahabi, Honarkar-Ashna, and Karbalayi (2024) examined the impact of modern technology and digital transformations through blockchain technology on employee performance. SPSS 18 software and the Partial Least Squares (Smart PLS) method were used to analyze the research data. The research method of this article was survey-based, and the statistical population was all employees of the General Department of Tax Affairs of Sistan and Baluchestan Province, from which 225 people were selected using simple random sampling and the Cochran formula. The results showed a positive relationship between the use of new technologies and employees' functioning..

Alayi and Salimi (2024) evaluated the position of smart technologies and nanotechnology on architecture and urban planning. The main point that this article tried to address was how we can, through this type of technology, achieve materials for sustainable architecture that are stronger, lighter, and cheaper compared to the current

materials available. The research method in this article was analytical-descriptive using library resources and articles. Findings indicated the importance of inclusion of new technologies in professions.

3. The Impact of Technology on Societies

Science and technology can have intended and unintended impacts on different environments and play an important role in shaping policies. Politicians rely on scientific evidence for their decision-making, and this helps humanize science and technology. Instrumentalism, as one of the important aspects of technology, shows that humans use tools to solve their problems. These tools may go beyond basic needs and create new definitions of humans. For example, the Internet, which was initially designed for military purposes, became a public and creative tool. Ultimately, technology has a great impact on social structure and people's activities (Eshni-Alvandi, 2010).

Today, technology, despite its prominent role in facilitating communication, has also had significant effects on the foundation of the family. Unfortunately, the uncontrolled influence of technology and cyberspace has gradually weakened the position and value of the family in society. Children and adolescents, as the future generation, are heavily influenced by media content and social networks. If constructive and attractive alternatives are not provided, the likelihood of their deviation from the path of proper upbringing, ethical principles, and cultural values increases. The entry of technology and new media has created fundamental changes in the structure and dynamics of the family and has overshadowed many moral values and norms. On one hand, parents are forced to use these tools to provide educational opportunities and develop technological skills for their children. On the other hand, this can gradually lead to the fading of traditions, family customs, and ultimately, damage to the strength of this valuable institution. (Ahmadian-Baghbaderani, 2015).

There are two main concerns in an industrial society: the industrial concern, which focuses on increasing production and competitiveness, and the cultural concern, which pertains to preserving the society's culture against the influences of technology. The

entry of new technologies usually faces initial resistance, but after a while, it becomes an essential part of social life. This cultural lag can hinder domestic production and the expansion of industrial consumption. While official culture often focuses on pathology, marginal cultures see these technologies as an opportunity for liberation. The main challenge in policymaking is creating convergence between industry and culture. A society needs a convergent approach to simultaneously meet technological and cultural needs (Ghaneirad, 2010).

4. The Impact of Technology on Jobs

Creating new and diverse jobs in the age of scientific progress, considering technological developments and especially information technology, requires sufficient knowledge about these jobs. This awareness can also help us understand the impact of technology (Akramifar, 2001).

For example, in the discussion of education, some teachers believe that using technology in school and the classroom causes distraction and less learning among students. They believe that using technology not only does not improve student performance, but the frequent use of computers in the classroom also has a negative impact on student education. However, this view is changing over time. After nearly a year of remote education during the COVID-19 era, some teachers also realized that using technology and digital tools not only increases student interaction and cooperation and creates innovation but also increases learning. It is worth mentioning that technology itself does not lead to teaching and learning, and the role of the guide (instructor) is very influential in the proper and appropriate use of digital tools by students (Mousavi et al., 2023). Educational technology has been able to play an important role in teaching students. Technology has also been able to assist teachers and school administrative staff. Furthermore, teachers can use monitors and laptops instead of drawing three-dimensional geometric shapes (Zeynali, 2024).

On the other hand, in the industry sector, the progress of technology and its widespread application in various fields has increased the productivity of economic activities. As a result of increased productivity, the need for some jobs also disappears.

For example, the job of "telephone operator" with the advancement of technology in telecommunications and voice processing is not only unnecessary anymore but is also removed from the list of occupations. Therefore, technology, from one perspective, leads to the elimination and reduction of some jobs. Automation and machine production are among the most important results of technological development, which, in addition to reducing jobs, also lead to increased quality, speed, and even reduced production costs. But does technology cause despair for people seeking employment? By reviewing the history of technology and its impact, it can be understood that the answer to this question is negative. Technology may eliminate or change some jobs, but in reality, it creates many higher-paying, more useful, and more diverse jobs. (Akramifar, 2001).

With the increasing progress of technology in various fields, different and creative applications of new technologies are being introduced in various industries. Although industrial architecture is mixed with art, architecture has not been devoid of this change and, along with other industries and other aspects of human life, has been influenced by technological progress. Topics like artificial intelligence and smart cities are still in their infancy even in leading countries. The perspective of architecture can be changed or enriched under the influence of artificial intelligence. Artificial intelligence is a powerful tool available to us that can dramatically change lifestyles and even affect the culture of societies in the future. Using this tool resulting from technological progress, the damages and side effects of modern technology can also be eliminated. Artificial intelligence can be used to help increase security, comfort, and efficiency in designs. Modern safety and security systems, etc., can be employed to achieve a smart city (Hasangholinejad, Baratkah, and Azimzadeh, 2021). Overall, the effects of technology can be divided into two categories: positive and negative effects, and in every job, comparing the positive and negative sides of the scale will give us a better view.

