

# *How does technological advancements affect unemployment?*

**Abstract:** The interdependence between unemployment level and technological advancements is a long-disputed issue. Logically technological advancements increase unemployment and lead to the social problems in many occasions. The paper examines the issue and tries to come up with the mechanisms of the relationship. This relationship was and will be a driving force for many changes in the society and economy. There are long-term and short-term affects of technological advancements to the unemployment. **Keywords:** Technological change, long-term and short-term effects, skilled employees, employment trends, interdependence.

**Összefoglalás:** A munkanélküliségi szint és a technológiai fejlődés közötti összefüggés régóta vitatott kérdés. A technológiai fejlődés a legtöbb esetben logikusan növeli a munkanélküliséget és társadalmi problémákhoz vezet. A tanulmány ezt a problémát járja körül, és megpróbálja felderíteni a kapcsolat mechanizmusait. Ez a kapcsolat mindig is a társadalom és a gazdaság számos változásának hajtóereje volt. A technológiai fejlődés rövid- és hosszú távon egyaránt hatást gyakorol a munkanélküliségre.

**Kulcsszavak:** Technológiai változás, hosszú és rövid távú hatások, szakképzett alkalmazottak, foglalkoztatási trendek, egymásrautaltság.

## Introduction

There is a big literature that talks about technology and unemployment. [1, 2, 3, 4] studies are about unemployment and technologic advancements, but the literature lacks the mechanism of this interdependence. The paper seeks to establish the relation between technological advancements and unemployment.

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[1] Zhou, Yuanren–Chen, Menggen–Gao: *Lingxi, Digital Literacy, Economic Participation, and Household-Specific Income Inequality: Evidence from China*. Available at SSRN: <https://ssrn.com/abstract=4834790> or <http://dx.doi.org/10.2139/ssrn.4834790>

[2] Goldfarb, A.–Tucker, C. (2019): Digital Economics. *Journal of Economic Literature*, 57., (1.), pp. 3–43. <https://www.jstor.org/stable/26673202>

[3] Klimczuk, A.–Klimczuk-Kochańska, M. (2015): Technological Unemployment. In: M. Odekon (Ed.): *The SAGE Encyclopedia of World Poverty* (2<sup>nd</sup> Edition), pp. 1510–1511. Thousand Oaks, CA: SAGE Publications. <https://doi.org/10.4135/9781483345727.n783>

[4] Kóvári, E.–Saleh, M. A.–Hajmásky, G. (2022). The impact of corporate digital responsibility (CDR) on internal stakeholders' satisfaction in Hungarian upscale hotels. *New governance and management in touristic destinations*. IGI Global. <https://doi.org/10.4018/978-1-6684-3889-3.ch003>

The phenomenon of technologic change both straightforward and interesting topic. Modern economies are facing this every now and then. Even individually every person faces changing ways of buying and selling and doing business every day.

Knowledge economy has made people open to the changes everyone faces and needs to adapt to smoothly work and live in the modern society. All of us need to be able to adapt to the everchanging advancements that are happening in our businesses and households that we work live and inhabit. The technology is going to drastically change all the spheres that we have in our economies.

One of the most important result of technological advancement that we all face is unemployment and this has long-lasting implications for both individually and for the knowledge society as a whole. There are both short-term and long-term implications of technological advancements that we face.

The other issue is to make an individual and societies resilient to the technological changes that we continuously face. There are implications for the education and training systems that previously were designed to produce individuals for the steady work at the factories of the past. Factories of the future will be very different than what we do imagine. There will be new names and ways of working at the factories of the future. The knowledge that is essential for the people to work are not yet produced. We as a society have difficult problem to make the education and training system for the future that will equip our coming generations with necessary knowledge and skills to operate at the world of tomorrow.

The paper is made up of three sections. They are Analysis, and Conclusion sections. At the analysis section the author reveals the methodology of the paper and reveals what is reached after the analyzing the problem. Conclusion section lays out the ideas reached from the analysis.

## Analysis

We have analyzed literature and tried to answer how does technologic advancements lead to unemployment. We have used deductive and inductive analysis to find out what is the real interrelation between unemployment and technologic advancements.