4.1. Positive Impacts of Technology on Jobs

- **Creation of New Industries**

With the advancement of technology, new industries such as robotics, artificial intelligence, and the Internet of Things (IoT) are formed, which require new specializations and lead to the production of new and diverse jobs.

- **Establishment of New Businesses**

Technology enables individuals to start innovative businesses that not only create jobs but can also create new value chains and developed industries.

- **Increased Productivity and Efficiency**

Technology, by automating tasks and reducing manual work, simplifies complex processes and saves time and resources. These changes help increase productivity and improve processes in industries and increase the need for a more skilled workforce, which can lead to the creation of high value-added jobs.

- **Improved Customer Experience**

Improving customer experience is possible using artificial intelligence, especially chatbots and virtual assistants. These technologies establish personalized interactions with users and help in providing suggestions, finding information, and solving problems. This approach increases customer satisfaction and loyalty and encourages them to return to services.

- **Increased Security Level**

Technology has now been able to significantly increase the security of businesses. Modern technology allows companies to keep their documents and records secure and use systems that only authorized individuals have access to their information. Encrypted passwords also improve the security level of your organization and make data access difficult for computer hackers and can prevent the disclosure of confidential information.

- **Increased Flexibility in Jobs**

With the countless advancements in technology that enable working in other locations, how people communicate has changed significantly in the last 20 years.

Today, people can communicate with their colleagues from any place and at any time, and through this, the flexibility of companies for conducting quick and efficient transactions and research has improved.

- **Generation of New Ideas**

Artificial intelligence algorithms have the ability to collect a wide range of data and analyze it. Ultimately, they identify patterns and extract ideas and solutions that are useful to them. Businesses can employ machine learning models to discover unknown angles and capacities of their business and add creativity to it.

- **Creation of Higher-Paying, More Diverse, and More Useful Jobs**

Technology has been able to create useful and high-paying jobs, such as programming, admin, blogging, etc. It can be said that with the entry of technology, jobs like telephone operator disappeared; or on the other hand, it can be said that the invention of the sewing machine caused hand-stitchers to become unemployed. But the sewing machine led to the creation of more and more useful jobs. Consequently, some jobs may become fully automated; artificial intelligence has the potential to merely change the roles and duties related to some other jobs. In such cases, AI-related technologies perform repetitive and mundane tasks, and workers are forced to take on harder, more important, and more useful responsibilities.

4.2. Negative Impacts of Technology on Jobs

- **Replacement of Robots for Humans**

Artificial intelligence, and specifically robots, from an economic perspective, can have profound impacts on the labor market in the long term. Given the increasing intelligence of robots and smart systems in various industries such as the automotive industry, a large number of workers will become unemployed, and robots and smart systems will replace the workforce; the efficiency of technology in many jobs is ten times greater than human performance. This very fact causes many organizations to desire replacing technology with humans. For this reason, technology has created job

insecurity in a wide range of occupational guilds. Consequently, the effects of unemployment resulting from the use of AI technology in businesses cannot be ignored.

- **Automation of Jobs**

The main concern about technology is its threat to human jobs, as machines and algorithms can perform repetitive tasks faster and more accurately, and this may lead to the replacement of human labor. Various industries such as manufacturing, customer service, and transportation are affected by these changes. However, many businesses are aware of the impact of technology on jobs and welcome it, as it can change human resource management strategies.

- **Lack of Transparency in AI Systems**

AI systems, due to the complexity of their algorithms, find it challenging to understand and explain their decision-making processes. Businesses must strive for interpretability, transparency, and building trust in AI.

- **Isolation and Work-Life Imbalance**

Remote work and telecommuting have enabled many people to work from home, but this can isolate humans, reduce social interaction, and lead to an imbalance between work and life. Separating work and personal life when working from home can be difficult, which over time can also lead to job burnout and reduced productivity.

- **Skills Mismatch**

The jobs created may require completely different skills compared to the jobs eliminated by AI. This mismatch will be unpleasant for people who have different skills or have not strengthened their skills for a long time. For such people, skill training or skill development are suitable methods for career change.

5. Conclusion

Having a job is essential for both the individuals and the society. Individually, it is important for aspirations and the situation of young people ; they should be able to plan for their future. From the societal aspect, unemployment is highly related with poverty and crime. It requires readiness for managing transitions over people's life cycle and equipping them with policies, skills, and systems for future workforce.

On the whole, the impact of technology on jobs, as mentioned, has two aspects: it is both opportunity-creating and threatening. Technology, with its transformative power, is capable of completely transforming business processes and, by optimizing the performance of organizations in various sectors, facilitates decision-making and enhances customer experience, bringing significant benefits affecting both the quality and quantity of jobs. But these advancements also bring about challenges. Therefore, it is essential to determine the method and scope of application of new technologies carefully by formulating smart strategies and accurately assessing the advantages and disadvantages. Governments should be follow innovative approaches to ensure local, regional and universal protection for the future of work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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CITE THIS ARTICLE AS: Eskandari, S. and Soltan-Mohammadi, S. (2026) 'The impact of technology on jobs: Fears and hopes', *International Journal of Humanities and Social Development Research*, 10(2), pp. 113-125. <https://doi.org/10.30546/2523-4331.2026.10.2.113>