There are many aspects of the problem. The author is concerned with the inter-relation between technological advancements and unemployment. The author tries to uncover the relation that is not clearly addressed in the literature.

There are many steps before technology advancements lead to unemployment. There is a need to consider the level of average technological fluency and average literacy of the society. These issues do make big changes between societies. The other aspect of this equation is the level of learning new skills to work using new technologies.

Having mentioned these, let's go over the process of diffusion of technology advancements into the society. Firstly, there is a need to mention that the technological advancement level of the humankind not always lets engineers make new machines to change the methods of production directly and in no time. The other aspect is the availability of knowledge and methods to make desired machines. Provided that there are both knowledge and methods for the creation of needed machines engineers start their journey of making that machine.

After having the necessary means to be able to make machines the engineers are ready to start making desired machines. We need to direct the kind of machines that will not be dominant and will not have the power and possibility to hinder the peoples way to do this or other economic activity freely and consciously.

When there is a new technologic advancement, it leads to the invention of some machine/program (hereafter machine). The machine is new and not many people are aware of this. The entrepreneur is eager to apply it into the production. The machine can be operated by several people. [3]

Shows that there are several mechanisms that start with technologic advancements and leads to the employment. [3] states labor saving organizational solutions as one of the elements of technological unemployment. Technological unemployment is the determinant of structural unemployment that is persistent in short-term during advancements in the economy. Of course, there are several layers of unemployment and all are either result or the determinant of technological unemployment. The economies face not only technological advancements in this regard.

After installing the machine into the production many people become unemployed. So, initially machine causes unemployment. As time passes, more people get acquainted by the technology. Some of these people hopefully start to train others. Some parts of the machine need people operators. People learn to operate several parts of the machine eventually. Eventually, the machine leads to the decrease of the unemployment.

[3] Klimczuk, A.–Klimczuk-Kochańska, M. (2015): Technological Unemployment. In: M. Odekon (Ed.): *The SAGE Encyclopedia of World Poverty* (2<sup>nd</sup> Edition), pp. 1510–1511. Thousand Oaks, CA: SAGE Publications. <https://doi.org/10.4135/9781483345727.n783>

## Conclusion and Recommendations

Technology and unemployment relation mechanism is as following. The technology advancements lead to the creation of a new machine. Machine can be handled by few people. So many people become unemployed. As the machine is widely used in the industry, more people either learn and train other people to work with the machine. So, the unemployment decreases in the end.

There are different implications of the technological advancements. These implications can be grouped to two divisions. One for the individuals and other for the societies.

Let's start with group implications. Societies need to come up with resilient systems to make humanity easy to grasp the wealth of knowledge that we face.

It is not even enough to make perfect system that can be spread over the world. We need to consider to disseminate and diffuse the knowledge free and without barriers to each and everyone in the world. Technologies and machines have perfect ways to couple and come together. We need to find ways to learn and teach necessary skills and abilities for everyone of us to endure in the tornado of changes around us.

Let's pass to the individual implications that we can secure. We need to have individual plans for babies after they are able to learn anything. Individual characteristics should be "baked" at families. The author proposes individual plans for the children in families. So far families have been under shadow and we as a society did not start any important plans within families. It is high time for humanity to start teaching our children in families.

We as a society did not have any system for the determination of child's ability. Every training and ability should start with the capabilities and desires of the person that is ought to receive the education and training. Our education system needs to teach parents to grasp the capabilities of the children. We need to consider to bring together the system for this. The author proposes to name this system child ability determination system. Families so far has been free to work in this system. But now we do not have a single child to spare his or her abilities to become redundant. Our humankind needs to upskill every possible individual to help them become resilient for the future economies.

The other important factor is to make lifelong learning systems that every person in the world can freely and effortlessly reach and get use of it. Even if one individual country can make this system, it is not enough. This system needs to spread all over the globe and be open and handy to operate.

In the case we do not come up with necessary and compact systems individuals will be open to robot slavery. We need to consider this problem very seriously.

To sum up, unless we as a society have necessary learning and training systems in place for the knowledge economy it will be impossible for individuals to work, live freely in the future economies. Humankind can face robot domination even slavery. So, there is a need to be prepared to "live" with robot and technology domination and make individuals resilient to the demands of knowledge economy.